PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT JULY 26, 2004

FORMER HARDEL MUTUAL PLYWOOD WATERFRONT PROPERTY 1210 N.W. WEST BAY DRIVE OLYMPIA, WASHINGTON TAX PARCEL #72600200100

Prepared By

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Stemen Environmental, Inc.

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SECTION II

CONSULTANTS COMMENTS

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July 26, 2004

Ms. Janine Ezzell
Triway Enterprises
1500 79th Avenue S.E.
Olympia, Washington 98501

Dear Ms. Ezzell:

RE: PHASE II ENVIRONMENTAL SITE ASSESSMENT FOR FORMER HARDEL MUTUAL PLYWOOD WATERFRONT PROPERTY SITE LOCATED IN OLYMPIA, WASHINGTON.

SITE CHARACTERISTICS AND HISTORY

The Hardel Mutual Plywood Waterfront Property (subject property) is located at 1210 N.W. West Bay Drive in Olympia, Washington.

The subject property is located in the southeast quarter of Section 10, Township 18 North, Range 2 West, Willamette Meridian within the boundaries of Thurston County, Washington, Washington.

For the purposes of this report, the subject property consists of approximately 7 acres of land listed on the Thurston County GeoData Site as Tax Parcel #72600200100.

The Subject property is bordered on the north by a vacant property, to the south by BMT Northwest, a metal fabrication factory, to the west by a railway right of way and N.W. West Bay Drive, and to east by Budd Inlet.

The subject property is located in an area occupied by residential and industrial properties.

Currently available information indicates that some type of a logging/lumber related business was operated on the subject property from 1939 to 1996.

Available records indicate that Hardel Mutual Plywood operated a facility on the subject property from 1951 to 1996.

The Hardel Mutual Plywood waterfront facility ceased operations following an on-site fire on September 1, 1996.

Available information indicates that petroleum contaminated waters containing grease and heavy oils at levels exceeding Ecology's Method "A" Clean Up Levels were pumped from the press pits and discharged into the sanitary sewer system.

Manifested wastes removed from the subject property in 1997 and 1998 included, among other things, a drum containing Unocal AW-46 oil, multiple barrels of wood waste and absorbent pads soaked with Unocal AW-46 oil, a barrel of absorbent pads soaked with Amotherm 150 oil, multiple barrels of XU-100-A patch liquid, and multiple barrels of XU-100-A soaked absorbent pads and wood debris.

The concrete slabs and foundation walls associated with the previous on-site structures are still present on the subject property.

Additionally, the various appurtenances associated with the on-site drainage systems are still in-place.

SOIL AND GROUNDWATER SAMPLING

The purpose of this on-site investigation of the subsurface soils and waters on the subject property is to assess the impacts of the past uses of the subject property and/or neighboring properties on the current environmental integrity of the subject property.

On June 17, June 18, and July 9, 2004, a total of thirty-four (34) investigative subsurface soil samples and thirteen (13) investigative subsurface water samples were obtained from thirty-three (33) selected locations on the subject property and were submitted for appropriate laboratory analyses.

An additional quantity of samples were obtained from various depths at each of the selected sampling locations, were field screened using a water sheen test, and then were placed in sample jars for temporary storage purposes.

Sampling locations were selected based on information contained in the Phase I Environmental Site Assessment completed by Tetra Tech Inc., information obtained from conversations with knowledgeable interested parties, the previous locations of equipment whose operations involved the use of petroleum products, the former storage areas for various petroleum products and/or other potential contaminants, and this consultant's observations of existing on-site conditions.

NORTHWESTERN PORTION OF SITE

A 24 op hot press, a trim saw, a plug cutting saw, a spreader, and a vaneer composer were operated in this immediate area in earlier years. Additionally, drums containing Methylene chloride were previously stored in this area.

Sampling locations S-9, S-10, S-11, S-12, S-15, S-16, S-19, and S-20 were located in the northwestern portion of the site.

Soil borings S-9, S-15, S-19, and S-20 were advanced through the concrete slab.

Soil borings S-10, S-11, and S-12 were advanced through soils present along the western edge of the concrete slab. These soil borings were advanced at an inward (easterly) angle to properly access the soils and/or waters present beneath the concrete slab in these areas.

No concrete slab was present at the location of soil boring S-16.

Soil borings were extended to an approximate depth of 16 feet b.g.s. (below ground surface) at these sampling locations.

Field screening (a water sheen test) results for soils removed from investigative soil borings advanced at sampling locations S-11, S-12, S-16, and S-19 indicated no noticeable presence of petroleum products.

Field screening results for soils removed from investigative soil borings advanced at sampling locations S-9, S-10, S-15, and S-20 indicated a noticeable presence of petroleum products.

Water samples obtained from investigative sampling locations S-10 and S-15 were oily in appearance and possessed a noticeable musky heavy oil type odor. An inspection of the sampling tube used to obtain water samples at these two (2) sampling locations indicated the presence of a layer of Free Product floating on the water table.

The water sample obtained from investigative sampling location S-12 possessed a faint heavy oil type odor and a very thin sheen appeared on the top of the waters when placed in the glass vials.

Laboratory analyses results for investigative soil samples S-9-8/12, S-10 4/8, S-15-4/8, S-15-12/16, S-20-8', and S-20-11' confirmed the presence of heavy oil range T.P.H., at levels that exceed Ecology's Method "A" Clean Up Levels in the subsurface soils present at selected depths at their respective sampling locations.

Laboratory analyses results for investigative soil sample S-15-8/12 confirmed the presence of Chrysene (Carcinogenic PAH's) at levels that exceed Ecology's Method "A" Clean Up Levels.

Laboratory analyses results for investigative water samples S-10-W, S-10-2-W, S-12-W, and S-15-W confirmed the presence of heavy oil range T.P.H. at levels that exceed Ecology's Method "A" Clean Up Levels at their respective sampling locations.

Laboratory analyses results for investigative soil sample S-10-2 indicated no detectable presence of RCRA 8 metals in these sampled subsurface soils.

NORTHERN CENRTRAL PORTION OF THE SITE

The boiler ash accumulation area and the glue wash water containment were located in this area in earlier years.

Sampling location S-6 was located in portion of the site. The soil boring was advanced to an approximate depth of 14 feet b.g.s. at this sampling location.

Field screening results of soils removed from the soil boring advanced at this location indicated no noticeable presence of petroleum product contaminants and/or the presence of any glue wastes.

Laboratory analyses results for investigative soil sample S-6-1- 0/4 indicated no detectable presence of diesel fuel, heavy oil, and/or mineral oil range T.P.H.

WESTERN CENTRAL PORTION OF THE SITE

The patch line was located on this portion of the site in earlier years.

Sampling locations S-13 and S-14 were located on this portion of the site.

Soil borings S-13, and S-14 were advanced through soils present along the western edge of the concrete slab. These soil borings were advanced at an inward (easterly) angle to properly access the soils and/or waters present beneath the concrete slab in these areas.

The two (2) soil borings were advanced to an approximate depth of 16 feet b.g.s.

Field screening results of soils removed from these boring indicated no noticeable presence of petroleum products.

Laboratory analyses results for investigative soil samples S-13-4/8 and S-14-4/8 indicated no detectable presence of diesel fuel, heavy oil, and/or mineral oil range T.P.H.

EASTERN CENTRAL PORTION OF SITE

The hog line, hog room, weld shop, maintenance area, petroleum products/used oil storage area, Poly B Methylene barrels storage area, 8' trim saw, and the transformer room were located on this portion of the site in earlier years.

Sampling locations S-1, S-2, S-3, S-21, S-22, TP-1, TP-2, TP-3, and TP-4 were located on this portion of the subject property

Soil Borings

Soil borings were advanced to an approximate depth of 16 feet b.g.s. at sampling locations S-1, S-2, S-3, S-21, and S-22

Soil boring S-1 was advanced at a location where a drain that serviced the former petroleum products and used oil storage area.

Soil boring S-2 was advanced at a location directly adjacent to the previous location of the weld shop.

Soil boring S-3 was advanced at a location directly adjacent to the former location of the Poly B Methylene barrels storage area.

Soil borings S-21 and S-22 were advanced in areas directly adjacent to former locations of the transformer room and the hog room.

Field screening results for soils removed from these soil borings indicated no presence of petroleum products.

Laboratory analyses results for investigative soil samples S-1-4/8, S-1-8/12, S-2-4/8, S-3-12/15,confirmed no presence no presence of kerosene, diesel fuel, and/or heavy oil range T.P.H. in these soil samples.

Laboratory analyses results for investigative water sample S-1-W confirmed the presence of heavy oil range T.P.H. at levels that exceed Ecology's Method "A" Clean Up Levels in the subsurface waters present at this sampling location.

Test Pits

Test pit TP-1 was created in the former location of the hog room.

The excavation at this sampling location was advanced to an approximate depth of 120 feet b.g.s.

No noticeable signs of petroleum contaminants were found in the soils remove from this test pit.

Test pits TP-2, TP-3, and TP-4 were created in the soil used to fill the former concrete containment area associated with the hog line. The concrete floor of the containment area was present at an approximate depth of 4.5 feet b.g.s. Concrete containment walls were present on each side of the hog line.

Soils that were noticeably impacted by petroleum were present in the lower portions of these test pits.

Oily waters flowed into the test pits via breaches (holes) in the concrete containment walls. These waters began to pool in the lower portions of these excavations (test pits). A petroleum product type sheen was noticeably present on these pooled waters.

Laboratory analyses results for investigative soil sample TP-3 confirmed the presence of heavy oil range T.P.H., at levels that exceed Ecology's Method "A" Clean Up Levels in the soils present in this test pit area.

Laboratory analyses results for investigative water samples TP-3, and TP-4 confirmed the presence of heavy oil range T.P.H., at levels that exceed Ecology's Method "A" Clean Up Levels, in the waters present in their test pit areas.

SOUTHERN PORTION OF SITE

The scrubber containment area, Dryer #1, Dryer #2, the truck port loading area, the bander, the sander, the downstairs plug line, the plug line roundtable, the new sliding saw, and the 40 op hot press were located on this portion of the site.

Sampling locations S-17, S-18, S-23, S-24, S-25, S-26, and DV1 were located on this portion of the subject property.

Vault Waters

Water sample DV1 was obtained from waters present in an underground containment vault located directly adjacent to the western edge of Dryer #1. This vault is serviced by a drain located in this immediate area. The drain grate was removed to provide reasonable access to these contained waters for investigative sampling purposes.

A disposable PVC bailer was used to obtain water sample DV1.

Laboratory analyses results for water sample DV1 indicated no detectable presence of kerosene, diesel fuel, and/or heavy oil range T.P.H. in these sampled waters.

Additionally, laboratory analyses results for water sample DV1 indicated no detectable presence of PCBs inn these sampled waters.

Soil Borings

Soil borings were advanced to an approximate depth of 16 feet at sampling locations S-17, S-18, S-23, S-24, S-25, and S-26.

Soil boring S-17 was advanced at location directly south of the upstairs plug line and the new sliding saw.

Soil boring S-18 was advanced at a location directly adjacent to the scrubber containment area.

Soil boring S-23 was advanced in an area directly adjacent to the previous location of the 40 op hot press.

Soil boring S-24 was advanced in an area directly adjacent to the former location of the downstairs plug line and the plug line roundtable.

Soil boring S-25 was advanced through soils present along the western edge of the southern portion of the concrete slab. This sampling location is located directly west of sampling location S-24.

Soil boring S-26 was advanced at a location directly adjacent to the western edge of the central portion of Dryer #2.

Soil borings were advanced to an approximate depth of 16 feet at sampling locations S-17, S-18, S-23, S-24, S-25, and S-26.

Due to extenuating circumstances (gravels continually clogging the sampling device), no soil samples were obtained at sampling location S-26.

Field screening results for soils removed from soil borings S-17, S-18, S-23, and S-25 indicated no noticeable presence of petroleum products.

Field screening results for soils removed from soil boring S-24 indicated the noticeable presence of petroleum products in these soils.

Water samples obtained from sampling locations S-24 and S-26 were noticeably impacted by petroleum products.

Laboratory analyses results for investigative soil sample S-18-8/12 indicated no detectable presence of kerosene, diesel fuel, and/or heavy oil range T.P.H. in these sampled soils.

Laboratory analyses results for investigative soil sample S-18-8/12 indicated no detectable presence of Volatile Organic Compounds (VOC's) in these sampled soils.

Laboratory analyses results for investigative soil sample S-18-4/8 indicated no detectable presence of diesel fuel, mineral oil, and/or heavy oil range T.P.H. in these sampled soils.

Laboratory analyses results for soil sample S-24 (4') confirmed the presence of non – carcinogenic PAH's these sampled soils.

Laboratory analyses results for soil sample S-24 (4') indicated no detectable presence of RCRA 8 Metals in these sampled soils.

Laboratory analyses results for investigative soil sample S-24 (6') confirmed the presence of diesel fuel range T.P.H., heavy oil range T.P.H., and non –carcinogenic PAH's at levels that exceed Ecology's Method "A" Clean Up Levels.

Laboratory analyses results for water sample S-24-W confirmed the presence of kerosene range T.P.H., heavy oil range T.P.H., and non-carcinogenic PAH's at levels that exceed Ecology's Method "A" Clean Up Levels.
in these sampled waters.

Laboratory analyses results for water sample S-26-W confirmed the presence of diesel fuel range T.P.H., carcinogenic and non-carcinogenic PAH's at levels that exceed Ecology's Method "A" Clean Up Levels. in these sampled waters.

EASTERN PORTION OF THE SITE

The glue loft, downstairs tank farm, air compressor room, purchasing/office building, and reported former U.S.T. burial location are located on this portion of the subject property.

Sampling locations S-4, S-5, S-7, and S-8 were located on this portion of the subject property.

Soil borings S-4 and S-5 were advanced at locations directly adjacent to the air compressor room and the downstairs tank farm.

Soil boring S-7 was advanced at a location directly adjacent to the former location of the safety/purchasing office building.

Soil boring S-8 was advanced at a location directly adjacent to the reported former U.S.T. burial location.

Soil borings were advanced to an approximate depth of 16 feet at sampling locations.

Field screening results for soils removed from these soil borings indicated no presence of petroleum products and/or other contaminants.

Laboratory analyses results for investigative soil samples S-4-4/8, S-5-4/8, S-5-8/12, S-7-4/8, and S-8-8/12 indicated no detectable presence of diesel fuel, heavy oil and/or mineral oil range T.P.H. in these sampled soils.

REMOTE SAMPLING LOCATIONS

Test Pit

Test Pit TP-5 was created at a remote location located along the eastern perimeter of the subject property.

The test pit was excavated to an approximate depth of 10 feet b.g.s.

A combination steel and PVC pipe was found at an approximate depth of 3 feet b.g.s.

Although an earthen surface was present over this area, we discovered a layer of asphalt materials at an approximately depth of 2 feet b.g.s.

A wooden piling was encountered at an approximate depth of approximately 8 feet b.g.s.

Waters began entering the excavation at an approximate depth of 8 feet b.g.s., and then began pooling in the lower portions of the excavation. I observed no petroleum product type sheen on the surface of these pooled waters.

Soil sample TP-5 was obtained from soils present at an approximate depth of 10 feet b.g.s.

Field screening results for soils removed from this test pit excavation indicated no noticeable presence of petroleum products.

Laboratory analyses results for soil sample TP-5-10 indicated no detectable presence of diesel fuel, heavy oil, and/or mineral oil range T.P.H.

SEDIMENT SAMPLING LOCATION

Sampling location SED1is located along the shoreline that is present along the sothern portion of the eastern perimeter of the subject property.

Sediment sample SED1 was obtained from the shallow subsurface tidal sediments present at this sampling location.

Laboratory analyses results for sediment sample SED1 indicated no detectable presence of Volatile Organic Compounds (VOC's) and/or RCRA 8 Metals in these sampled sediments.

All depth measurements are measured from the surface level present over the immediate sampling location.

SAMPLING PROTOCOLS AND LABORATORY ANALYSES

Discreet investigative soil samples were obtained using a "Direct Push Sampling System" provided and operated by Licensed Geologists from Environmental Services Network Northwest, Lacey, Washington. Continuous soil corings were extended to depths of 16 feet below ground surface (b.g.s.) or less. Continuous soil coring/samples (split spoon samplers) were laid out in order by depth on the surface to facilitate field screening and observation of the soils obtained from various depths.

Discreet water samples were obtained from temporary monitoring wells installed using a "Direct Push Sampling System" provided and operated by Licensed Geologists from Environmental Services Network Northwest, Lacey, Washington. Screened PVC pipe was placed in the previously created soil boring. A peristaltic pump, equipped with disposable tubing, was used to properly purge the well, and then obtain the discreet water samples. Upon the completion of the water sampling activities, a Licensed Well Driller properly abandoned the temporary wells.

Investigative soil samples obtained from the test pits were obtained using stainless steel hand sampling tools. Soils samples were obtained from soils excavated from various depths and location in the test pit using a backhoe. The soil samples were obtained from soils located in the central portion of the backhoe bucket.

Water samples were obtained manually from the shallow waters present in the sampled test pits using a glass vial as the sampling device. These samples were obtained by hand from waters present in these shallow test pits.

All sampling tools/devices were properly cleaned between individual samples to prevent cross sample contamination. All soil and water samples were then placed in recommended sample containers with no headspace, properly refrigerated and transported with proper chain of custody forms, to Environmental Services Network Northwest Inc. of Lacey, Washington, for appropriate laboratory analyses.

Investigative soil and/or groundwater samples were screened for diesel fuel, kerosene, and heavy oil range T.P.H. using method NWTPH-Dx/Dx Extended,Volatile Organic Compounds (V.O.C.'s) using EPA method 8260, and Semi -Volatile Organic Compounds using EPA method 8260.

Additional selected investigative soil samples were screened for RCRA 8 metals using the EPA 7000 series methods and PCBs using EPA method 8082.

All laboratory analyses methods, Quality Assurances, and Quality Controls meet Ecology's requirements for Site Checks and Site Assessments.

HEALTH AND SAFETY

1. All on-site work was performed under the Health and Safety guidelines set forth in sections 29 CRF 1910.120 of the Federal Register and Chapter 296-62 WAC which provide regulations for individuals who are engaged in activities involving hazardous substances, including petroleum, and who perform confined space entry during field activities, also Chapter 296-155 WAC which provides State safety standards for construction work.

2. All on-site workers were 40 hour Hazmat certified.

3. A copy of the Site Safety Plan was provided to all on-site employees. The contents of this plan and all potential on-site hazards, were discussed during a personnel on-site safety meeting. Based on the contents of this safety plan all workers were required to wear at least Level D protection. First Aid materials were on-site at all times.

4. The extended perimeter of the work area was secured at all times by chain link fencing.

SUMMARY

Laboratory analyses results for the subsurface soil and/or water samples obtained from selected locations on the subject property indicate the following:

1. The confirmed presence of heavy oil range T.P.H. (total petroleum hydrocarbons), at levels that exceed Ecology's Method "A" Clean Up Levels in the subsurface soils at selected locations on the northern and eastern central portions of the subject property. (Sampling locations S-9, S-10, S-12, S-15, and S-20)

2. The confirmed presence of heavy oil range T.P.H. (total petroleum hydrocarbons), at levels that exceed Ecology's Method "A" Clean Up Levels, in the subsurface waters present at selected locations on the northern and eastern central portions of the subject property. (Sampling locations S-1, S-10, S-12, TP-3, TP-4, S-15W)

   An inspection of the PVC pipe used for water sampling activities at sampling locations S-10, S-12, and S-15 revealed the presence of a approximately 3 inch thick

dark band of oily materials at a depth equal to the static water level. The presence of this dark substance indicates the presence of "free product" (oil) floating on the waters present in this immediate area.

3. The confirmed presence of carcinogenic Polycyclic aromatic hydrocarbons (PAH's) in the subsurface soils at selected locations on the northern portion of the subject property. (Sampling location S-15)

4. The confirmed presence of diesel fuel range T.P.H., heavy oil range T.P.H., Volatile Organic Compounds (V.O.C.'s), and non-carcinogenic (PAH's), at levels that exceed Ecology's Method "A" Clean Up Levels in the subsurface soils present at selected locations on the southern portion of the subject property. (Sampling locations # S-24 and S-26)

5. The confirmed presence of diesel fuel range T.P.H., heavy oil range T.P.H., non-carcinogenic (PAH's), and carcinogenic PAH's at levels that exceed Ecology's Method "A" Clean Up Levels in the subsurface waters present at selected locations on the southern portion of the subject property. (Sampling locations # S-24 and S-26)

6. No detectable presence of RCRA 8 Metals and/or PCB's in the subsurface soils present at selected locations on the subject property.

7. No presence of Volatile Organic Compounds (V.O.C.'s) at levels exceeding Ecology's applicable recommended clean up levels was indicated by these investigative soil and/or water samples.

8. Soil samples obtained along the eastern perimeter of the former building's location do not indicate the presence of any petroleum range T.P.H. (Sampling locations TP-5, S-2, S-4, S-5, S-7, S-8)

9. No presence of Volatile Organic Compounds (VOC's) and/or RCRA 8 Metals were detected in the sediments present along the eastern perimeter of the subject site.

10. Currently available information indicates that all of the adversely impacted areas on the subject property are located within the boundaries of the former commercial building's footprint. The majority of these impacted areas are covered by an approximately a 12 inch thick steel re-enforced concrete slab, and multiple steel re-enforced concrete foundation walls.

Consultants Conclusions:

The petroleum product range contaminants present in the subsurface soils and waters beneath selected portions of the subject property are consistent with the type of petroleum products used in the operations of the previous on-site facility and are also consistent with the petroleum products cleaned up during the post fire clean up operations performed on the subject property.

The clean up operations performed on the subject in previously years addressed the clean up of released petroleum products and petroleum impacted materials from selected reasonably accessible locations/areas on the subject site.

The proposed remedial/corrective actions project will address the clean up and remediation of petroleum products and petroleum impacted materials that were not in the past and/or that are not currently reasonably accessible for clean up/remediation purposes.

Consultant's Recommendations:

1. The confirmed presence of diesel fuel range T.P.H., heavy oil range T.P.H., non-carcinogenic (PAH's), and carcinogenic PAH's at levels that exceed Ecology's Method "A" Clean Up Levels in the subsurface waters and soils beneath the subject property should be immediately reported to Ecology's Toxics Clean Up Program-Southwest Regional Office.

2. Initial remedial activities should be focused on the recovery/removal of the "free product" floating on the water table in the immediate areas directly beneath and directly adjacent to investigative sampling locations S-15 and S-26. The recovered "free product should be placed in appropriate storage containers and then transported to an appropriate off-site treatment/disposal facility. The demolition and removal of the concrete on these selected portions of the subject property would be required to provide reasonable access to the "free product" for pumping/recovery purposes.

3. All remaining portions of the on-site concrete slab should be removed to facilitate the proper excavation and removal of all of the adversely impacted subsurface materials present on these portions of the subject property.

   The demolition and removal of the concrete slab will also provide reasonable access to subsurface materials and waters in areas that have not been properly characterized at this point.

4. Portable aboveground storage tanks should be placed at strategic locations on the subject property to provide temporary storage for adversely impacted waters pumped/recovered during the dewatering of the on-site remedial excavations.

   These water storage tanks would also be an essential component of any proposed on-site water treatment system.

5. All reasonably accessible soils containing contaminants at levels exceeding applicable regulatory clean up levels should be properly excavated, properly stockpiled, properly characterized, and properly transported to an appropriate off-site treatment/disposal facility.

   The excavation of adversely impacted soils should continue until laboratory analyses results for confirmation soil samples indicate the successful removal of all adversely impacted soils.

6. Due to the presence of adversely impacted subsurface waters on the subject property, it is anticipated that upon the completion of the on-site remedial excavation activities, Ecology will require the installation and placement of groundwater water monitoring wells at selected locations on the subject property. The subsurface waters on the subject property would be monitored on a periodic basis via the monitoring wells until the results of these monitoring activities meet regulatory requirements.

7. All on-site remedial/corrective action activities should be properly documented in a report that will be issued to all interested parties.

8. If possible, I would recommend that this project be entered into Ecology's Voluntary Clean Up Program for the purpose of receiving a notice of " No Further Action Required".

All opinions, observations, and recommendations set forth in this report are based on current available information and on-site conditions, and cannot predict or report on the impacts of future events and/or regulatory requirements on this site.

If you have any questions and/or require additional information, please feel free to contact me at the above listed phone number and/or address.

Sincerely,

Paul W. Stemen
Ecology-Registered Site Assessor
IFCI #0874201-26
ASTM Certified

SECTION III

LABORATORY ANALYSES REPORTS

Table 740-1
Method A Soil Cleanup Levels for Unrestricted Land Uses.[a]

Hazardous Substance	CAS Number	Cleanup Level
Arsenic	7440-38-2	20 mg/kg[b]
Benzene	71-43-2	0.03 mg/kg[c]
Benzo(a)pyrene	50-32-8	0.1 mg/kg[d]
Cadmium	7440-43-9	2 mg/kg[e]
Chromium		
Chromium VI	18540-29-9	19 mg/kg[f1]
Chromium III	16065-83-1	2,000 mg/kg[f2]
DDT	50-29-3	3 mg/kg[g]
Ethylbenzene	100-41-4	6 mg/kg[h]
Ethylene dibromide (EDB)	106-93-4	0.005 mg/kg[i]
Lead	7439-92-1	250 mg/kg[j]
Lindane	58-89-9	0.01 mg/kg[k]
Methylene chloride	75-09-2	0.02 mg/kg[l]
Mercury (inorganic)	7439-97-6	2 mg/kg[m]
MTBE	1634-04-4	0.1 mg/kg[n]
Naphthalenes	91-20-3	5 mg/kg[o]
PAHs (carcinogenic)		See benzo(a)pyrene[d]
PCB Mixtures		1 mg/kg[p]
Tetrachloroethylene	127-18-4	0.05 mg/kg[q]
Toluene	108-88-3	7 mg/kg[r]
Total Petroleum Hydrocarbons[s]		
[Note: Must also test for and meet cleanup levels for other petroleum components--see footnotes!]		
Gasoline Range Organics		
Gasoline mixtures without benzene and the total of ethyl benzene, toluene and xylene are less than 1% of the gasoline mixture		100 mg/kg
All other gasoline mixtures		30 mg/kg
Diesel Range Organics		2,000 mg/kg
Heavy Oils		2,000 mg/kg
Mineral Oil		4,000 mg/kg
1,1,1 Trichloroethane	71-55-6	2 mg/kg[t]
Trichloroethylene	79-01-6	0.03 mg/kg[u]
Xylenes	1330-20-7	9 mg/kg[v]

Footnotes:

a **Caution on misusing this table.** This table has been developed for specific purposes. It is intended to provide conservative cleanup levels for sites undergoing routine cleanup actions or for sites with relatively few hazardous substances, and the site qualifies under WAC 173-340-7491 for an exclusion from conducting a simplified or site-specific terrestrial ecological evaluation, or it can be demonstrated using a terrestrial ecological evaluation under WAC 173-340-7492 or 173-340-7493 that the values in this table are ecologically protective for the site. This table may not be appropriate for defining cleanup levels at other sites. For these reasons, the values in this table should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in this table do not necessarily mean the soil must be restored to these levels at a site. The level of restoration depends on the remedy selected under WAC 173-340-350 through 173-340-390.

b **Arsenic.** Cleanup level based on direct contact using Equation 740-2 and protection of ground water for drinking water use using the procedures in WAC 173-340-747(4), adjusted for natural background for soil.

c **Benzene.** Cleanup level based on protection of ground water for drinking water use, using the procedures in WAC 173-340-747(4) and (6).

d **Benzo(a)pyrene.** Cleanup level based on direct contact using Equation 740-2. If other carcinogenic PAHs are suspected of being present at the site, test for them and use this value as the total concentration that all carginogenic PAHs must meet using the toxicity equivalency methodology in WAC 173-340-708(8).

e **Cadmium.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4), adjusted for the practical quantitation limit for soil.

f1 **Chromium VI.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

f2 **Chromium III.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4). Chromium VI must also be tested for and the cleanup level met when present at a site.

g **DDT (dichlorodiphenyltrichloroethane).** Cleanup level based on direct contact using Equation 740-2.

h **Ethylbenzene.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

i **Ethylene dibromide (1,2 dibromoethane or EDB).** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4) and adjusted for the practical quantitation limit for soil.

j **Lead.** Cleanup level based on preventing unacceptable blood lead levels.

k **Lindane.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4), adjusted for the practical quantitation limit.

l **Methylene chloride (dichloromethane).** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

m **Mercury.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

n **Methyl tertiary-butyl ether (MTBE).** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

o **Naphthalenes.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4). This is a total value for naphthalene, 1-methyl naphthalene and 2-methyl naphthalene.

p **PCB Mixtures.** Cleanup level based on applicable federal law (40 C.F.R. 761.61). This is a total value for all PCBs.

WAC 173-340-900 Tables.

Table 720-1
Method A Cleanup Levels for Ground Water.[a]

Hazardous Substance	CAS Number	Cleanup Level
Arsenic	7440-38-2	5 ug/liter[b]
Benzene	71-43-2	5 ug/liter[c]
Benzo(a)pyrene	50-32-8	0.1 ug/liter[d]
Cadmium	7440-43-9	5 ug/liter[e]
Chromium (Total)	7440-47-3	50 ug/liter[f]
DDT	50-29-3	0.3 ug/liter[g]
1,2 Dichloroethane (EDC)	107-06-2	5 ug/liter[h]
Ethylbenzene	100-41-4	700 ug/liter[i]
Ethylene dibromide (EDB)	106-93-4	0.01 ug/liter[j]
Gross Alpha Particle Activity		15 pCi/liter[k]
Gross Beta Particle Activity		4 mrem/yr[l]
Lead	7439-92-1	15 ug/liter[m]
Lindane	58-89-9	0.2 ug/liter[n]
Methylene chloride	75-09-2	5 ug/liter[o]
Mercury	7439-97-6	2 ug/liter[p]
MTBE	1634-04-4	20 ug/liter[q]
Naphthalenes	91-20-3	160 ug/liter[r]
PAHs (carcinogenic)		See benzo(a)pyrene[d]
PCB mixtures		0.1 ug/liter[s]
Radium 226 and 228		5 pCi/liter[t]
Radium 226		3 pCi/liter[u]
Tetrachloroethylene	127-18-4	5 ug/liter[v]
Toluene	108-88-3	1,000 ug/liter[w]
Total Petroleum Hydrocarbons[x]		
[Note: Must also test for and meet cleanup levels for other petroleum components--see footnotes!]		
Gasoline Range Organics		
Benzene present in ground water		800 ug/liter
No detectable benzene in ground water		1,000 ug/liter
Diesel Range Organics		500 ug/liter
Heavy Oils		500 ug/liter
Mineral Oil		500 ug/liter
1,1,1 Trichloroethane	71-55-6	200 ug/liter[y]
Trichloroethylene	79-01-6	5 ug/liter[z]
Vinyl chloride	75-01-4	0.2 ug/liter[aa]
Xylenes	1330-20-7	1,000 ug/liter[bb]

Footnotes:

a **Caution on misusing this table.** This table has been developed for specific purposes. It is intended to provide conservative cleanup levels for drinking water beneficial uses at sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. This table may not be appropriate for defining cleanup levels at other sites. For these reasons, the values in this table should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in this table do not necessarily mean the ground water must be restored to those levels at all sites. The level of restoration depends on the remedy selected under WAC 173-340-350 through 173-340-390.

b **Arsenic.** Cleanup level based on background concentrations for state of Washington.

c **Benzene.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.61).

d **Benzo(a)pyrene.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.61), adjusted to a 1×10^{-5} risk. If other carcinogenic PAHs are suspected of being present at the site, test for them and use this value as the total concentration that all carcinogenic PAHs must meet using the toxicity equivalency methodology in WAC 173-340-708(8).

e **Cadmium.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.62).

f **Chromium (Total).** Cleanup level based on concentration derived using Equation 720-1 for hexavalent chromium. This is a total value for chromium III and chromium VI. If just chromium III is present at the site, a cleanup level of 100 ug/l may be used (based on WAC 246-290-310 and 40 C.F.R. 141.62).

g **DDT (dichlorodiphenyltrichloroethane).** Cleanup levels based on concentration derived using Equation 720-2.

h **1,2 Dichloroethane (ethylene dichloride or EDC).** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.61).

i **Ethylbenzene.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.61).

j **Ethylene dibromide (1,2 dibromoethane or EDB).** Cleanup level based on concentration derived using Equation 720-2, adjusted for the practical quantitation limit.

k **Gross Alpha Particle Activity, excluding uranium.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.15).

l **Gross Beta Particle Activity, including gamma activity.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.15).

m **Lead.** Cleanup level based on applicable state and federal law (40 C.F.R. 141.80).

n **Lindane.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.61).

o **Methylene chloride (dichloromethane).** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.61).

p **Mercury.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.62).

q **Methyl tertiary-butyl ether (MTBE).** Cleanup level based on federal drinking water advisory level (EPA-822-F-97-009, December 1997).

r **Naphthalenes.** Cleanup level based on concentration derived using Equation 720-1. This is a total value for naphthalene, 1-methyl naphthalene and 2-methyl naphthalene.

s **PCB mixtures.** Cleanup level based on concentration derived using Equation 720-2, adjusted for the practical quantitation limit. This cleanup level is a total value for all PCBs.

t **Radium 226 and 228.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.15).

u **Radium 226.** Cleanup level based on applicable state law (WAC 246-290-310).

SEMI-VOLATILE ORGANIC COMPOUNDS WATER 8270			
SAMPLE-NUMBER	S-26-W	S-24 W	S-10-W
DATE	7-9-04	7-9-04	7-9-04
DEPTHS	4'	4'	4'
Pyridine	ND	ND	ND
Analine	ND	ND	ND
Phenol	ND	ND	ND
2-Chlorophenol	ND	ND	ND
Bis (2-chloroethyl) ether	ND	ND	ND
1 ,3-Dichlorobenzene	ND	ND	ND
1 ,4-Dichlorobenzene	ND	ND	ND
1 ,2-Dichlorobenzene	ND	ND	ND
Benzyl alcohol	ND	ND	ND
2-Methylphenol (o-cresol)	ND	ND	ND
Bis (2-chloroisopropyl) ether	ND	ND	ND
3,4-Methylphenol (m,p-cresol)	ND	ND	ND
Hexacholorethane	ND	ND	ND
N-Nitroso-di-n-propylamine	ND	ND	ND
Nitrobenzene	ND	ND	ND
Isophorone	ND	ND	ND
2-Nitrophenol	ND	ND	ND
4-Nitrophenol	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND
Bis (2-chloroethoxy) methane	ND	ND	ND
2,4-Dichlorophenol	ND	ND	ND
1 ,2,4-Trichlorobenzene	ND	ND	ND
Naphthalene	**270**	ND	ND
4-Chloroanaline	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND
4-Chloro-3-methylphenol	ND	ND	ND
2-Methylnapthalene	**95**	ND	ND
1-Methylnapthalene	**110**	51	ND
Hexachlorocyclopentadiene	ND	ND	ND
2,4,6-Trichlorophenol	ND	ND	ND
2,4,5-Trichlorophenol	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND
2-Nitroanaline	ND	ND	ND
1 ,4-Dinitrobenzene	ND	ND	ND
Dimethylphthalate	ND	ND	ND
Acenaphthylene	ND	ND	ND
1 ,3-Dinotrobenzene	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND
1 ,2-Dinitrobenzene	ND	ND	ND

SEMI-VOLATILE ORGANIC COMPOUNDS WATER 8270			
SAMPLE-NUMBER	S-26-W	S-24 W	S-10-W
DATE	7-9-04	7-9-04	7-9-04
DEPTHS	4'	4'	4'
Acenaphthene	190	11	1.4
3-Nitroanaline	ND	ND	ND
Dibenzofuran	110	3.9	ND
2,4-Dinitrotoluene	ND	ND	ND
2,3,4,6-Tetrachlorophenol	ND	ND	ND
2,3,5,6-Tetrachlorophenol	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND
Fluorene	180	5.5	ND
4-Chlorophenylphenylether	ND	ND	ND
Diethylphthalate	ND	ND	ND
4-Nitroanaline	ND	ND	ND
4,6-Dinitro-2-methylphenol	ND	ND	ND
N-nitrosodiphenylamine	ND	ND	ND
Azobenzene	ND	ND	ND
4-Bromophenylphenylether	ND	ND	ND
Hexachlorobenzene	ND	ND	ND
Pentachlorophenol	ND	ND	ND
Phenanthrene	470	3.7	ND
Anthracene	32	ND	ND
Carbazole	8.3	ND	ND
Di-n-butylphthalate	ND	ND	ND
Fluoranthene	160	ND	ND
Pyrene	98	ND	ND
Butylbenzyiphthalate	ND	ND	ND
Bis(2-ethylhexyl) adipate	ND	ND	ND
Benzo(a)anthracene	**15**	ND	ND
Chrysene	**11**	ND	ND
Bis (2-ethylhexyl) phthalate	ND	ND	ND
Di-n-octyl phthalate	ND	ND	ND
Benzo(b)fluoranthene	**3.2**	ND	ND
Benzo(k)fluoranthene	**3.4**	ND	ND
Benzo(a)pyrene	**2.9**	ND	ND
Dibenzo(a,h)anthracene	ND	ND	ND
Benzo(ghi)perylene	ND	ND	ND
Indeno(1 ,2,3-cd)pyrene	ND	ND	ND

VOLATILE ORGANIC COMPOUNDS 8260 WATER			
SAMPLE-NUMBER	S1-W		
DATE	6-22-04		
DEPTHS			
DICHLORODIFLUOROMETHANE	ND		
CHLOROMETHANE	ND		
VINYL CHLORIDE	ND		
BROMOMETHANE	ND		
CHLOROETHANE	ND		
TRICHLOROFLUOROMETHANE	ND		
ACETONE	ND		
METHYLENE CHLORIDE	ND		
METHYL-T-BUTY ETHER (MTBE)	ND		
TRANS 1,1 DICHLOROETHENE	ND		
1,1 DICHLOROETHENE	ND		
CIS-1,-2 DICHLOROETHENE	ND		
TRANS-1,2-DICHLOROETHENE	ND		
1,1 DICHLOROETHANE	ND		
CIS-1,2 DICHLOROETHENE	ND		
2,2-DICHLOROPROPANE	ND		
CHLOROFORM	ND		
BROMOCHLOROMETHANE	ND		
1,1,1- TRICHLOROETHANE	ND		
1,2 DICHLOROETHANE	ND		
1,1-DICHLOROPROPENE	ND		
CARBON TETRACHLORIDE	ND		
BENZENE	ND		
TRICHLOROETHENE	ND		
1,2-DICHLOROPROPANE	ND		
DIBROMOMETHANE	ND		
BROMODICHLOROMETHANE	ND		
4-METHYL-2-PENANONE	ND		
CIS-1,3-DICHLOROPROPENE	ND		
TOLUENE	ND		
TRANS-1,3-DICHLOROPROPENE	ND		
1,1,2,-TRICHLOROETHANE	ND		
2-HEXANONE	ND		
1,3-DICHLOROPROPANE	ND		
DIBROMOCHLOROMETHANE	ND		
TETRACHLOROETHENE (PCE)	ND		
1,2-DIBROMOETHANE (EDB)(*)	ND		
CHLOROBENZENE	ND		
1,1,1,2-TETRACHLOROETHANE	ND		
ETHYLBENZENE	ND		
XYLENES	ND		
STYRENE	ND		
BROMOFORM	ND		
1,1,2,2-TETRACHLOROETHANE	ND		
ISOPROPYLBENZENE	ND		
1,2,3-TRICHLOROPROPANE	ND		
BROMOBENZENE	ND		
n-PROPYLBENZENE	7.2		
2-CHLOROTOLUENE	ND		
4-CHLOROTOLUENE	ND		

VOLATILE ORGANIC COMPOUNDS 8260 WATER			
SAMPLE-NUMBER	S1-W		
DATE	6-22-04		
DEPTHS			
1,3,5-TRIMETHYLBENZENE	ND		
TERT-BUTYLBENZENE	ND		
1,2,4-TRIMETHYLBENZE	ND		
SEC-BUTYLBENZENE	6.3		
1,3-DICHLOROBENZENE	ND		
1,4-DICHLOROBENZENE	ND		
ISOPROPYLTOLUENE	ND		
1,2-DICHLOROBENZENE	ND		
n-BUTYLBENZENE	20		
1,2-DIBROMO-3-CHLOROPROPANE	ND		
1,2,4-TRICHLOROBENZENE	ND		
NAPHTHALENE	ND		
HEXACHLORO-1,3-BUTADIENE	ND		
1,2,3,-TRICHLOROBENZENE	ND		

	SOIL LABORATORY ANALYSES CHARTS				
			TOTAL PETROLEUM		
			HYDROCARBONS (PPM)		
SAMPLE NUMBER	SAMPLE DATE	SAMPLE DEPTH	DIESEL	OIL	MINERAL OIL
S-3-12/15	6-22-04	12'-15'	ND	ND	ND
S-4-4/8	6-22-04	4'-8'	ND	ND	ND
S-5-4/8	6-22-04	4'-8'	ND	ND	ND
S-5-8/12	6-22-04	8'-12'	ND	ND	ND
S-7-4/8	6-22-04	4'-8'	ND	ND	ND
S-8-8/12	6-22-04	8'-12'	ND	ND	ND
S-9-8/12	6-22-04	8'-12'	ND	**3700**	ND
S-13-4/8	6-22-04	4'-8'	ND	ND	ND
S-14-4/8	6-22-04	4'-8'	ND	ND	ND
S-15-12/16	6-22-04	12'-16'	ND	**5700**	ND
S-16-8/12	6-22-04	8'-12'	ND	ND	ND
S-18-4/8	6-22-04	4'-8'	ND	ND	ND
S-1-4/8	6-22-04	4'-8'	ND	ND	ND
S-2-4/8	6-22-04	4'-8'	ND	ND	ND
S-6-1-0/4	6-22-04	0'-4'	ND	ND	ND
S-10-4/8	6-22-04	4'-8'	ND	**11000**	ND
S-11-8/12	6-22-04	8'-12'	ND	ND	ND
S-15-4/8	6-22-04	4'-8'	ND	**3000**	ND
S-12-4/7	6-22-04	4'-7'	ND	ND	ND
TP-4	6-22-04	4'	ND	1900	ND
TP-2	6-22-04	4'	ND	410	ND
TP-3	6-22-04	4'	ND	**7300**	ND
TP5-5	6-22-04	5'	ND	ND	ND
TP5-10	6-22-04	10'	ND	ND	ND
METHOD "A"					
CLEANUP LEVELS			2000 PPM	2000 PPM	2000 PPM

	SOIL LABORATORY ANALYSES CHARTS				
			TOTAL PETROLEUM		
			HYDROCARBONS (PPM)		
SAMPLE NUMBER	SAMPLE DATE	SAMPLE DEPTH	KERSOSENE JET FUEL	DIESEL FUEL OIL	HEAVY OIL
S-18-8/12	6-22-04	8'-12'	ND	ND	ND
S-3-4/8	6-22-04	4'-8'	ND	ND	ND
S-15-8/12	6-22-04	8'-12'	ND	ND	**100000**
S-1-8/12	6-22-04	8'-12'	ND	ND	130
S-24 4'	7-9-04	4'	ND	860	1400
S-20 11'	7-9-04	11'	ND	ND	**30000**
S-19	7-9-04	8'	ND	ND	ND
S-20 8'	7-9-04	8'	ND	ND	**360000**
S-24 6'	7-9-04	6	ND	**13000**	**10000**
S-22**	7-9-04	10' - 12'	ND	840	ND
METHOD "A"					
CLEANUP LEVELS			2000 PPM	2000 PPM	2000 PPM

	WATER LABORATORY ANALYSES CHARTS				
			TOTAL PETROLEUM		
			HYDROCARBONS (PPB)		
SAMPLE	SAMPLE	SAMPLE	DIESEL	OIL	MINERAL
NUMBER	DATE	DEPTH			OIL
S-3-W	6-22-04		ND	ND	ND
S-6-W	6-22-04		ND	ND	ND
S-8-W	6-22-04		ND	ND	ND
S-15-W	6-22-04		ND	**160000**	ND
S-12-W	6-22-04		ND	**1400**	ND
S-1-W	6-22-04		ND	**7300**	ND
S-10-W	6-22-04		ND	**19000**	ND
TP-4-W	6-22-04		ND	**26000**	ND
TP-3-W	6-22-04		ND	**4800**	ND
METHOD "A"					
CLEANUP LEVELS			500 PPB	500 PPB	500 PPB

	WATER LABORATORY ANALYSES CHARTS				
			TOTAL PETROLEUM		
			HYDROCARBONS (PPM)		
SAMPLE NUMBER	SAMPLE DATE	SAMPLE DEPTH	KERSOSENE JET FUEL	DIESEL FUEL OIL	HEAVY OIL
S-26-W**	7-9-04	4'	ND	**3.1**	ND
S-10-2-W	7-9-04	4'	ND	ND	**6.7**
DV-1	7-9-04	4'	ND	ND	ND
S-24-2	7-9-04	4'	**2.4**	ND	**0.62**
METHOD "A" CLEANUP LEVELS			.5 PPM	.5 PPM	.5 PPM

	SOIL LABORATORY ANALYSES CHARTS									
			RCRA 8 METALS (7000)							
SAMPLE	SAMPLE	SAMPLE								
NUMBER	DATE	DEPTH	LEAD	CADMIM	CHROMIUM	ARSENIC	SILVER	BARIUM	SELENIUM	MERCURY
SED-1	6-22-04	4'	ND	ND	ND	ND	ND	ND	ND	ND
S-24 (4')	7-9-04	4'	ND	ND	ND	ND	ND	ND	ND	ND
S-10-2	7-9-04	2'	ND	ND	ND	ND	ND	ND	ND	ND

	WATER LABORATORY ANALYSES CHARTS				
			TOTAL PETROLEUM		
			HYDROCARBONS (PPM)		
SAMPLE	SAMPLE	SAMPLE	KERSOSENE	DIESEL	HEAVY
NUMBER	DATE	DEPTH	JET FUEL	FUEL OIL	OIL
S-26-W**	7-9-04	4'	ND	**3.1**	ND
S-10-2-W	7-9-04	4'	ND	ND	**6.7**
DV-1	7-9-04	4'	ND	ND	ND
S-24-2	7-9-04	4'	**2.4**	ND	**0.62**
METHOD "A"					
CLEANUP LEVELS			.5 PPM	.5 PPM	.5 PPM

VOLATILE ORGANIC COMPOUNDS SOILS (8260)				
SAMPLE-NUMBER	S-24 4'	S-20 11'	S-20 8'	S-24 5'
DATE	7-9-04	7-9-04	7-9-04	7-9-04
DEPTHS	4'	11'	8'	5'
DICHLORODIFLUOROMETHANE	ND	ND	ND	ND
CHLOROMETHANE	ND	ND	ND	ND
VINYL CHLORIDE	ND	ND	ND	ND
BROMOMETHANE	ND	ND	ND	ND
CHLOROETHANE	ND	ND	ND	ND
TRICHLOROFLUOROMETHANE	ND	ND	ND	ND
ACETONE	ND	ND	ND	ND
METHYLENE CHLORIDE	ND	ND	ND	ND
METHYL-T-BUTY ETHER (MTBE)	ND	ND	ND	ND
TRANS 1,1 DICHLOROETHENE	ND	ND	ND	ND
1,1 DICHLOROETHENE	ND	ND	ND	ND
CIS-1,-2 DICHLOROETHENE	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	ND	ND	ND	ND
1,1 DICHLOROETHANE	ND	ND	ND	ND
CIS-1,2 DICHLOROETHENE	ND	ND	ND	ND
2,2-DICHLOROPROPANE	ND	ND	ND	ND
CHLOROFORM	ND	ND	ND	ND
BROMOCHLOROMETHANE	ND	ND	ND	ND
1,1,1- TRICHLOROETHANE	ND	ND	ND	ND
1,2 DICHLOROETHANE	ND	ND	ND	ND
1,1-DICHLOROPROPENE	ND	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND	ND
BENZENE	ND	ND	ND	ND
TRICHLOROETHENE	ND	ND	ND	ND
1,2-DICHLOROPROPANE	ND	ND	ND	ND
DIBROMOMETHANE	ND	ND	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND	ND
4-METHYL-2-PENANONE	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	ND	ND	ND	ND
TOLUENE	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	ND	ND	ND	ND
1,1,2,-TRICHLOROETHANE	ND	ND	ND	ND
2-HEXANONE	ND	ND	ND	ND
1,3-DICHLOROPROPANE	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	ND	ND	ND	ND
TETRACHLOROETHENE (PCE)	ND	ND	ND	ND
1,2-DIBROMOETHANE (EDB)(*)	ND	ND	ND	ND
CHLOROBENZENE	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND
XYLENES	ND	ND	ND	ND
STYRENE	ND	ND	ND	ND
BROMOFORM	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND	ND
ISOPROPYLBENZENE	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE	ND	ND	ND	ND
BROMOBENZENE	ND	ND	ND	ND
n-PROPYLBENZENE	0.09	ND	ND	0.63
2-CHLOROTOLUENE	ND	ND	ND	ND
4-CHLOROTOLUENE	ND	ND	ND	ND
VOLATILE ORGANIC COMPOUNDS SOILS (8260)				
SAMPLE-NUMBER	S-24 4'	S-20 11'	S-20 8'	S-24 5'

VOLATILE ORGANIC COMPOUNDS SOILS (8260)				
SAMPLE-NUMBER	S-24 4'	S-20 11'	S-20 8'	S-24 5'
DATE	7-9-04	7-9-04	7-9-04	7-9-04
DEPTHS	4'	11'	8'	5'
1,3,5-TRIMETHYLBENZENE	ND	ND	ND	ND
TERT-BUTYLBENZENE	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZE	0.08	ND	ND	ND
SEC-BUTYLBENZENE	0.11	ND	ND	0.84
1,3-DICHLOROBENZENE	ND	ND	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND	ND
ISOPROPYLTOLUENE	ND	ND	ND	ND
1,2-DICHLOROBENZENE	ND	ND	ND	ND
n-BUTYLBENZENE	0.23	ND	ND	2.9
1,2-DIBROMO-3-CHLOROPROPANE	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	ND	ND	ND	ND
NAPHTHALENE	0.22	ND	ND	ND
HEXACHLORO-1,3-BUTADIENE	ND	ND	ND	ND
1,2,3,-TRICHLOROBENZENE	ND	ND	ND	ND

SEMI-VOLATILE ORGANIC COMPOUNDS SOILS (8270)				
SAMPLE-NUMBER	S-24 4'	S-20 11'	S-20 8'	S-24 6'
DATE	7-9-04	7-9-04	7-9-04	7-9-04
DEPTHS	4'	11'	8'	6'
Pyridine	ND	ND	ND	ND
Aniline	ND	ND	ND	ND
Phenol	ND	ND	ND	ND
2-Chlorophenol	ND	ND	ND	ND
Bis (2-chloroethyl) ether	ND	ND	ND	ND
1 ,3-Dichlorobenzene	ND	ND	ND	ND
1 ,4-Dichlorobenzene	ND	ND	ND	ND
1 ,2-Dichlorobenzene	ND	ND	ND	ND
Benzyl alcohol	ND	ND	ND	ND
2-Methylphenol (o-cresol)	ND	ND	ND	ND
Bis (2-chloroisopropyl) ether	ND	ND	ND	ND
3,4-Methylphenol (m,p-cresol)	ND	ND	ND	ND
Hexacholorethane	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND
2-Nitrophenol	ND	ND	ND	ND
4-Nitrophenol	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND
Bis (2-chloroethoxy) methane	ND	ND	ND	ND
2,4-Dichlorophenol	ND	ND	ND	ND
1 ,2,4-Trichlorobenzene	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND
4-Chloroan aline	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND
4-Chloro-3-methylphenol	ND	ND	ND	ND
2-Methylnapthalene	**4.5**	ND	ND	ND
1 -Methylnapthalene	**5.3**	ND	ND	**13**
Hexachlorocyclopentadiene	ND	ND	ND	ND
2,4,6-Trichlorophenol	ND	ND	ND	ND
2 ,4 ,5-Trichlorophenol	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND
2-Nitroanaline	ND	ND	ND	ND
1 ,4-Dinitrobenzene	ND	ND	ND	ND
Dimethylphthalate	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND
1 ,3-Dinotrobenzene	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND
1 ,2-Dinitrobenzene	ND	ND	ND	ND

SEMI-VOLATILE ORGANIC COMPOUNDS SOILS (8270)				
SAMPLE-NUMBER	S-24 4'	S-20 11'	S-20 8'	S-24 6'
DATE	7-9-04	7-9-04	7-9-04	7-9-04
DEPTHS	4'	11'	8'	6'
Acenaphthene	0.21	ND	ND	4
3-Nitroan aline	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	1.9
2,4-Dinitrotoluene	ND	ND	ND	ND
2 ,3 ,4 ,6-Tetrachlorophenol	ND	ND	ND	ND
2,3,5,6-Tetrachlorophenol	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND
Fluorene	0.68	ND	ND	2.7
4-Chlorophenylphenylether	ND	ND	ND	ND
Diethylphthalate	ND	ND	ND	ND
4-Nitroanaline	ND	ND	ND	ND
4,6-Dinitro-2-methyl phenol	ND	ND	ND	ND
N-nitrosodiphenylamine	ND	ND	ND	ND
Azobenzene	ND	ND	ND	ND
4-Bromophenylphenylether	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND
Phenanthrene	1.4	ND	ND	3.4
Anthracene	ND	ND	ND	ND
Carbazole	ND	ND	ND	ND
Di-n-butylphthalate	ND	ND	ND	ND
Fluoranthene	ND	ND	ND	ND
Pyrene	ND	ND	ND	ND
Butylbenzylphthalate	ND	ND	ND	ND
Bis(2-ethylhexyl) adipate	ND	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND
Bis (2-ethylhexyl) phthalate	ND	ND	ND	ND
Di-n-octyl phthalate	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND
Dibenzo(a,h)anthracene	ND	ND	ND	ND
Benzo(ghi)perylene	ND	ND	ND	ND
Indeno(1 ,2,3-cd)pyrene	ND	ND	ND	ND

ESN NORTHWEST
Environmental Services Network

July 13, 2004

Paul Stemen
Stemen Environmental
P.O. Box 3644
Lacey, WA 98509

Dear Mr. Stemen:

Please find enclosed the analytical data report for the Hardel Site Project site in Olympia, Washington. Direct Push services were conducted on June 17 & 18, 2004. Soil and water samples were analyzed for Diesel and Oil by NWTPH-Dx/Dx Extended, VOC's by Method 8260, Semi-VOC's by Method 8270, and RCRA 8 Metals by Method 7000 series on June 23 – July 8, 2004.

The results of these analyses are summarized in the attached tables. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Stemen Environmental for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A Korosec

Michael A. Korosec
President

677 Woodland Square Lp. SE, Suite D ▪ Lacey, Washington 98503 ▪ 360.459.4670 ▪ FAX 360.459.3432
Web Site: *www.esnnw.com* E-Mail: *info@esnnw.com*

ESN NORTHWEST CHEMISTRY LABORATORY

HARDEL SITE PROJECT
Olympia, Washington
Stemen Environmental, Inc

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)	Mineral Oil (mg/kg)
Method Blank	7/2/04	86	nd	nd	nd
Method Blank	7/6/04	125	nd	nd	nd
Method Blank	7/7/04	115	nd	nd	nd
S-3-12/15	7/6/04	88	nd	nd	nd
S-4-4/8	7/6/04	110	nd	nd	nd
S-5-4/8	7/2/04	100	nd	nd	nd
S-5--8/12	7/6/04	101	nd	nd	nd
S-5-8/12 Dup.	7/7/04	92	nd	nd	nd
S-7-4/8	7/2/04	84	nd	nd	nd
S-8-8/12	7/6/04	75	nd	nd	nd
S-9-8/12	7/2/04	65	nd	3,700	nd
S-9-8/12 Dup.	7/7/04	85	nd	3,500	nd
S-13-4/8	7/6/04	93	nd	nd	nd
S-14-4/8	7/2/04	81	nd	nd	nd
S-15-12/16	7/6/04	99	nd	5,700	nd
S-16-8/12	7/6/04	96	nd	nd	nd
S-18-4/8	7/6/04	114	nd	nd	nd
Method Detection Limits			20	40	40

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Marilyn Farmer, Tim McCall, & Matthew Sebonia

ESN NORTHWEST CHEMISTRY LABORATORY

HARDEL SITE PROJECT
Olympia, Washington
Stemen Environmental, Inc

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (ug/l)	Oil (ug/l)	Mineral Oil (ug/l)
Method Blank	7/7/04	99	nd	nd	nd
S-3-W	7/7/04	96	nd	nd	nd
S-6-W	7/7/04	103	nd	nd	nd
S-6-W Dup.	7/7/04	93	nd	nd	nd
S-8-W	7/7/04	77	nd	nd	nd
S-15-W	7/7/04	99	nd	160,000	nd
Method Detection Limits			200	400	400

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Marilyn Farmer, Tim McCall, & Matthew Sebonia

ESN NORTHWEST CHEMISTRY LABORATORY

HARDEL SITE PROJECT
Olympia, Washington
Stemen Environmental, Inc.

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (ug/l)	Oil (ug/l)	Mineral Oil (ug/l)
Method Blank	6/22/24	105	nd	nd	nd
Method Blank	6/23/04	100	nd	nd	nd
S-12-W	6/23/04	102	nd	1400	nd
S-1-W	6/22/24	77	nd	7300	nd
S-10-W	6/22/24	115	nd	19,000	nd
TP-4-W	6/22/24	66	nd	26,000	nd
TP-3-W	6/23/04	127	nd	4800	nd
Method Detection Limits			200	400	400

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: T. McCall

ESN NORTHWEST CHEMISTRY LABORATORY

HARDEL SITE PROJECT
Olympia, Washington
Stemen Environmental, Inc.

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)	Mineral Oil (mg/kg)
Method Blank	6/23/04	100	nd	nd	nd
S-1-4/8	6/23/04	70	nd	nd	nd
S-2-4/8	6/23/04	113	nd	130	nd
S-6-1-0/4	6/23/04	65	nd	nd	nd
S-6-1-0/4 Dup.	6/23/04	70	nd	nd	nd
S-10-4/8	6/23/04	115	nd	11,000	nd
S-11-8/12	6/23/04	101	nd	nd	nd
S-15-4/8	6/23/04	126	nd	3000	nd
S-12-4/7	6/23/04	117	nd	nd	nd
TP-4	6/23/04	92	nd	1900	nd
TP-2	6/23/04	70	nd	410	nd
TP-3	6/23/04	98	nd	7300	nd
TP5-5	6/23/04	78	nd	nd	nd
TP5-10	6/23/04	78	nd	nd	nd
Method Detection Limits			20	40	40

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: T. McCall

ESN NORTHWEST CHEMISTRY LABORATORY

HARDEL SITE PROJECT
Olympia, Washington
Stemen Environmental, Inc

Heavy Metals in Soil by EPA-7000 Series

Sample Number	Date Analyzed	Lead (Pb) EPA 7420 (mg/kg)	Cadmium (Cd) EPA 7130 (mg/kg)	Chromium (Cr) EPA 7190 (mg/kg)	Arsenic (As) EPA 7061 (mg/kg)	Silver (Ag) EPA 7760 (mg/kg)	Barium (Ba) EPA 7080 (mg/kg)	Selenium (Se) EPA 7741 (mg/kg)	Mercury (Hg) EPA 7471 (mg/kg)
Method Blank	7/8/04	nd	nd	nd	nd	nd	nd	nd	nd
SED-1	7/8/04	nd	nd	nd	nd	nd	nd	nd	nd
Method Detection Limits		5	1	5	5	20	20	50	0.5

"nd" Indicates not detected at listed detection limits.

ANALYSES PERFORMED BY: Marilyn Farmer&Matthew Sebonia

ESN NORTHWEST CHEMISTRY LABORATORY

HARDEL SITE PROJECT
Olympia, Washington
Stemen Environmental, Inc

QA/QC Data - Total Metals EPA-7000 Series Analyses

Sample Number: SED-1

	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	(%)
Lead	125	135	108	125	124	99	8.49
Chromium	125	123	98	125	112	90	9.36

	Laboratory Control Sample		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Lead	125	135	108
Chromium	125	105	84

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Marilyn Farmer&Matthew Sebonia

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40702-1
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE

Analytical Results

NWTPH-Dx, mg/kg		MTH BLK	S-18 - 8/12	S-3 - 4/8	S-15 - 8/12	S-1 - 8/12	S-1 - 8/12 DUP
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/02/04	07/02/04	07/02/04	07/02/04	07/02/04	07/02/04
Date analyzed	Limits	07/02/04	07/02/04	07/02/04	07/06/04	07/02/04	07/02/04
Moisture, %			38%	45%	23%	31%	31%
Kerosene/Jet fuel	20	nd	nd	nd	nd	nd	nd
Diesel/Fuel oil	20	nd	nd	nd	nd	nd	nd
Heavy oil	50	nd	nd	nd	**100,000**	**130**	**160**
Surrogate recoveries:							
Fluorobiphenyl		103%	107%	106%	101%	110%	104%
o-Terphenyl		103%	107%	100%	116%	104%	108%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Results reported on dry-weight basis
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40702-1
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE

Analytical Results

8260, mg/kg		MTH BLK	LCS	SED-1	S-18-8/12	S-3-4/8
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/02/04		07/02/04	07/02/04	07/02/04
Date analyzed	Limits	07/02/04	07/02/04	07/02/04	07/02/04	07/02/04
Moisture, %				35%	38%	45%
Dichlorodifluoromethane	0.05	nd		nd	nd	nd
Chloromethane	0.05	nd		nd	nd	nd
Vinyl chloride	0.05	nd		nd	nd	nd
Bromomethane	0.05	nd		nd	nd	nd
Chloroethane	0.05	nd		nd	nd	nd
Trichlorofluoromethane	0.05	nd		nd	nd	nd
Acetone	0.50	nd		nd	nd	nd
1,1-Dichloroethene	0.05	nd	79%	nd	nd	nd
Methylene chloride	0.02	nd		nd	nd	nd
Methyl-t-butyl ether (MTBE)	0.05	nd		nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd		nd	nd	nd
1,1-Dichloroethane	0.05	nd		nd	nd	nd
2-Butanone (MEK)	0.50	nd		nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd		nd	nd	nd
2,2-Dichloropropane	0.05	nd		nd	nd	nd
Chloroform	0.05	nd		nd	nd	nd
Bromochloromethane	0.05	nd		nd	nd	nd
1,1,1-Trichloroethane	0.05	nd		nd	nd	nd
1,2-Dichloroethane	0.05	nd		nd	nd	nd
1,1-Dichloropropene	0.05	nd		nd	nd	nd
Carbon tetrachloride	0.05	nd		nd	nd	nd
Benzene	0.02	nd	93%	nd	nd	nd
Trichloroethene	0.02	nd	91%	nd	nd	nd
1,2-Dichloropropane	0.05	nd		nd	nd	nd
Dibromomethane	0.05	nd		nd	nd	nd
Bromodichloromethane	0.05	nd		nd	nd	nd
4-Methyl-2-pentanone	0.05	nd		nd	nd	nd
cis-1,3-Dichloropropene	0.05	nd		nd	nd	nd
Toluene	0.05	nd	94%	nd	nd	nd
trans-1,3-Dichloropropene	0.05	nd		nd	nd	nd
1,1,2-Trichloroethane	0.05	nd		nd	nd	nd
2-Hexanone	0.05	nd		nd	nd	nd
1,3-Dichloropropane	0.05	nd		nd	nd	nd
Dibromochloromethane	0.05	nd		nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd		nd	nd	nd
1,2-Dibromoethane (EDB)(*)	0.005	nd		nd	nd	nd
Chlorobenzene	0.05	nd	98%	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd		nd	nd	nd
Ethylbenzene	0.05	nd		nd	nd	nd
Xylenes	0.05	nd		nd	nd	nd
Styrene	0.05	nd		nd	nd	nd
Bromoform	0.05	nd		nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd		nd	nd	nd
Isopropylbenzene	0.05	nd		nd	nd	nd
1,2,3-Trichloropropane	0.05	nd		nd	nd	nd
Bromobenzene	0.05	nd		nd	nd	nd
n-Propylbenzene	0.05	nd		nd	nd	nd
2-Chlorotoluene	0.05	nd		nd	nd	nd
4-Chlorotoluene	0.05	nd		nd	nd	nd
1,3,5-Trimethylbenzene	0.05	nd		nd	nd	nd
tert-Butylbenzene	0.05	nd		nd	nd	nd
1,2,4-Trimethylbenzene	0.05	nd		nd	nd	nd
sec-Butylbenzene	0.05	nd		nd	nd	nd
1,3-Dichlorobenzene	0.05	nd		nd	nd	nd
1,4-Dichlorobenzene	0.05	nd		nd	nd	nd
Isopropyltoluene	0.05	nd		nd	nd	nd
1,2-Dichlorobenzene	0.05	nd		nd	nd	nd
n-Butylbenzene	0.05	nd		nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd		nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd		nd	nd	nd
Naphthalene	0.05	nd		nd	nd	**0.19**
Hexachloro-1,3-butadiene	0.05	nd		nd	nd	nd
1,2,3-Trichlorobenzene	0.05	nd		nd	nd	nd

*-instrument detection limits

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40702-1
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE

Analytical Results

8260, mg/kg		MTH BLK	LCS	SED-1	S-18-8/12	S-3-4/8
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/02/04		07/02/04	07/02/04	07/02/04
Date analyzed	Limits	07/02/04	07/02/04	07/02/04	07/02/04	07/02/04
Moisture, %				35%	38%	45%

Surrogate recoveries					
Dibromofluoromethane	98%	101%	98%	102%	99%
Toluene-d8	100%	100%	99%	99%	97%
4-Bromofluorobenzene	101%	99%	101%	102%	98%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40702-1
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE

Analytical Results

8260, mg/kg		S-6-1	MS	MSD	RPD
Matrix	Soil	Soil			
Date extracted	Reporting	07/02/04	07/02/04	07/02/04	
Date analyzed	Limits	07/02/04	07/02/04	07/02/04	
Moisture, %		26%			
Dichlorodifluoromethane	0.05	nd			
Chloromethane	0.05	nd			
Vinyl chloride	0.05	nd			
Bromomethane	0.05	nd			
Chloroethane	0.05	nd			
Trichlorofluoromethane	0.05	nd			
Acetone	0.50	nd			
1,1-Dichloroethene	0.05	nd	87%	82%	6%
Methylene chloride	0.02	nd			
Methyl-t-butyl ether (MTBE)	0.05	nd			
trans-1,2-Dichloroethene	0.05	nd			
1,1-Dichloroethane	0.05	nd			
2-Butanone (MEK)	0.50	nd			
cis-1,2-Dichloroethene	0.05	nd			
2,2-Dichloropropane	0.05	nd			
Chloroform	0.05	nd			
Bromochloromethane	0.05	nd			
1,1,1-Trichloroethane	0.05	nd			
1,2-Dichloroethane	0.05	nd			
1,1-Dichloropropene	0.05	nd			
Carbon tetrachloride	0.05	nd			
Benzene	0.02	nd	100%	102%	2%
Trichloroethene	0.02	nd	98%	99%	1%
1,2-Dichloropropane	0.05	nd			
Dibromomethane	0.05	nd			
Bromodichloromethane	0.05	nd			
4-Methyl-2-pentanone	0.05	nd			
cis-1,3-Dichloropropene	0.05	nd			
Toluene	0.05	nd	99%	101%	2%
trans-1,3-Dichloropropene	0.05	nd			
1,1,2-Trichloroethane	0.05	nd			
2-Hexanone	0.05	nd			
1,3-Dichloropropane	0.05	nd			
Dibromochloromethane	0.05	nd			
Tetrachloroethene (PCE)	0.02	nd			
1,2-Dibromoethane (EDB)(*)	0.005	nd			
Chlorobenzene	0.05	nd	102%	104%	2%
1,1,1,2-Tetrachloroethane	0.05	nd			
Ethylbenzene	0.05	nd			
Xylenes	0.05	nd			
Styrene	0.05	nd			
Bromoform	0.05	nd			
1,1,2,2-Tetrachloroethane	0.05	nd			
Isopropylbenzene	0.05	nd			
1,2,3-Trichloropropane	0.05	nd			
Bromobenzene	0.05	nd			
n-Propylbenzene	0.05	nd			
2-Chlorotoluene	0.05	nd			
4-Chlorotoluene	0.05	nd			
1,3,5-Trimethylbenzene	0.05	nd			
tert-Butylbenzene	0.05	nd			
1,2,4-Trimethylbenzene	0.05	nd			
sec-Butylbenzene	0.05	nd			
1,3-Dichlorobenzene	0.05	nd			
1,4-Dichlorobenzene	0.05	nd			
Isopropyltoluene	0.05	nd			
1,2-Dichlorobenzene	0.05	nd			
n-Butylbenzene	0.05	nd			
1,2-Dibromo-3-Chloropropane	0.05	nd			
1,2,4-Trichlorobenzene	0.05	nd			
Naphthalene	0.05	nd			
Hexachloro-1,3-butadiene	0.05	nd			
1,2,3-Trichlorobenzene	0.05	nd			

*-instrument detection limits

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40702-1
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE

Analytical Results

8260, mg/kg		S-6-1	MS	MSD	RPD
Matrix	Soil	Soil			
Date extracted	Reporting	07/02/04	07/02/04	07/02/04	
Date analyzed	Limits	07/02/04	07/02/04	07/02/04	
Moisture, %		26%			

Surrogate recoveries			
Dibromofluoromethane	99%	99%	99%
Toluene-d8	98%	100%	100%
4-Bromofluorobenzene	100%	103%	101%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40702-1
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE

Analytical Results

8260, µg/L		MTH BLK	LCS	S1-W	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	
Date extracted	Reporting	07/02/04		07/02/04	06/30/04	06/30/04	
Date analyzed	Limits	07/02/04	07/02/04	07/02/04	06/30/04	06/30/04	
Dichlorodifluoromethane	1.0	nd		nd			
Chloromethane	1.0	nd		nd			
Vinyl chloride	1.0	nd		nd			
Bromomethane	1.0	nd		nd			
Chloroethane	1.0	nd		nd			
Trichlorofluoromethane	1.0	nd		nd			
Acetone	10.0	nd		nd			
1,1-Dichloroethene	1.0	nd	79%	nd	90%	87%	3%
Methylene chloride	5.0	nd		nd			
Methyl-t-butyl ether (MTBE)	1.0	nd		nd			
trans-1,2-Dichloroethene	1.0	nd		nd			
1,1-Dichloroethane	1.0	nd		nd			
2-Butanone (MEK)	10.0	nd		nd			
cis-1,2-Dichloroethene	1.0	nd		nd			
2,2-Dichloropropane	1.0	nd		nd			
Chloroform	1.0	nd		nd			
Bromochloromethane	1.0	nd		nd			
1,1,1-Trichloroethane	1.0	nd		nd			
1,2-Dichloroethane	1.0	nd		nd			
1,1-Dichloropropene	1.0	nd		nd			
Carbon tetrachloride	1.0	nd		nd			
Benzene	1.0	nd	93%	nd	97%	92%	5%
Trichloroethene	1.0	nd	91%	nd	94%	91%	3%
1,2-Dichloropropane	1.0	nd		nd			
Dibromomethane	1.0	nd		nd			
Bromodichloromethane	1.0	nd		nd			
4-Methyl-2-pentanone	1.0	nd		nd			
cis-1,3-Dichloropropene	1.0	nd		nd			
Toluene	1.0	nd	94%	nd	97%	92%	5%
trans-1,3-Dichloropropene	1.0	nd		nd			
1,1,2-Trichloroethane	1.0	nd		nd			
2-Hexanone	1.0	nd		nd			
1,3-Dichloropropane	1.0	nd		nd			
Dibromochloromethane	1.0	nd		nd			
Tetrachloroethene	1.0	nd		nd			
1,2-Dibromoethane (EDB)(*)	0.01	nd		nd			
Chlorobenzene	1.0	nd	98%	nd	100%	95%	5%
1,1,1,2-Tetrachloroethane	1.0	nd		nd			
Ethylbenzene	1.0	nd		nd			
Xylenes	1.0	nd		nd			
Styrene	1.0	nd		nd			
Bromoform	1.0	nd		nd			
1,1,2,2-Tetrachloroethane	1.0	nd		nd			
Isopropylbenzene	1.0	nd		nd			
1,2,3-Trichloropropane	1.0	nd		nd			
Bromobenzene	1.0	nd		nd			
n-Propylbenzene	1.0	nd		nd			
2-Chlorotoluene	1.0	nd		nd			
4-Chlorotoluene	1.0	nd		nd			
1,3,5-Trimethylbenzene	1.0	nd		nd			
tert-Butylbenzene	1.0	nd		nd			
1,2,4-Trimethylbenzene	1.0	nd		nd			
sec-Butylbenzene	1.0	nd		nd			
1,3-Dichlorobenzene	1.0	nd		nd			
1,4-Dichlorobenzene	1.0	nd		nd			
Isopropyltoluene	1.0	nd		nd			
1,2-Dichlorobenzene	1.0	nd		nd			
n-Butylbenzene	1.0	nd		nd			
1,2-Dibromo-3-Chloropropane	1.0	nd		nd			
1,2,4-Trichlorobenzene	1.0	nd		nd			
Naphthalene	1.0	nd		nd			
Hexachloro-1,3-butadiene	1.0	nd		nd			
1,2,3-Trichlorobenzene	1.0	nd		nd			

*-instrument detection limits

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40702-1
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE

Analytical Results

8260, µg/L		MTH BLK	LCS	S1-W	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	
Date extracted	Reporting	07/02/04		07/02/04	06/30/04	06/30/04	
Date analyzed	Limits	07/02/04	07/02/04	07/02/04	06/30/04	06/30/04	
Surrogate recoveries							
Dibromofluoromethane		100%	101%	101%	100%	100%	
Toluene-d8		99%	100%	100%	100%	99%	
4-Bromofluorobenzene		99%	99%	101%	102%	100%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40702-1
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE

Analytical Results

8270, mg/kg		MTH BLK	LCS	S-15-8/12	S-1-8/12	S-9-4/8
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/02/04		07/02/04	07/02/04	07/02/04
Date analyzed	Limits	07/02/04	07/05/04	07/05/04	07/05/04	07/05/04
Moisture, %				23%	31%	17%
Pyridine	1.0	nd		nd	nd	nd
Analine	1.0	nd		nd	nd	nd
Phenol	1.0	nd		nd	nd	nd
2-Chlorophenol	1.0	nd		nd	nd	nd
Bis (2-chloroethyl) ether	1.0	nd		nd	nd	nd
1,3-Dichlorobenzene	1.0	nd		nd	nd	nd
1,4-Dichlorobenzene	1.0	nd	107%	nd	nd	nd
1,2-Dichlorobenzene	1.0	nd		nd	nd	nd
Benzyl alcohol	1.0	nd		nd	nd	nd
2-Methylphenol (o-cresol)	1.0	nd		nd	nd	nd
Bis (2-chloroisopropyl) ether	5.0	nd		nd	nd	nd
3,4-Methylphenol (m,p-cresol)	1.0	nd		nd	nd	nd
Hexacholorethane	1.0	nd		nd	nd	nd
N-Nitroso-di-n-propylamine	1.0	nd		nd	nd	nd
Nitrobenzene	1.0	nd		nd	nd	nd
Isophorone	1.0	nd		nd	nd	nd
2-Nitrophenol	5.0	nd		nd	nd	nd
4-Nitrophenol	5.0	nd		nd	nd	nd
2,4-Dimethylphenol	1.0	nd		nd	nd	nd
Bis (2-chloroethoxy) methane	1.0	nd		nd	nd	nd
2,4-Dichlorophenol	5.0	nd		nd	nd	nd
1,2,4-Trichlorobenzene	1.0	nd		nd	nd	nd
Naphthalene	1.0	nd		nd	nd	nd
4-Chloroanaline	5.0	nd		nd	nd	nd
Hexachlorobutadiene	1.0	nd	110%	nd	nd	nd
4-Chloro-3-methylphenol	5.0	nd		nd	nd	nd
2-Methylnapthalene	1.0	nd		nd	nd	nd
1-Methylnapthalene	1.0	nd		nd	nd	nd
Hexachlorocyclopentadiene	1.0	nd		nd	nd	nd
2,4,6-Trichlorophenol	5.0	nd		nd	nd	nd
2,4,5-Trichlorophenol	5.0	nd		nd	nd	nd
2-Chloronaphthalene	1.0	nd		nd	nd	nd
2-Nitroanaline	5.0	nd		nd	nd	nd
1,4-Dinitrobenzene	5.0	nd		nd	nd	nd
Dimethylphthalate	1.0	nd		nd	nd	nd
Acenaphthylene	0.1	nd		nd	nd	nd
1,3-Dinotrobenzene	5.0	nd		nd	nd	nd
2,6-Dinitrotoluene	1.0	nd		nd	nd	nd
1,2-Dinitrobenzene	1.0	nd		nd	nd	nd
Acenaphthene	0.1	nd	95%	nd	nd	nd
3-Nitroanaline	5.0	nd		nd	nd	nd
Dibenzofuran	1.0	nd		nd	nd	nd
2,4-Dinitrotoluene	1.0	nd		nd	nd	nd
2,3,4,6-Tetrachlorophenol	1.0	nd		nd	nd	nd
2,3,5,6-Tetrachlorophenol	1.0	nd		nd	nd	nd
2,4-Dinitrophenol	5.0	nd		nd	nd	nd

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40702-1
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE

Analytical Results

8270, mg/kg		MTH BLK	LCS	S-15-8/12	S-1-8/12	S-9-4/8
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/02/04		07/02/04	07/02/04	07/02/04
Date analyzed	Limits	07/02/04	07/05/04	07/05/04	07/05/04	07/05/04
Moisture, %				23%	31%	17%
Fluorene	0.1	nd		nd	nd	nd
4-Chlorophenylphenylether	1.0	nd		nd	nd	nd
Diethylphthalate	1.0	nd		nd	nd	nd
4-Nitroanaline	5.0	nd		nd	nd	nd
4,6-Dinitro-2-methylphenol	5.0	nd		nd	nd	nd
N-nitrosodiphenylamine	1.0	nd	69%	nd	nd	nd
Azobenzene	1.0	nd		nd	nd	nd
4-Bromophenylphenylether	1.0	nd		nd	nd	nd
Hexachlorobenzene	1.0	nd		nd	nd	nd
Pentachlorophenol	5.0	nd		nd	nd	nd
Phenanthrene	0.1	nd		nd	nd	nd
Anthracene	0.1	nd		nd	nd	nd
Carbazole	1.0	nd		nd	nd	nd
Di-n-butylphthalate	1.0	nd		nd	nd	nd
Fluoranthene	0.1	nd	101%	nd	nd	nd
Pyrene	0.1	nd		nd	nd	nd
Butylbenzylphthalate	1.0	nd		nd	nd	nd
Bis(2-ethylhexyl) adipate	1.0	nd		nd	nd	nd
Benzo(a)anthracene	0.1	nd		nd	nd	nd
Chrysene	0.1	nd		**0.64**	nd	nd
Bis (2-ethylhexyl) phthalate	1.0	nd		nd	nd	nd
Di-n-octyl phthalate	1.0	nd		nd	nd	nd
Benzo(b)fluoranthene	0.1	nd		nd	nd	nd
Benzo(k)fluoranthene	0.1	nd		nd	nd	nd
Benzo(a)pyrene	0.1	nd	104%	nd	nd	nd
Dibenzo(a,h)anthracene	0.1	nd		nd	nd	nd
Benzo(ghi)perylene	0.1	nd		nd	nd	nd
Indeno(1,2,3-cd)pyrene	0.1	nd		nd	nd	nd
Surrogate recoveries						
2-Fluorophenol		82%	91%	84%	70%	92%
Phenol-d6		73%	71%	56%	58%	65%
Nitrobenzene-d5		104%	84%	72%	82%	63%
2-Fluorobiphenyl		110%	106%	109%	136%	127%
2,4,6-Tribromophenol		86%	61%	79%	111%	105%
4-Terphenyl-d14		123%	105%	128%	139%	133%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40702-1
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE

Analytical Results		S-9-4/8	S-9-4/8	
8270, mg/kg		**MS**	**MSD**	**RPD**
Matrix	Soil			
Date extracted	Reporting	07/02/04	07/02/04	
Date analyzed	Limits	07/05/04	07/05/04	
Moisture, %				
Pyridine	1.0			
Analine	1.0			
Phenol	1.0			
2-Chlorophenol	1.0			
Bis (2-chloroethyl) ether	1.0			
1,3-Dichlorobenzene	1.0			
1,4-Dichlorobenzene	1.0	117%	117%	0%
1,2-Dichlorobenzene	1.0			
Benzyl alcohol	1.0			
2-Methylphenol (o-cresol)	1.0			
Bis (2-chloroisopropyl) ether	5.0			
3,4-Methylphenol (m,p-cresol)	1.0			
Hexacholorethane	1.0			
N-Nitroso-di-n-propylamine	1.0			
Nitrobenzene	1.0			
Isophorone	1.0			
2-Nitrophenol	5.0			
4-Nitrophenol	5.0			
2,4-Dimethylphenol	1.0			
Bis (2-chloroethoxy) methane	1.0			
2,4-Dichlorophenol	5.0			
1,2,4-Trichlorobenzene	1.0			
Naphthalene	1.0			
4-Chloroanaline	5.0			
Hexachlorobutadiene	1.0	110%	110%	0%
4-Chloro-3-methylphenol	5.0			
2-Methylnapthalene	1.0			
1-Methylnapthalene	1.0			
Hexachlorocyclopentadiene	1.0			
2,4,6-Trichlorophenol	5.0			
2,4,5-Trichlorophenol	5.0			
2-Chloronaphthalene	1.0			
2-Nitroanaline	5.0			
1,4-Dinitrobenzene	5.0			
Dimethylphthalate	1.0			
Acenaphthylene	0.1			
1,3-Dinotrobenzene	5.0			
2,6-Dinitrotoluene	1.0			
1,2-Dinitrobenzene	1.0			
Acenaphthene	0.1	91%	98%	7%
3-Nitroanaline	5.0			
Dibenzofuran	1.0			
2,4-Dinitrotoluene	1.0			
2,3,4,6-Tetrachlorophenol	1.0			
2,3,5,6-Tetrachlorophenol	1.0			
2,4-Dinitrophenol	5.0			

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40702-1
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE

Analytical Results		S-9-4/8	S-9-4/8	
8270, mg/kg		**MS**	**MSD**	**RPD**
Matrix	Soil			
Date extracted	Reporting	07/02/04	07/02/04	
Date analyzed	Limits	07/05/04	07/05/04	
Moisture, %				
Fluorene	0.1			
4-Chlorophenylphenylether	1.0			
Diethylphthalate	1.0			
4-Nitroanaline	5.0			
4,6-Dinitro-2-methylphenol	5.0			
N-nitrosodiphenylamine	1.0	71%	76%	7%
Azobenzene	1.0			
4-Bromophenylphenylether	1.0			
Hexachlorobenzene	1.0			
Pentachlorophenol	5.0			
Phenanthrene	0.1			
Anthracene	0.1			
Carbazole	1.0			
Di-n-butylphthalate	1.0			
Fluoranthene	0.1	96%	107%	11%
Pyrene	0.1			
Butylbenzylphthalate	1.0			
Bis(2-ethylhexyl) adipate	1.0			
Benzo(a)anthracene	0.1			
Chrysene	0.1			
Bis (2-ethylhexyl) phthalate	1.0			
Di-n-octyl phthalate	1.0			
Benzo(b)fluoranthene	0.1			
Benzo(k)fluoranthene	0.1			
Benzo(a)pyrene	0.1	104%	105%	1%
Dibenzo(a,h)anthracene	0.1			
Benzo(ghi)perylene	0.1			
Indeno(1,2,3-cd)pyrene	0.1			
Surrogate recoveries				
2-Fluorophenol		89%	87%	
Phenol-d6		72%	72%	
Nitrobenzene-d5		106%	106%	
2-Fluorobiphenyl		102%	101%	
2,4,6-Tribromophenol		62%	66%	
4-Terphenyl-d14		109%	113%	

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: STEMEN ENVIRONMENTAL, INC

ADDRESS:

PHONE: 360 438 9521 FAX:

CLIENT PROJECT #: Hardel PROJECT MANAGER: PS

DATE: 6/22/04 PAGE 1 OF 4

PROJECT NAME: HARDEL SITE

LOCATION: OLYMPIA WA

COLLECTOR: Paul STEMEN DATE OF COLLECTION 6/18

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	PAH 8100	PAH 8270	PCBs 8082	Pesticides 8081	EPH	VPH	Methamphetamine	Pb	Hex Chrome	RCRA 8	NOTES	Total Number of Containers	Laboratory Note Number
1. S-1-W			H_2O				X															2 POLY, 2 VOA, 1 AMBER		
2. S-3-W			H_2O								X											2 POLY, 4 VOA, 1 AMBER		
3. S-6-W			H_2O								X											2 POLY, 4 VOA, 1 AMBER		
4. S-7-W			H_2O																			2 POLY, 4 VOA		
5. S-8-W			H_2O								X											2 POLY, 3 VOA, 1 AMBER		
6. S-10-W			H_2O																			2 POLY, 3 VOA, 1 AMBER		
7. S-12-W			H_2O																			2 POLY, 3 VOA, 1 AMBER		
8. S-15-W			H_2O								X											2 POLY, 5 VOA, 1 AMBER		
9. S-17-W			H_2O																			1 AMBER		
10. TP-1-8			SOIL	4 oz																			1	
11. TP-2-4 (RAN)			SOIL	4 oz							X												1	
12. TP-2-4 (NR)			SOIL	4 oz																			1	
13. TP-3-5			SOIL	4 oz							X												1	
14. TP-4			SOIL	4 oz																			1	
15. TP-4-4.5			SOIL	4 oz							x												1	
16. TP-5-5			SOIL	4 oz							x												1	
17. TP-5-10			SOIL	4 oz							x												1	
18. SED-1			SOIL	4 oz			X													X			2	

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
		Jim McCall	6/22/04
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:
D/Dx 24 hr
8260/8270 48 hr
#1 Sent to Bellevue
#18

Turn Around Time: 24 HR 48 HR 5 DAY

ESN NORTHWEST | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: Stevens

ADDRESS:

PHONE: FAX:

CLIENT PROJECT #: PROJECT MANAGER:

DATE: 6/22/04 PAGE 2 OF 4 #

PROJECT NAME: Hardel Site

LOCATION:

COLLECTOR: DATE OF COLLECTION

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PAH 8270	PCBs 8082	Pesticides 8081	EPH	VPH	Methamphetamine	Pb	Hex Chrome	NOTES	Total Number of Containers	Laboratory Note Number
1. TP4 W			H_2O	VOA																			2	
2. S-1-1			Soil	4oz																			1	
3. S-1-4/8			Soil	4oz							X												1	
4. S-1-8/12			Soil	4oz			X				X												1	
5. S-1-12/15			Soil	4oz																			1	
6. S-2-4/8											X													
7. S-2-8/12																								
8. S-3-1/4																								
9. S-3-4/8						X					X													
10. S-3-8/12																								
11. S-3-12/15											X													
12. S-4-0/4																								
13. S-4-4/8											X													
14. S-4-8/12																								
15. S-4-12/15																								
16. S-5-4/8											X													
17. S-5-8/12																								
18. S-6-1-0/4											X													

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
		Jim McCall	
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

#4 #9 Sent to Bellevue

Turn Around Time: 24 HR 48 HR 5 DAY

ESN NORTHWEST | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: Stemen

ADDRESS:

PHONE: FAX:

CLIENT PROJECT #: PROJECT MANAGER:

DATE: 6/22/04 PAGE 3 OF 4

PROJECT NAME: Handel Site

LOCATION:

COLLECTOR: DATE OF COLLECTION

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PAH 8270	PCBs 8082	Pesticides 8081	EPH	VPH	Methamphetamine	Pb	Hex Chrome	NOTES	Total Number of Containers	Laboratory Note Number
1. S-6-1-6							X																	
2. S-6-2-4/8																								
3. S-6-2-8/12																								
4. S-6-2-12/16																								
5. S-7-0/4																								
6. S-7-4/8											X													
7. S-7-12/16																								
8. S-8-0/4																								
9. S-8-4/8																								
10. S-8-8/12																								
11. S-9-4/8																								
12. S-9-8/12							X				X													
13. S-10-0/4																								
14. S-10-4/8											X													
15. S-11-0/4																								
16. S-11-8/12											X													
17. S-12-0/4																								
18. S-12-4/7											X													

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
		Jim McCall	
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

#1 + #12 sent bellevue

Turn Around Time: 24 HR 48 HR 5 DAY

ESN NORTHWEST | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: Stemm

ADDRESS:

PHONE: FAX:

CLIENT PROJECT #: PROJECT MANAGER:

DATE: 6/22/04 PAGE 4 OF 4

PROJECT NAME: Handel Site

LOCATION:

COLLECTOR: DATE OF COLLECTION

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PAH 8270	PCBs 8082	Pesticides 8081	EPH	VPH	Methamphetamine	Pb	Hex Chrome	NOTES	Total Number of Containers	Laboratory Note Number
1. S-12-8																								
2. S-13																								
3. S-13-4/6																								
4. S-14-0/4																								
5. S-14-4/8																								
6. S-15-0/4																								
7. S-15-4/8											X													
8. S-15-8/12							X																	
9. S-15-12/16											X													
10. S-16-8/12																								
11. S-17-12																								
12. S-16-4/8											X													
13. S-18-8/12						X																		
14.											X													
15.																								
16.																								
17.																								
18.																								

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
		Jim McCall	
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

#8 + #13 sent to bellevue

Turn Around Time: 24 HR 48 HR 5 DAY

ESN NORTHWEST
Environmental Services Network

July 21, 2004

Paul Stemen
Stemen Environmental
P.O. Box 3644
Lacey, WA 98509

Dear Mr. Stemen:

Please find enclosed the analytical data report for the Hardel Site Project site in Olympia, Washington. Direct Push services were conducted on July 9, 2004. Soil and water samples were analyzed for Diesel and Oil by NWTPH-Dx/Dx Extended, PCB's by Method 8082, VOC's by Method 8260, Semi-VOC's by Method 8270, and RCRA 8 Metals by Method 7000 series on July 12 – 15, 2004.

The results of these analyses are summarized in the attached tables. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Stemen Environmental for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A Korosec

Michael A. Korosec
President

677 Woodland Square Lp. SE, Suite D ■ Lacey, Washington 98503 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.esnnw.com* E-Mail: *info@esnnw.com*

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number:	S40713-2
Client:	STEMEN ENVIRONMENTAL
Client Job Name:	HARDEL SITE
Client Job Number:	HARDEL

Analytical Results

NWTPH-Dx, mg/kg		MTH BLK	S-24 4'	S-20 11'	S-19	S-20 8'
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/13/04	07/13/04	07/13/04	07/13/04	07/14/04
Date analyzed	Limits	07/13/04	07/14/04	07/13/04	07/13/04	07/15/04
Moisture, %			10%	51%	30%	57%
Kerosene/Jet fuel	20	nd	nd	nd	nd	nd
Diesel/Fuel oil	20	nd	**860**	nd	nd	nd
Heavy oil	50	nd	**1,400**	**30,000**	nd	**360,000**
Surrogate recoveries:						
Fluorobiphenyl		96%	C	95%	98%	98%
o-Terphenyl		99%	C	104%	102%	115%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Results reported on dry-weight basis
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

** SAMPLE CONTAINS NON-SPECIFIC **HC** IN DIESEL

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number:	S40713-2
Client:	STEMEN ENVIRONMENTAL
Client Job Name:	HARDEL SITE
Client Job Number:	HARDEL

Analytical Results

NWTPH-Dx, mg/kg		S-24 6'	S-22**	S-22** DUP
Matrix	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/13/04	07/13/04	07/13/04
Date analyzed	Limits	07/13/04	07/13/04	07/13/04
Moisture, %		68%	29%	29%
Kerosene/Jet fuel	20	nd	nd	nd
Diesel/Fuel oil	20	**13,000**	**840**	**530**
Heavy oil	50	**10,000**	nd	nd
Surrogate recoveries:				
Fluorobiphenyl		C	97%	101%
o-Terphenyl		C	126%	110%

Data Qualifiers and Analytical Comments

RANGE- PROBABLY CRESOL

nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Results reported on dry-weight basis
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number:	S40713-2
Client:	STEMEN ENVIRONMENTAL
Client Job Name:	HARDEL SITE
Client Job Number:	HARDEL

Analytical Results

NWTPH-Dx, mg/l		MTH BLK	S-26-W**	S-10-2-W	DV-1	S-24-W	DUP S-24-W
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	07/13/04	07/13/04	07/13/04	07/13/04	07/13/04	07/13/04
Date analyzed	Limits	07/13/04	07/13/04	07/13/04	07/13/04	07/13/04	07/13/04
Kerosene/Jet fuel	0.20	nd	nd	nd	nd	**2.4**	**2.7**
Diesel/Fuel oil	0.20	nd	**3.1**	nd	nd	nd	nd
Heavy oil	0.50	nd	nd	**6.7**	nd	**0.62**	**1.2**
Surrogate recoveries:							
Fluorobiphenyl		115%	125%	103%	104%	108%	114%
o-Terphenyl		109%	123%	101%	98%	98%	104%

Data Qualifiers and Analytical Comments

** SAMPLE CONTAINS NON-SPECIFIC **HC** IN DIESEL RANGE- PROBABLY CRESOL

nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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(425) 957-9872, fax (425) 957-9904

ESN Job Number:	S40713-2
Client:	STEMEN ENVIRONMENTAL
Client Job Name:	HARDEL SITE
Client Job Number:	HARDEL

Analytical Results

8082(PCBs), mg/kg		MTH BLK	LCS	S-24 4'	S-20 11'	S-20 8'	S-24 6'
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/15/04		07/15/04	07/15/04	07/15/04	07/15/04
Date analyzed	Limits	07/15/04	07/15/04	07/15/04	07/15/04	07/15/04	07/15/04
Moisture, %				10%	51%	57%	68%
A1221	0.20	nd		nd	nd	nd	nd
A1232	0.20	nd		nd	nd	nd	nd
A1242 (A1016)	0.20	nd		nd	nd	nd	nd
A1248	0.20	nd		nd	nd	nd	nd
A1254	0.20	nd		nd	nd	nd	nd
A1260	0.20	nd	101%	nd	nd	nd	nd

Data Qualifiers and Analytical Comments

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M - matrix interference
J - estimated value
Results reported on dry-weight basis
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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ESN Job Number:	S40713-2
Client:	STEMEN ENVIRONMENTAL
Client Job Name:	HARDEL SITE
Client Job Number:	HARDEL

Analytical Results

8082(PCBs), µg/l		MTH BLK	LCS	S-26-W	S-24-W	S-10-2-W
Matrix	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	07/13/04		07/13/04	07/13/04	07/13/04
Date analyzed	Limits	07/13/04	07/13/04	07/13/04	07/13/04	07/13/04
A1221	0.1*	nd		nd	nd	nd
A1232	0.1*	nd		nd	nd	nd
A1242 (A1016)	0.1*	nd		nd	nd	nd
A1248	0.1*	nd		nd	nd	nd
A1254	0.1*	nd		nd	nd	nd
A1260	0.1*	nd	100%	nd	nd	nd
Surrogate recoveries:						
Tetrachloro-m-xylene		93%	97%	75%	77%	94%
Decachlorobiphenyl		98%	108%	103%	93%	88%

*- instrument detection limits

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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ESN Job Number:	S40713-2
Client:	STEMEN ENVIRONMENTAL
Client Job Name:	HARDEL SITE
Client Job Number:	HARDEL

Analytical Results

8082(PCBs), µg/l		DV-1	MS	MSD	RPD
Matrix	Water	Water	Water	Water	
Date extracted	Reporting	07/13/04	07/13/04	07/13/04	
Date analyzed	Limits	07/13/04	07/13/04	07/13/04	
A1221	0.1*	nd			
A1232	0.1*	nd			
A1242 (A1016)	0.1*	nd			
A1248	0.1*	nd			
A1254	0.1*	nd			
A1260	0.1*	nd	90%	114%	24%
Surrogate recoveries:					
Tetrachloro-m-xylene		106%	76%	72%	
Decachlorobiphenyl		97%	107%	100%	

*- instrument detection limits

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40713-2
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE
Client Job Number: HARDEL

Analytical Results

8260, mg/kg		MTH BLK	LCS	S-24 4'	S-20 11'	S-20 8'	S-24 6'
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/14/04		07/14/04	07/14/04	07/14/04	07/14/04
Date analyzed	Limits	07/14/04		07/14/04	07/14/04	07/14/04	07/14/04
Moisture, %				10%	51%	57%	68%
Dichlorodifluoromethane	0.05	nd		nd	nd	nd	nd
Chloromethane	0.05	nd		nd	nd	nd	nd
Vinyl chloride	0.05	nd		nd	nd	nd	nd
Bromomethane	0.05	nd		nd	nd	nd	nd
Chloroethane	0.05	nd		nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd		nd	nd	nd	nd
Acetone	0.50	nd		nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	91%	nd	nd	nd	nd
Methylene chloride	0.02	nd		nd	nd	nd	nd
Methyl-t-butyl ether (MTBE)	0.05	nd		nd	nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd		nd	nd	nd	nd
1,1-Dichloroethane	0.05	nd		nd	nd	nd	nd
2-Butanone (MEK)	0.50	nd		nd	nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd		nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd		nd	nd	nd	nd
Chloroform	0.05	nd		nd	nd	nd	nd
Bromochloromethane	0.05	nd		nd	nd	nd	nd
1,1,1-Trichloroethane	0.05	nd		nd	nd	nd	nd
1,2-Dichloroethane	0.05	nd		nd	nd	nd	nd
1,1-Dichloropropene	0.05	nd		nd	nd	nd	nd
Carbon tetrachloride	0.05	nd		nd	nd	nd	nd
Benzene	0.02	nd	102%	nd	nd	nd	nd
Trichloroethene	0.02	nd	101%	nd	nd	nd	nd
1,2-Dichloropropane	0.05	nd		nd	nd	nd	nd
Dibromomethane	0.05	nd		nd	nd	nd	nd
Bromodichloromethane	0.05	nd		nd	nd	nd	nd
4-Methyl-2-pentanone	0.05	nd		nd	nd	nd	nd
cis-1,3-Dichloropropene	0.05	nd		nd	nd	nd	nd
Toluene	0.05	nd	102%	nd	nd	nd	nd
trans-1,3-Dichloropropene	0.05	nd		nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd		nd	nd	nd	nd
2-Hexanone	0.05	nd		nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd		nd	nd	nd	nd
Dibromochloromethane	0.05	nd		nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd		nd	nd	nd	nd
1,2-Dibromoethane (EDB)(*)	0.005	nd		nd	nd	nd	nd
Chlorobenzene	0.05	nd	105%	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd		nd	nd	nd	nd
Ethylbenzene	0.05	nd		nd	nd	nd	nd
Xylenes	0.05	nd		nd	nd	nd	nd
Styrene	0.05	nd		nd	nd	nd	nd
Bromoform	0.05	nd		nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd		nd	nd	nd	nd
Isopropylbenzene	0.05	nd		nd	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd		nd	nd	nd	nd
Bromobenzene	0.05	nd		nd	nd	nd	nd
n-Propylbenzene	0.05	nd		**0.09**	nd	nd	**0.63**
2-Chlorotoluene	0.05	nd		nd	nd	nd	nd
4-Chlorotoluene	0.05	nd		nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.05	nd		nd	nd	nd	nd
tert-Butylbenzene	0.05	nd		nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.05	nd		**0.08**	nd	nd	nd
sec-Butylbenzene	0.05	nd		**0.11**	nd	nd	**0.84**
1,3-Dichlorobenzene	0.05	nd		nd	nd	nd	nd
1,4-Dichlorobenzene	0.05	nd		nd	nd	nd	nd
Isopropyltoluene	0.05	nd		nd	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd		nd	nd	nd	nd
n-Butylbenzene	0.05	nd		**0.23**	nd	nd	**2.9**
1,2-Dibromo-3-Chloropropane	0.05	nd		nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd		nd	nd	nd	nd
Naphthalene	0.05	nd		**0.22**	nd	nd	nd
Hexachloro-1,3-butadiene	0.05	nd		nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.05	nd		nd	nd	nd	nd

*-instrument detection limits

ESN SEATTLE CHEMISTRY LABORATORY
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ESN Job Number: S40713-2
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE
Client Job Number: HARDEL

Analytical Results

8260, mg/kg		MTH BLK	LCS	S-24 4'	S-20 11'	S-20 8'	S-24 6'
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/14/04		07/14/04	07/14/04	07/14/04	07/14/04
Date analyzed	Limits	07/14/04		07/14/04	07/14/04	07/14/04	07/14/04
Moisture, %				10%	51%	57%	68%
Surrogate recoveries							
Dibromofluoromethane		98%	99%	98%	98%	97%	98%
Toluene-d8		99%	99%	100%	100%	100%	100%
4-Bromofluorobenzene		98%	98%	97%	102%	100%	98%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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ESN Job Number: S40713-2
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE
Client Job Number: HARDEL

Analytical Results

8260, mg/kg		MS	MSD	RPD
Matrix	Soil	Soil	Soil	
Date extracted	Reporting	07/14/04	07/14/04	
Date analyzed	Limits	07/14/04	07/14/04	
Moisture, %				
Dichlorodifluoromethane	0.05			
Chloromethane	0.05			
Vinyl chloride	0.05			
Bromomethane	0.05			
Chloroethane	0.05			
Trichlorofluoromethane	0.05			
Acetone	0.50			
1,1-Dichloroethene	0.05	86%	90%	5%
Methylene chloride	0.02			
Methyl-t-butyl ether (MTBE)	0.05			
trans-1,2-Dichloroethene	0.05			
1,1-Dichloroethane	0.05			
2-Butanone (MEK)	0.50			
cis-1,2-Dichloroethene	0.05			
2,2-Dichloropropane	0.05			
Chloroform	0.05			
Bromochloromethane	0.05			
1,1,1-Trichloroethane	0.05			
1,2-Dichloroethane	0.05			
1,1-Dichloropropene	0.05			
Carbon tetrachloride	0.05			
Benzene	0.02	96%	101%	5%
Trichloroethene	0.02	95%	99%	4%
1,2-Dichloropropane	0.05			
Dibromomethane	0.05			
Bromodichloromethane	0.05			
4-Methyl-2-pentanone	0.05			
cis-1,3-Dichloropropene	0.05			
Toluene	0.05	98%	98%	0%
trans-1,3-Dichloropropene	0.05			
1,1,2-Trichloroethane	0.05			
2-Hexanone	0.05			
1,3-Dichloropropane	0.05			
Dibromochloromethane	0.05			
Tetrachloroethene (PCE)	0.02			
1,2-Dibromoethane (EDB)(*)	0.005			
Chlorobenzene	0.05	99%	99%	0%
1,1,1,2-Tetrachloroethane	0.05			
Ethylbenzene	0.05			
Xylenes	0.05			
Styrene	0.05			
Bromoform	0.05			
1,1,2,2-Tetrachloroethane	0.05			
Isopropylbenzene	0.05			
1,2,3-Trichloropropane	0.05			
Bromobenzene	0.05			
n-Propylbenzene	0.05			
2-Chlorotoluene	0.05			
4-Chlorotoluene	0.05			
1,3,5-Trimethylbenzene	0.05			
tert-Butylbenzene	0.05			
1,2,4-Trimethylbenzene	0.05			
sec-Butylbenzene	0.05			
1,3-Dichlorobenzene	0.05			
1,4-Dichlorobenzene	0.05			
Isopropyltoluene	0.05			
1,2-Dichlorobenzene	0.05			
n-Butylbenzene	0.05			
1,2-Dibromo-3-Chloropropane	0.05			
1,2,4-Trichlorobenzene	0.05			
Naphthalene	0.05			
Hexachloro-1,3-butadiene	0.05			
1,2,3-Trichlorobenzene	0.05			

*-instrument detection limits

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ESN Job Number:	S40713-2
Client:	STEMEN ENVIRONMENTAL
Client Job Name:	HARDEL SITE
Client Job Number:	HARDEL

Analytical Results

8260, mg/kg		MS	MSD	RPD
Matrix	Soil	Soil	Soil	
Date extracted	Reporting	07/14/04	07/14/04	
Date analyzed	Limits	07/14/04	07/14/04	
Moisture, %				

Surrogate recoveries		
Dibromofluoromethane	96%	95%
Toluene-d8	100%	94%
4-Bromofluorobenzene	99%	96%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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ESN Job Number: S40713-2
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE
Client Job Number: HARDEL

Analytical Results

8260, µg/L		MTH BLK	LCS	S-24-W	S-10-2-W	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting							
Date analyzed	Limits	07/13/04	07/13/04	07/13/04	07/13/04	07/13/04	07/13/04	
Dichlorodifluoromethane	1.0	nd		nd	nd			
Chloromethane	1.0	nd		nd	nd			
Vinyl chloride	1.0	nd		nd	nd			
Bromomethane	1.0	nd		nd	nd			
Chloroethane	1.0	nd		nd	nd			
Trichlorofluoromethane	1.0	nd		nd	nd			
Acetone	10.0	nd		nd	nd			
1,1-Dichloroethene	1.0	nd	92%	nd	nd	86%	90%	5%
Methylene chloride	5.0	nd		nd	nd			
Methyl-t-butyl ether (MTBE)	1.0	nd		nd	nd			
trans-1,2-Dichloroethene	1.0	nd		nd	nd			
1,1-Dichloroethane	1.0	nd		nd	nd			
2-Butanone (MEK)	10.0	nd		nd	nd			
cis-1,2-Dichloroethene	1.0	nd		nd	nd			
2,2-Dichloropropane	1.0	nd		nd	nd			
Chloroform	1.0	nd		nd	nd			
Bromochloromethane	1.0	nd		nd	nd			
1,1,1-Trichloroethane	1.0	nd		nd	nd			
1,2-Dichloroethane	1.0	nd		nd	nd			
1,1-Dichloropropene	1.0	nd		nd	nd			
Carbon tetrachloride	1.0	nd		nd	nd			
Benzene	1.0	nd	100%	nd	nd	96%	101%	5%
Trichloroethene	1.0	nd	98%	nd	nd	95%	100%	5%
1,2-Dichloropropane	1.0	nd		nd	nd			
Dibromomethane	1.0	nd		nd	nd			
Bromodichloromethane	1.0	nd		nd	nd			
4-Methyl-2-pentanone	1.0	nd		nd	nd			
cis-1,3-Dichloropropene	1.0	nd		nd	nd			
Toluene	1.0	nd	101%	nd	nd	97%	102%	5%
trans-1,3-Dichloropropene	1.0	nd		nd	nd			
1,1,2-Trichloroethane	1.0	nd		nd	nd			
2-Hexanone	1.0	nd		nd	nd			
1,3-Dichloropropane	1.0	nd		nd	nd			
Dibromochloromethane	1.0	nd		nd	nd			
Tetrachloroethene	1.0	nd		nd	nd			
1,2-Dibromoethane (EDB)(*)	0.01	nd		nd	nd			
Chlorobenzene	1.0	nd	101%	nd	nd	97%	102%	5%
1,1,1,2-Tetrachloroethane	1.0	nd		nd	nd			
Ethylbenzene	1.0	nd		nd	nd			
Xylenes	1.0	nd		nd	nd			
Styrene	1.0	nd		nd	nd			
Bromoform	1.0	nd		nd	nd			
1,1,2,2-Tetrachloroethane	1.0	nd		nd	nd			
Isopropylbenzene	1.0	nd		nd	nd			
1,2,3-Trichloropropane	1.0	nd		nd	nd			
Bromobenzene	1.0	nd		nd	nd			
n-Propylbenzene	1.0	nd		**7.2**	nd			
2-Chlorotoluene	1.0	nd		nd	nd			
4-Chlorotoluene	1.0	nd		nd	nd			
1,3,5-Trimethylbenzene	1.0	nd		nd	nd			
tert-Butylbenzene	1.0	nd		nd	nd			
1,2,4-Trimethylbenzene	1.0	nd		nd	nd			
sec-Butylbenzene	1.0	nd		**6.3**	nd			
1,3-Dichlorobenzene	1.0	nd		nd	nd			
1,4-Dichlorobenzene	1.0	nd		nd	nd			
Isopropyltoluene	1.0	nd		nd	nd			
1,2-Dichlorobenzene	1.0	nd		nd	nd			
n-Butylbenzene	1.0	nd		**20**	nd			
1,2-Dibromo-3-Chloropropane	1.0	nd		nd	nd			
1,2,4-Trichlorobenzene	1.0	nd		nd	nd			
Naphthalene	1.0	nd		nd	nd			
Hexachloro-1,3-butadiene	1.0	nd		nd	nd			
1,2,3-Trichlorobenzene	1.0	nd		nd	nd			

*-instrument detection limits

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number:	S40713-2
Client:	STEMEN ENVIRONMENTAL
Client Job Name:	HARDEL SITE
Client Job Number:	HARDEL

Analytical Results

8260, µg/L		MTH BLK	LCS	S-24-W	S-10-2-W	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting							
Date analyzed	Limits	07/13/04	07/13/04	07/13/04	07/13/04	07/13/04	07/13/04	
Surrogate recoveries								
Dibromofluoromethane		99%	99%	100%	98%	98%	100%	
Toluene-d8		100%	100%	99%	99%	99%	98%	
4-Bromofluorobenzene		100%	99%	96%	99%	100%	101%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40713-2
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE
Client Job Number: HARDEL

Analytical Results

8270, mg/kg		MTH BLK	LCS	S-24 4'	S-20 11'	S-20 8'
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/13/04		07/13/04	07/13/04	07/14/04
Date analyzed	Limits	07/13/04	07/13/04	07/13/04	07/13/04	07/14/04
Moisture, %				10%	51%	57%
Pyridine	1.0	nd		nd	nd	nd
Aniline	1.0	nd		nd	nd	nd
Phenol	1.0	nd		nd	nd	nd
2-Chlorophenol	1.0	nd		nd	nd	nd
Bis (2-chloroethyl) ether	1.0	nd		nd	nd	nd
1,3-Dichlorobenzene	1.0	nd		nd	nd	nd
1,4-Dichlorobenzene	1.0	nd	95%	nd	nd	nd
1,2-Dichlorobenzene	1.0	nd		nd	nd	nd
Benzyl alcohol	1.0	nd		nd	nd	nd
2-Methylphenol (o-cresol)	1.0	nd		nd	nd	nd
Bis (2-chloroisopropyl) ether	5.0	nd		nd	nd	nd
3,4-Methylphenol (m,p-cresol)	1.0	nd		nd	nd	nd
Hexacholorethane	1.0	nd		nd	nd	nd
N-Nitroso-di-n-propylamine	1.0	nd		nd	nd	nd
Nitrobenzene	1.0	nd		nd	nd	nd
Isophorone	1.0	nd		nd	nd	nd
2-Nitrophenol	5.0	nd		nd	nd	nd
4-Nitrophenol	5.0	nd		nd	nd	nd
2,4-Dimethylphenol	1.0	nd		nd	nd	nd
Bis (2-chloroethoxy) methane	1.0	nd		nd	nd	nd
2,4-Dichlorophenol	5.0	nd		nd	nd	nd
1,2,4-Trichlorobenzene	1.0	nd		nd	nd	nd
Naphthalene	1.0	nd		nd	nd	nd
4-Chloroanaline	5.0	nd		nd	nd	nd
Hexachlorobutadiene	1.0	nd	103%	nd	nd	nd
4-Chloro-3-methylphenol	5.0	nd		nd	nd	nd
2-Methylnapthalene	1.0	nd		**4.5**	nd	nd
1-Methylnapthalene	1.0	nd		**5.3**	nd	nd
Hexachlorocyclopentadiene	1.0	nd		nd	nd	nd
2,4,6-Trichlorophenol	5.0	nd		nd	nd	nd
2,4,5-Trichlorophenol	5.0	nd		nd	nd	nd
2-Chloronaphthalene	1.0	nd		nd	nd	nd
2-Nitroanaline	5.0	nd		nd	nd	nd
1,4-Dinitrobenzene	5.0	nd		nd	nd	nd
Dimethylphthalate	1.0	nd		nd	nd	nd
Acenaphthylene	0.1	nd		nd	nd	nd
1,3-Dinotrobenzene	5.0	nd		nd	nd	nd
2,6-Dinitrotoluene	1.0	nd		nd	nd	nd
1,2-Dinitrobenzene	1.0	nd		nd	nd	nd
Acenaphthene	0.1	nd	89%	**0.21**	nd	nd
3-Nitroanaline	5.0	nd		nd	nd	nd
Dibenzofuran	1.0	nd		nd	nd	nd
2,4-Dinitrotoluene	1.0	nd		nd	nd	nd
2,3,4,6-Tetrachlorophenol	1.0	nd		nd	nd	nd
2,3,5,6-Tetrachlorophenol	1.0	nd		nd	nd	nd
2,4-Dinitrophenol	5.0	nd		nd	nd	nd

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40713-2
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE
Client Job Number: HARDEL

Analytical Results

8270, mg/kg		MTH BLK	LCS	S-24 4'	S-20 11'	S-20 8'
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/13/04		07/13/04	07/13/04	07/14/04
Date analyzed	Limits	07/13/04	07/13/04	07/13/04	07/13/04	07/14/04
Moisture, %				10%	51%	57%
Fluorene	0.1	nd		**0.68**	nd	nd
4-Chlorophenylphenylether	1.0	nd		nd	nd	nd
Diethylphthalate	1.0	nd		nd	nd	nd
4-Nitroanaline	5.0	nd		nd	nd	nd
4,6-Dinitro-2-methylphenol	5.0	nd		nd	nd	nd
N-nitrosodiphenylamine	1.0	nd	71%	nd	nd	nd
Azobenzene	1.0	nd		nd	nd	nd
4-Bromophenylphenylether	1.0	nd		nd	nd	nd
Hexachlorobenzene	1.0	nd		nd	nd	nd
Pentachlorophenol	5.0	nd		nd	nd	nd
Phenanthrene	0.1	nd		**1.4**	nd	nd
Anthracene	0.1	nd		nd	nd	nd
Carbazole	1.0	nd		nd	nd	nd
Di-n-butylphthalate	1.0	nd		nd	nd	nd
Fluoranthene	0.1	nd	93%	nd	nd	nd
Pyrene	0.1	nd		nd	nd	nd
Butylbenzylphthalate	1.0	nd		nd	nd	nd
Bis(2-ethylhexyl) adipate	1.0	nd		nd	nd	nd
Benzo(a)anthracene	0.1	nd		nd	nd	nd
Chrysene	0.1	nd		nd	nd	nd
Bis (2-ethylhexyl) phthalate	1.0	nd		nd	nd	nd
Di-n-octyl phthalate	1.0	nd		nd	nd	nd
Benzo(b)fluoranthene	0.1	nd		nd	nd	nd
Benzo(k)fluoranthene	0.1	nd		nd	nd	nd
Benzo(a)pyrene	0.1	nd	93%	nd	nd	nd
Dibenzo(a,h)anthracene	0.1	nd		nd	nd	nd
Benzo(ghi)perylene	0.1	nd		nd	nd	nd
Indeno(1,2,3-cd)pyrene	0.1	nd		nd	nd	nd
Surrogate recoveries						
2-Fluorophenol		97%	81%	98%	71%	113%
Phenol-d6		71%	73%	69%	58%	75%
Nitrobenzene-d5		106%	96%	109%	81%	102%
2-Fluorobiphenyl		102%	105%	111%	84%	120%
2,4,6-Tribromophenol		95%	73%	95%	90%	111%
4-Terphenyl-d14		122%	109%	108%	104%	113%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40713-2
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE
Client Job Number: HARDEL

Analytical Results

8270, mg/kg		S-24 6'	MS	MSD	RPD
Matrix	Soil	Soil	Soil	Soil	
Date extracted	Reporting	07/13/04	07/13/04	07/13/04	
Date analyzed	Limits	07/13/04	07/13/04	07/13/04	
Moisture, %		68%			
Pyridine	1.0	nd			
Aniline	1.0	nd			
Phenol	1.0	nd			
2-Chlorophenol	1.0	nd			
Bis (2-chloroethyl) ether	1.0	nd			
1,3-Dichlorobenzene	1.0	nd			
1,4-Dichlorobenzene	1.0	nd	97%	93%	4%
1,2-Dichlorobenzene	1.0	nd			
Benzyl alcohol	1.0	nd			
2-Methylphenol (o-cresol)	1.0	nd			
Bis (2-chloroisopropyl) ether	5.0	nd			
3,4-Methylphenol (m,p-cresol)	1.0	nd			
Hexacholorethane	1.0	nd			
N-Nitroso-di-n-propylamine	1.0	nd			
Nitrobenzene	1.0	nd			
Isophorone	1.0	nd			
2-Nitrophenol	5.0	nd			
4-Nitrophenol	5.0	nd			
2,4-Dimethylphenol	1.0	nd			
Bis (2-chloroethoxy) methane	1.0	nd			
2,4-Dichlorophenol	5.0	nd			
1,2,4-Trichlorobenzene	1.0	nd			
Naphthalene	1.0	nd			
4-Chloroanaline	5.0	nd			
Hexachlorobutadiene	1.0	nd	106%	104%	2%
4-Chloro-3-methylphenol	5.0	nd			
2-Methylnapthalene	1.0	nd			
1-Methylnapthalene	1.0	**13**			
Hexachlorocyclopentadiene	1.0	nd			
2,4,6-Trichlorophenol	5.0	nd			
2,4,5-Trichlorophenol	5.0	nd			
2-Chloronaphthalene	1.0	nd			
2-Nitroanaline	5.0	nd			
1,4-Dinitrobenzene	5.0	nd			
Dimethylphthalate	1.0	nd			
Acenaphthylene	0.1	nd			
1,3-Dinotrobenzene	5.0	nd			
2,6-Dinitrotoluene	1.0	nd			
1,2-Dinitrobenzene	1.0	nd			
Acenaphthene	0.1	**4.0**	100%	92%	8%
3-Nitroanaline	5.0	nd			
Dibenzofuran	1.0	**1.9**			
2,4-Dinitrotoluene	1.0	nd			
2,3,4,6-Tetrachlorophenol	1.0	nd			
2,3,5,6-Tetrachlorophenol	1.0	nd			
2,4-Dinitrophenol	5.0	nd			

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number:	S40713-2
Client:	STEMEN ENVIRONMENTAL
Client Job Name:	HARDEL SITE
Client Job Number:	HARDEL

Analytical Results

8270, mg/kg		S-24 6'	MS	MSD	RPD
Matrix	Soil	Soil	Soil	Soil	
Date extracted	Reporting	07/13/04	07/13/04	07/13/04	
Date analyzed	Limits	07/13/04	07/13/04	07/13/04	
Moisture, %		68%			
Fluorene	0.1	**2.7**			
4-Chlorophenylphenylether	1.0	nd			
Diethylphthalate	1.0	nd			
4-Nitroanaline	5.0	nd			
4,6-Dinitro-2-methylphenol	5.0	nd			
N-nitrosodiphenylamine	1.0	nd	92%	88%	4%
Azobenzene	1.0	nd			
4-Bromophenylphenylether	1.0	nd			
Hexachlorobenzene	1.0	nd			
Pentachlorophenol	5.0	nd			
Phenanthrene	0.1	**3.4**			
Anthracene	0.1	nd			
Carbazole	1.0	nd			
Di-n-butylphthalate	1.0	nd			
Fluoranthene	0.1	nd	102%	99%	3%
Pyrene	0.1	nd			
Butylbenzylphthalate	1.0	nd			
Bis(2-ethylhexyl) adipate	1.0	nd			
Benzo(a)anthracene	0.1	nd			
Chrysene	0.1	nd			
Bis (2-ethylhexyl) phthalate	1.0	nd			
Di-n-octyl phthalate	1.0	nd			
Benzo(b)fluoranthene	0.1	nd			
Benzo(k)fluoranthene	0.1	nd			
Benzo(a)pyrene	0.1	nd	88%	84%	5%
Dibenzo(a,h)anthracene	0.1	nd			
Benzo(ghi)perylene	0.1	nd			
Indeno(1,2,3-cd)pyrene	0.1	nd			
Surrogate recoveries					
2-Fluorophenol		71%	90%	95%	
Phenol-d6		52%	66%	66%	
Nitrobenzene-d5		126%	92%	83%	
2-Fluorobiphenyl		110%	113%	104%	
2,4,6-Tribromophenol		89%	104%	93%	
4-Terphenyl-d14		109%	111%	104%	

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40713-2
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE
Client Job Number: HARDEL

Analytical Results

8270, µg/L		MTH BLK	LCS	S-26-W	S-24-W	S-10-2-W
Matrix	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	07/13/04		07/13/04	07/13/04	07/13/04
Date analyzed	Limits	07/13/04	07/13/04	07/13/04	07/13/04	07/13/04
Pyridine	2.0	nd		nd	nd	nd
Analine	2.0	nd		nd	nd	nd
Phenol	2.0	nd		nd	nd	nd
2-Chlorophenol	2.0	nd		nd	nd	nd
Bis (2-chloroethyl) ether	2.0	nd		nd	nd	nd
1,3-Dichlorobenzene	2.0	nd		nd	nd	nd
1,4-Dichlorobenzene	2.0	nd	95%	nd	nd	nd
1,2-Dichlorobenzene	2.0	nd		nd	nd	nd
Benzyl alcohol	2.0	nd		nd	nd	nd
2-Methylphenol (o-cresol)	2.0	nd		nd	nd	nd
Bis (2-chloroisopropyl) ether	10.0	nd		nd	nd	nd
3,4-Methylphenol (m,p-cresol)	2.0	nd		nd	nd	nd
Hexacholorethane	2.0	nd		nd	nd	nd
N-Nitroso-di-n-propylamine	2.0	nd		nd	nd	nd
Nitrobenzene	2.0	nd		nd	nd	nd
Isophorone	2.0	nd		nd	nd	nd
2-Nitrophenol	10.0	nd		nd	nd	nd
4-Nitrophenol	10.0	nd		nd	nd	nd
2,4-Dimethylphenol	2.0	nd		nd	nd	nd
Bis (2-chloroethoxy) methane	2.0	nd		nd	nd	nd
2,4-Dichlorophenol	10.0	nd		nd	nd	nd
1,2,4-Trichlorobenzene	2.0	nd		nd	nd	nd
Naphthalene	2.0	nd		270	nd	nd
4-Chloroanaline	10.0	nd		nd	nd	nd
Hexachlorobutadiene	2.0	nd	103%	nd	nd	nd
4-Chloro-3-methylphenol	10.0	nd		nd	nd	nd
2-Methylnapthalene	2.0	nd		95	nd	nd
1-Methylnapthalene	2.0	nd		110	51	nd
Hexachlorocyclopentadiene	2.0	nd		nd	nd	nd
2,4,6-Trichlorophenol	10.0	nd		nd	nd	nd
2,4,5-Trichlorophenol	10.0	nd		nd	nd	nd
2-Chloronaphthalene	2.0	nd		nd	nd	nd
2-Nitroanaline	10.0	nd		nd	nd	nd
1,4-Dinitrobenzene	10.0	nd		nd	nd	nd
Dimethylphthalate	2.0	nd		nd	nd	nd
Acenaphthylene	0.2	nd		1.2	nd	nd
1,3-Dinotrobenzene	10.0	nd		nd	nd	nd
2,6-Dinitrotoluene	2.0	nd		nd	nd	nd
1,2-Dinitrobenzene	2.0	nd		nd	nd	nd
Acenaphthene	0.2	nd	89%	190	11	1.4
3-Nitroanaline	10.0	nd		nd	nd	nd
Dibenzofuran	2.0	nd		110	3.9	nd
2,4-Dinitrotoluene	2.0	nd		nd	nd	nd
2,3,4,6-Tetrachlorophenol	2.0	nd		nd	nd	nd
2,3,5,6-Tetrachlorophenol	2.0	nd		nd	nd	nd
2,4-Dinitrophenol	10.0	nd		nd	nd	nd
Fluorene	0.2	nd		180	5.5	nd
4-Chlorophenylphenylether	2.0	nd		nd	nd	nd
Diethylphthalate	2.0	nd		nd	nd	nd
4-Nitroanaline	10.0	nd		nd	nd	nd
4,6-Dinitro-2-methylphenol	10.0	nd		nd	nd	nd
N-nitrosodiphenylamine	2.0	nd	71%	nd	nd	nd
Azobenzene	2.0	nd		nd	nd	nd
4-Bromophenylphenylether	2.0	nd		nd	nd	nd
Hexachlorobenzene	2.0	nd		nd	nd	nd
Pentachlorophenol	10.0	nd		nd	nd	nd
Phenanthrene	0.2	nd		470	3.7	nd

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40713-2
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE
Client Job Number: HARDEL

Analytical Results

8270, µg/L		MTH BLK	LCS	S-26-W	S-24-W	S-10-2-W
Matrix	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	07/13/04		07/13/04	07/13/04	07/13/04
Date analyzed	Limits	07/13/04	07/13/04	07/13/04	07/13/04	07/13/04
Anthracene	0.2	nd		32	nd	nd
Carbazole	2.0	nd		8.3	nd	nd
Di-n-butylphthalate	2.0	nd		nd	nd	nd
Fluoranthene	0.2	nd	93%	160	nd	nd
Pyrene	0.2	nd		98	nd	nd
Butylbenzylphthalate	2.0	nd		nd	nd	nd
Bis(2-ethylhexyl) adipate	2.0	nd		nd	nd	nd
Benzo(a)anthracene	0.2	nd		15	nd	nd
Chrysene	0.2	nd		11	nd	nd
Bis (2-ethylhexyl) phthalate	2.0	nd		nd	nd	nd
Di-n-octyl phthalate	2.0	nd		nd	nd	nd
Benzo(b)fluoranthene	0.2	nd		3.2	nd	nd
Benzo(k)fluoranthene	0.2	nd		3.4	nd	nd
Benzo(a)pyrene	0.2	nd	93%	2.9	nd	nd
Dibenzo(a,h)anthracene	0.2	nd		nd	nd	nd
Benzo(ghi)perylene	0.2	nd		nd	nd	nd
Indeno(1,2,3-cd)pyrene	0.2	nd		nd	nd	nd
Surrogate recoveries						
2-Fluorobiphenyl		135%	105%	136%	136%	80%
4-Terphenyl-d14		144%	109%	140%	142%	83%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 50% TO 150%
Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number: S40713-2
Client: STEMEN ENVIRONMENTAL
Client Job Name: HARDEL SITE
Client Job Number: HARDEL

Analytical Results

8270, µg/L		MS	MSD	RPD
Matrix	Water	Water	Water	
Date extracted	Reporting	07/13/04	07/13/04	
Date analyzed	Limits	07/13/04	07/13/04	
Pyridine	2.0			
Analine	2.0			
Phenol	2.0			
2-Chlorophenol	2.0			
Bis (2-chloroethyl) ether	2.0			
1,3-Dichlorobenzene	2.0			
1,4-Dichlorobenzene	2.0	112%	114%	2%
1,2-Dichlorobenzene	2.0			
Benzyl alcohol	2.0			
2-Methylphenol (o-cresol)	2.0			
Bis (2-chloroisopropyl) ether	10.0			
3,4-Methylphenol (m,p-cresol)	2.0			
Hexacholorethane	2.0			
N-Nitroso-di-n-propylamine	2.0			
Nitrobenzene	2.0			
Isophorone	2.0			
2-Nitrophenol	10.0			
4-Nitrophenol	10.0			
2,4-Dimethylphenol	2.0			
Bis (2-chloroethoxy) methane	2.0			
2,4-Dichlorophenol	10.0			
1,2,4-Trichlorobenzene	2.0			
Naphthalene	2.0			
4-Chloroanaline	10.0			
Hexachlorobutadiene	2.0	145%	149%	3%
4-Chloro-3-methylphenol	10.0			
2-Methylnapthalene	2.0			
1-Methylnapthalene	2.0			
Hexachlorocyclopentadiene	2.0			
2,4,6-Trichlorophenol	10.0			
2,4,5-Trichlorophenol	10.0			
2-Chloronaphthalene	2.0			
2-Nitroanaline	10.0			
1,4-Dinitrobenzene	10.0			
Dimethylphthalate	2.0			
Acenaphthylene	0.2			
1,3-Dinotrobenzene	10.0			
2,6-Dinitrotoluene	2.0			
1,2-Dinitrobenzene	2.0			
Acenaphthene	0.2	118%	133%	12%
3-Nitroanaline	10.0			
Dibenzofuran	2.0			
2,4-Dinitrotoluene	2.0			
2,3,4,6-Tetrachlorophenol	2.0			
2,3,5,6-Tetrachlorophenol	2.0			
2,4-Dinitrophenol	10.0			
Fluorene	0.2			
4-Chlorophenylphenylether	2.0			
Diethylphthalate	2.0			
4-Nitroanaline	10.0			
4,6-Dinitro-2-methylphenol	10.0			
N-nitrosodiphenylamine	2.0	83%	94%	12%
Azobenzene	2.0			
4-Bromophenylphenylether	2.0			
Hexachlorobenzene	2.0			
Pentachlorophenol	10.0			
Phenanthrene	0.2			

ESN SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

ESN Job Number:	S40713-2
Client:	STEMEN ENVIRONMENTAL
Client Job Name:	HARDEL SITE
Client Job Number:	HARDEL

Analytical Results

8270, µg/L		MS	MSD	RPD
Matrix	Water	Water	Water	
Date extracted	Reporting	07/13/04	07/13/04	
Date analyzed	Limits	07/13/04	07/13/04	
Anthracene	0.2			
Carbazole	2.0			
Di-n-butylphthalate	2.0			
Fluoranthene	0.2	137%	149%	8%
Pyrene	0.2			
Butylbenzylphthalate	2.0			
Bis(2-ethylhexyl) adipate	2.0			
Benzo(a)anthracene	0.2			
Chrysene	0.2			
Bis (2-ethylhexyl) phthalate	2.0			
Di-n-octyl phthalate	2.0			
Benzo(b)fluoranthene	0.2			
Benzo(k)fluoranthene	0.2			
Benzo(a)pyrene	0.2	130%	135%	4%
Dibenzo(a,h)anthracene	0.2			
Benzo(ghi)perylene	0.2			
Indeno(1,2,3-cd)pyrene	0.2			
Surrogate recoveries				
2-Fluorobiphenyl		138%	136%	
4-Terphenyl-d14		145%	145%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 50% TO 150%
Acceptable RPD limit: 35%

ESN NORTHWEST CHEMISTRY LABORATORY

HARDEL SITE PROJECT
Olympia, Washington
Stemen Environmental, Inc.

Heavy Metals in Soil by EPA-7000 Series

Sample Number	Date Analyzed	Lead (Pb) EPA 7420 (mg/kg)	Cadmium (Cd) EPA 7130 (mg/kg)	Chromium (Cr) EPA 7190 (mg/kg)	Arsenic (As) EPA 7061 (mg/kg)	Silver (Ag) EPA 7760 (mg/kg)	Barium (Ba) EPA 7080 (mg/kg)	Selenium (Se) EPA 7741 (mg/kg)	Mercury (Hg) EPA 7471 (mg/kg)
Method Blank	7/15/04	nd	nd	nd	nd	nd	nd	nd	nd
S-24 (4')	7/15/04	nd	nd	nd	nd	nd	nd	nd	nd
S-10-2	7/15/04	nd	nd	nd	nd	nd	nd	nd	nd
Method Detection Limits		5	1	5	5	20	20	50	0.5

"nd" Indicates not detected at listed detection limits.

ANALYSES PERFORMED BY:Marilyn Farmer

ESN NORTHWEST CHEMISTRY LABORATORY

HARDEL SITE PROJECT
Olympia, Washington
Stemen Environmental, Inc.

QA/QC Data - Total Metals EPA-7000 Series Analyses

Sample Number: TP-1							
	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	(%)
Lead	125	138	110	125	133	106	3.69
Cadmium	12.5	12.6	101	12.5	10.6	85	17.24
Chromium	125	141	113	125	145	116	2.80

	Laboratory Control Sample		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Lead	125	118	94
Cadmium	12.5	11.8	94
Chromium	125	161	129

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY:Marilyn Farmer

ESN NORTHWEST | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: STEMEN ENVIRONMENTAL Inc

ADDRESS:

PHONE: 360 438 5574 FAX:

CLIENT PROJECT #: HANSEN PROJECT MANAGER: PAUL STEMEN

DATE: 7-9-04 PAGE 1 OF 1

PROJECT NAME: HANSEN SITE

LOCATION:

COLLECTOR: PAUL STEMEN DATE OF COLLECTION 7/9/04

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PAH 8270	PCBs 8082	Pesticides 8081	EPH	VPH	Methamphetamine	Pb	Hex Chrome	Rush & Metals	NOTES	Total Number of Containers	Laboratory Note Number
1. S-24	4FT		SOIL	JAR			X				X		X	X							X				
2. S-20	11FT		"	"			X				X		X	X											
3. S-19	8FT		"	"							X														
4. S-20	8FT		"	"			X				X		X	X											
5. S-10-2	6FT																								
6. S-26	13FT		"	"																					
7. S-21	10FT																								
8. S-10-2	4FT																				X				
9. S-26-W	4FT									X	X		X	X												
10. S-24-W	4FT		H2O			X	X			X	X		X	X												
11. S-10-2-W	4FT		"			X	X			X	X		X	X												
12. DW-1	4FT		"								X			X												
13.																									
14.																									
15. S-24	6FT		SOIL	JAR		X	X				X		X	X											
16. S2D	14/2		"	"							X														
17.																									
18.																									

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	7/9/04	[signature]	7/12/04
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

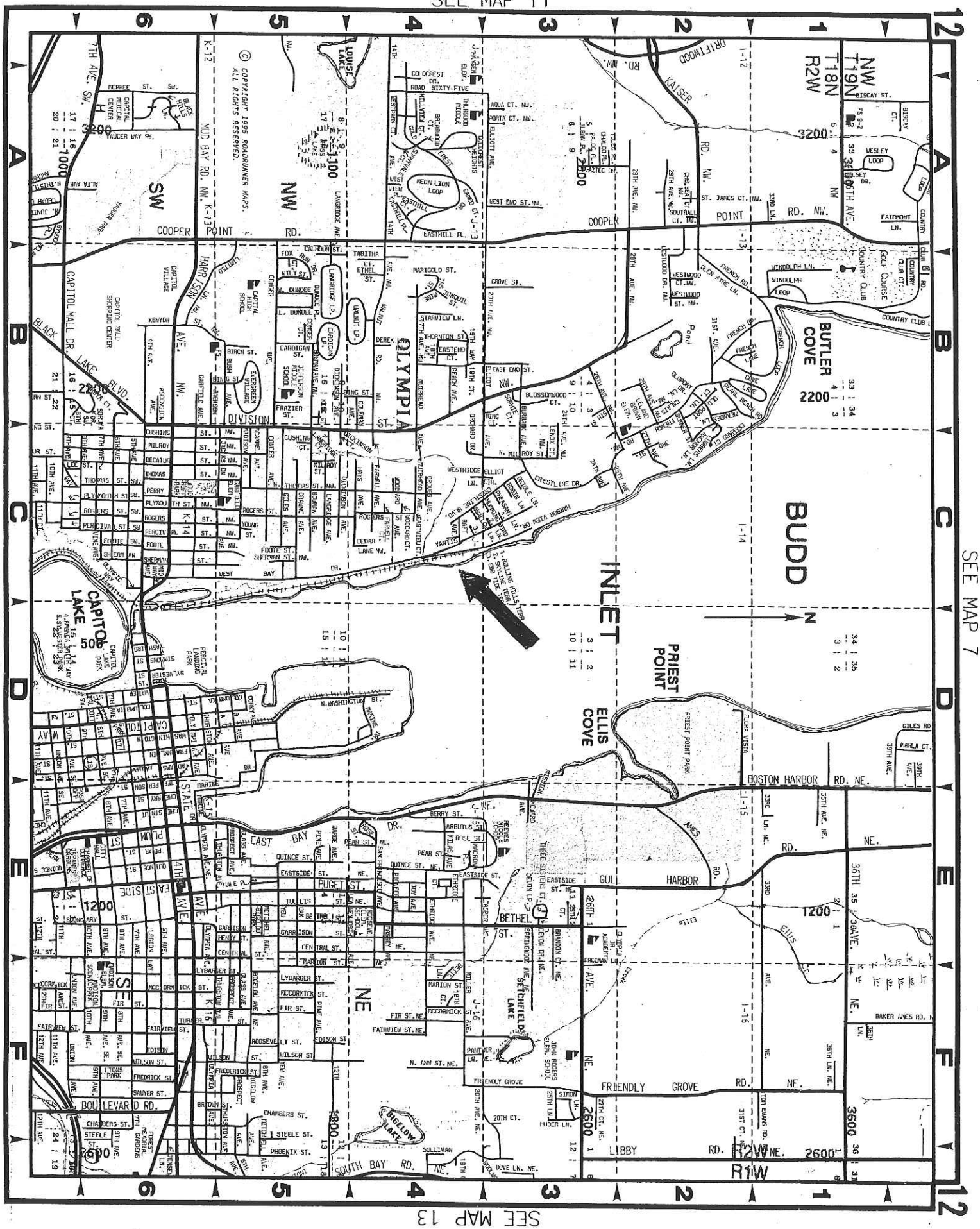
LABORATORY NOTES:

Rush turn
standard prices

Turn Around Time: 24 HR 48 HR 5 DAY

SECTION IV

MAPS


THURSTON COUNTY
SEE MAP 11
SEE MAP 7
SEE MAP 16
SEE MAP 13
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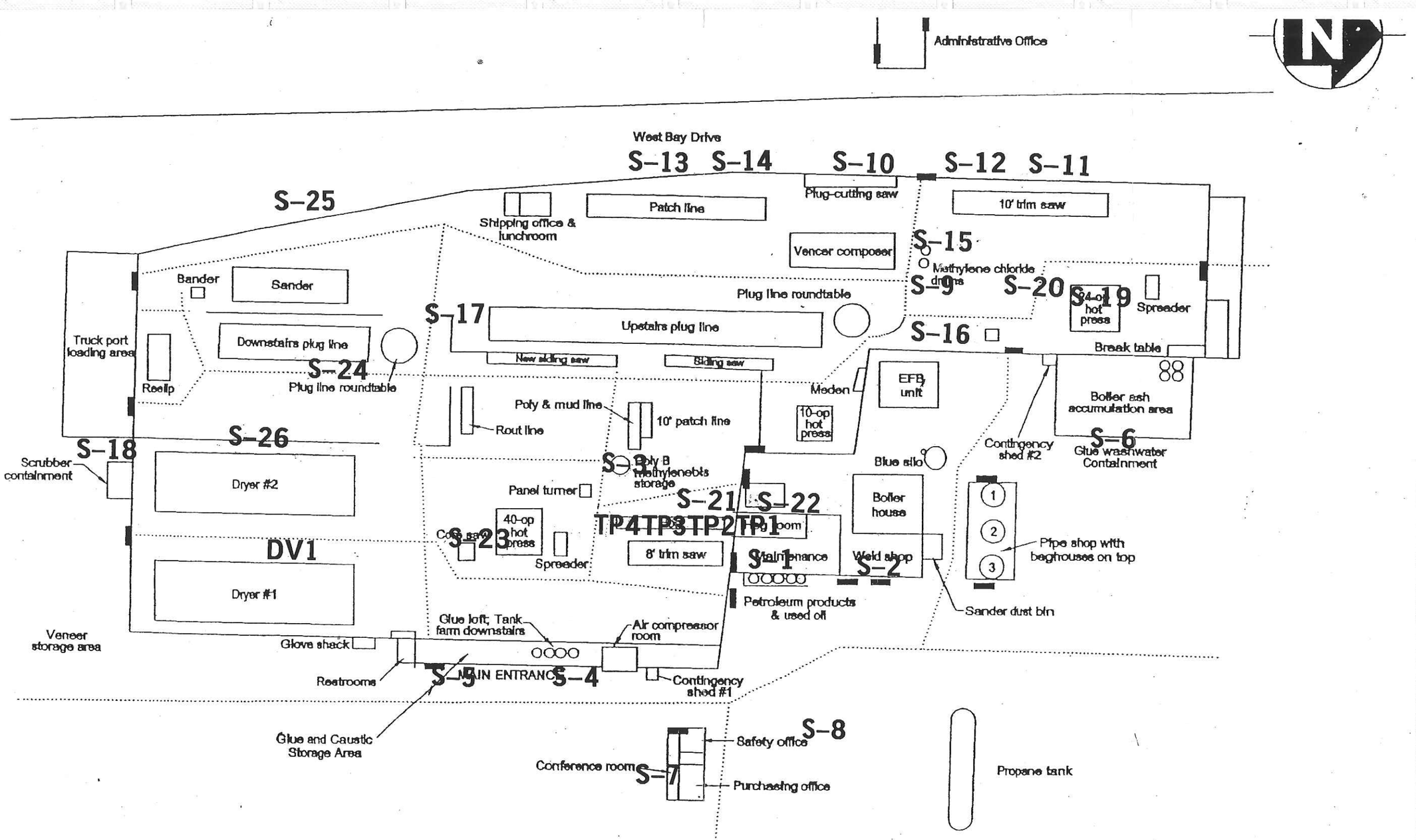
T18N R2W
T19N
OLYMPIA
BUDD INLET
CAPITOL LAKE
BUTLER COVE
PRIEST POINT
ELLIS COVE
SCHNEIDER HILL
SW
NW
SE
NE
COOPER POINT RD.
BLACK LAKE BLVD.
CAPITOL BLVD.
HARRISON AVE.
DIVISION ST.
4TH AVE.
EAST BAY DR.
STATE ST.
BOULEVARD RD.
MUD BAY RD. NW.
KAISER RD. NW.
DRIFTWOOD RD. NW.
BOSTON HARBOR RD. NE.
GULL HARBOR RD. NE.
FRIENDLY GROVE RD. NE.
LIBBY RD. NE.
SOUTH BAY RD. NE.
BETHEL ST.
EVERGREEN PARK DR.
BASKETT SLOUGH
SCHNEIDER CREEK
LOUISE LAKE
SCHNEIDER LAKE
BIGELOW LAKE
CAPITOL LAKE
CAPITOL MALL SHOPPING CENTER
CAPITOL VILLAGE
CAPITOL MEDICAL CENTER
CAPITOL HIGH SCHOOL
JEFFERSON MIDDLE SCHOOL
REEVES MIDDLE SCHOOL
EVERGREEN VILLAGE
WASHINGTON HIGH SCHOOL
OLYMPIA HIGH SCHOOL
JOHN REILLY ELEM. SCHOOL
LELAND BROWN ELEM. SCHOOL
JOHN ROGERS ELEM. SCHOOL
TOM EVANS ELEM. SCHOOL
WESTWOOD COUNTRY CLUB
COUNTRY CLUB GOLF COURSE
PRIEST POINT PARK
PERCIVAL LANDING PARK
SYLVESTER PARK
HERITAGE PARK
LIONS PARK
FORESTRY MEMORIAL GARDENS
JAPANESE GARDENS
1-5 ROLLING HILLS TERR.
2-5 SUNSHINE TERR.
3-5 EBB TIDE TERR.
4-5 RAINBOW LN.
5-5 SEASHORE LN.



Source: Modified from Boateng & Associates (1996)

SITE MAP

OPERATIONAL LAYOUT, 1990's
HARDEL MUTUAL PLYWOOD WATERFRONT PROPERTY
OLYMPIA, WASHINGTON