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TECHNICAL MEMORANDUM

Date:	November 22, 2011
To:	Steve Teel, LHG - Department of Ecology
From:	David Dinkuhn, P.E. - Parametrix
Subject:	Solid Wood Facility Area Assessments to Date
cc:	Kip Summers, P.E.- City of Olympia David Hanna, City of Olympia
Project Number:	235-1577-024 (04/04)
Project Name:	Solid Wood Incorporated Site (West Bay Park) RI/FS and Interim Action

INTRODUCTION

The purpose of this technical memorandum is to provide a summary of environmental investigation and sampling work performed to date in the vicinity of the former Solid Wood, Inc. facility and to show that the facility has been adequately characterized for the purposes of the site's Remedial Investigation/Feasibility Study (RI/FS). The information provided here was developed during multiple studies including a 2002 test pit sampling event, a 2004 Phase I Environmental Site Assessment (ESA), Phase II ESAs conducted in 2004 and 2007, and RI/FS investigations beginning in 2008 and continuing to the present. Note that the investigation and cleanup of Area A located just north of the former facility's concrete slab are not discussed here. A site map is provided on the attached Figure 1. A 1983 aerial photo of the site showing the Solid Wood, Inc. facility in operation is also attached.

2004 PHASE I ESA AND SITE HISTORICAL DOCUMENTATION

According to information gathered during the 2004 Phase I ESA, the Solid Wood Inc. facility was a plywood veneer manufacturing plant where logs were cut into sheets for the manufacture of plywood at off-site locations. The plant operated between approximately 1971 and 2001, when the facility and all above-ground structures were demolished (based on aerial photographs and Polk Street Directories).

Information regarding an underground storage tank (UST) on site was obtained from Washington State Department of Ecology (Ecology) records. These records indicated that the site contains a 111 to 1,100 gallon UST installed in 1964 and closed in place on an undisclosed date. The location of the UST was not identified. A visual survey of the facility foundation and surrounding area conducted during the Phase I ESA did not uncover any evidence of the UST location (such as fill or vent pipes). No penetrations were observed in the former building's concrete slab or surrounding paved areas that would indicate a closed-in-place UST.

The following excerpt regarding the site were taken from an unpublished history of the area titled *A Historical study commissioned by Sarah Wayne Smyth and Delson Lumber Company in conjunction with Shanna Stevenson and Thurston Regional Planning Council in 2004*:

> "D. Wayne Smyth also had an interest in the Solid Wood operation on West Bay at the Old Port Lagoon next to the 4th Avenue Bridge. Solidwood manufactured four foot veneer sheeting used to make plywood. Solid Wood had a specialized lathe that could cut small diameter logs. Solidwood sold veneer to Hardel Plywood and other Plywood mill throughout the state. Soldiwood shut down its facility in _____, after Hardel plywood relocated and there was a downturn in the industry."

Based on the available information, the process performed at the former Solid Wood, Inc. facility was to mill logs into sheets for plywood manufacture at other, offsite facilities (such as the nearby Hardel Plywood). It is likely no process chemicals were used or stored at the site. Contaminants of concern consist primarily of petroleum fuels and lubricating oil, which are associated with the operation of a potential drying kiln and heavy machinery.

2002 TEST PIT SAMPLING

The Port of Olympia conducted a test pit sampling study at the site in 2002. The sampling report is provided in Attachment 1 for reference. In summary, the purpose of the study was to provide a baseline of environmental conditions at the site. Six test pits (SS-1 through SS-6) were excavated to depths of 4 to 5 feet at the locations shown on Figure 1. A single soil sample was collected from each test pit and analyzed for gasoline, diesel, and lube oil. The analytical results reported low concentrations of diesel and oil is several samples that did not exceed Washington State Department of Ecology Model Toxics Control Act (MTCA) Method A cleanup levels.

2004 PHASE II ESA

Initial work conducted for the 2004 Phase II ESA included a ground-penetrating radar (GPR) survey of the Solid Wood facility vicinity in an attempt to locate the reported UST. The survey consisted of a complete traverse of the perimeter of the concrete slab with the GPR unit located 10 feet from the edge of the slab. The approximate GPR survey footprint is shown on Figure 1. No USTs were located during the survey. The complete GPR survey report is included in Attachment 2 for reference.

The 2002 sampling was supplemented during the Phase II ESA by the installation of two soil borings and a test pit in the vicinity of the former Solid Wood facility (WBGP-03, WBGP-04, and WBTP-06; Figure 1). Logs for the borings and test pit are included in Attachment 3. Boring WBGP-03 was located between the concrete slab and the adjacent railroad tracks. No evidence of contamination such as petroleum staining and/or odors were observed in the boring and no soil or groundwater samples were collected. WBGP-04 was located on the southern end of the concrete slab. Evidence of contamination was observed in this boring and soil and groundwater samples were collected. A soil sample was also collected from WBTP-06 located by the loading dock. The soil and groundwater samples were analyzed for hydrocarbon identification (HCID), total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, pesticides, and polychlorinated biphenyls (PCBs). Sample results taken as excerpts from existing reports are provided in Attachment 3. As shown, no contaminant was detected at concentration exceeding MTCA A cleanup levels.

2007 PHASE II ESA

A Phase II ESA was conducted in 2007 to target the railroad right of way on site. Soil boring SB-04 was installed during this study at the southeastern corner of the concrete slab (Figure 1). The boring log and results for a soil and groundwater sample collected from this boring are included in Attachment 4. The samples were analyzed for TPH, pesticides, PCBs, polycyclic aromatic hydrocarbons (PAHs), and metals. A single contaminant, motor oil, was detected in the groundwater sample at a concentration above MTCA A cleanup level. No contaminants were detected above cleanup levels in the soil sample.

RI/FS SAMPLING

RI/FS sampling in 2008 included the installation of a series of eight soil borings (SB-25 through SB-32) around the SB-04 location to define the nature and extent of oil contamination. Soil boring logs and the results of soil and groundwater samples collected from each boring are provided in Attachment 5. The samples were analyzed for TPH, benzene, toluene, ethylbenzene, and total xylenes (BTEX), PAHs, and metals. No motor oil was detected at concentrations above cleanup levels with the exception of the groundwater sample from SB-31. This sample contained oil at a concentration slightly above the cleanup level. The only other constituents detected above cleanup levels were PAHS in soil samples from SB-26, SB-29, and SB-30. Inspection of the boring logs shows that each affected soil sample was collected from a depth immediately below a shallow layer of creosote-treated wood thought to be rail ties or piling. The PAHs in the samples are clearly associated with the creosote-treated wood.

Monitoring wells MW-02 through MW-04 were installed surrounding the SB-04 location to attempt to define the extent of the groundwater plume around SB-04 (Figure 1). Groundwater samples were collected from these three wells for four consecutive quarters. During the four sampling events, only a single detection of motor oil occurred in one well (MW-02) at a concentration below the cleanup level. Note also wells MW-01, MW-06, and MW-07, which were installed for performance monitoring following the 2009 Interim Action performed at the site. These wells were also sampled for four consecutive quarters in 2009. No constituents were detected in these wells with the exception of acenapthene in MW-07 at concentrations below the cleanup level.

A soil sample (CB-04) was collected beneath a yard drain located adjacent to the southeastern corner of the concrete slab. The sample was collected at the base of the drain facility after the facility was removed as part of the Interim Action. Results for this sample are provided in Attachment 5. As shown, no constituents were detected in the sample at concentrations exceeding the cleanup level. These results indicate that the drain was not used as a dumping place for contaminants.

CONCLUSIONS

Environmental assessment work performed to date at the location of the former Solid Wood, Inc. facility includes a records review, visual survey, GPR survey, and the collection and analysis of 18 soil samples and 34 groundwater samples (including the four quarters of groundwater monitoring in six monitoring wells). None of the sampling data indicated the presence of a significant source of contamination associated with the former facility. The only constituent detected above cleanup levels is motor oil in groundwater in the vicinity of SB-04. Follow-on RI/FS sampling showed that the motor oil is limited to the immediate vicinity of SB-04. No apparent source area was found in the eight RI/FS borings installed to investigate the nature and extent of the motor oil.

The apparent lack of a significant source of contamination remaining within or near the facility footprint is supported by the monitoring results from the six wells and the four “clean” quarters of monitoring conducted during the RI/FS. All of the wells are located adjacent to or downgradient from the former facility and its operations area. The lack or near lack of detectable constituents in these wells is a strong indication of the absence of a contaminant source, since any groundwater plume originating from the source would likely be detected in the wells. Based on these conclusions, it is the City’s opinion that the investigations performed to date at the former Solid Wood, Inc. facility are complete and sufficient for the purposes of the RI/FS.

FIGURE 1

Solid Wood Facility Area Sampling Locations

APPROX. GROUND PENETRATING RADAR SURVEY FOOTPRINT (PMX 2004)

SS-4

FORMER SOLID WOOD INC FACILITY

SS-5

SS-6

MP CLUMP

MP CLUMP

WBGP-04

SS-3

MW-01

CONCRETE SLAB

LOADING DOCK

MW-02

SB-31

WBGP-03

36" RCP

SS-1

WBTP-06

YARD DRAIN

CB-04

SB-28

SB-32

SS-2

RAIL SPUR PRESENT BENEATH ASPHALT

SB-30

SB29

SB-26

SB-04

SB-27

SB-25

MW-03

MW-07

MW-04

MHHW

14.6

MW-06

GARFIELD CK

Parametrix DATE: 08/28/08 08:01am FILE: BR1577024P04T04F-05A

N

0 30

SCALE IN FEET

LEGEND

WBGP 2004 GEOPROPE SAMPLING LOCATIONS

WBTP 2004 TEST PIT SAMPLING LOCATION

PMX PHASE II ESA/RIFS SAMPLING LOCATION

MONITORING WELL

PORT OF OLYMPIA TEST PIT LOCATION

GROUNDWATER CONCENTRATIONS EXCEED SCREENING LEVELS

SOIL CONCENTRATIONS EXCEED SCREENING LEVELS

SOIL AND GROUNDWATER CONCENTRATIONS EXCEED SCREENING LEVELS

SS SURFACE SOIL SAMPLING LOCATION

SB SOIL BORING LOCATION

TP TEST PIT LOCATION

Figure 1
Solid Wood Incorporated Site
Olympia, Washington
Solid Wood Facility Area Sample Locations

1983 AIR PHOTO

1983
AIR PHOTO

ATTACHMENT 1

2002 Port of Olympia Study

Lease file
cc: City of
D. Cable 1/04

Northwest Testing Company, Inc.

CONSTRUCTION TESTING AND INSPECTION
ENVIRONMENTAL CONSULTATION AND ASSESSMENT

October 17, 2002

Don Bache
Port of Olympia Engineering
915 Washington Street NE
Olympia, WA. 98501-6931

RE: Solid Wood Lease Site Baseline Contaminant Investigation, PO #7619015-064

Dear Don:

We have completed the baseline contaminant study for the above referenced site requested by the Port of Olympia. The study focused on the current environmental state of shallow surface soil at the site with regard to petroleum contamination. Levels of heavy range petroleum hydrocarbons were detected in four of the tested areas, but were below the 2000-ppm Washington State Model Toxics Control Act Method A standards for cleanup requirements.

Site Address: 700 West Bay Drive NW, Olympia, Washington

Parcel Number: 09 5900 03000

Scope of Work:

A total of six locations at the site were selected based upon prior use of the site (see figure 1). Sample areas one through five encircled the former veneer fabrication plant and loading areas. The final sample (location #6) was selected based upon a historic above ground diesel fuel tank located nearby. On October 10th, soil samples were excavated with a backhoe through the upper 48" to 60" of soil. Soil from each individual location were then combined to represent the overall excavated material. Soil from each individual backhoe bucket was field screened with a PID, water sheen test, and general field observations (odor, texture, and color). Slight odors were noted in sample #1 at 16" to 20" depth, and at sample location #3, 0"-16" depth (wood waste and gravel).

Typical excavation profile was surface duff, gravels, and wood waste from 0" to 16", dry to moist silty/sandy gravel from 16" to 40", and wet sandy gravel below 40" (see attached field sheet notes).

Samples were sealed in glass jars and placed on ice, and delivered to ESN laboratories in Lacey for hydrocarbon identification (HCID test). Significant spikes were found in samples 1, 2, 3, and 5. These samples were then quantified through extended diesel analysis. Low to moderate levels of diesel and heavy oil (Bunker C range) were detected, but all were below cleanup levels. See attached for test locations and results.

P. O. BOX 11581 · OLYMPIA, WASHINGTON 98508-1581 · PHONE or FAX 360/866-3647

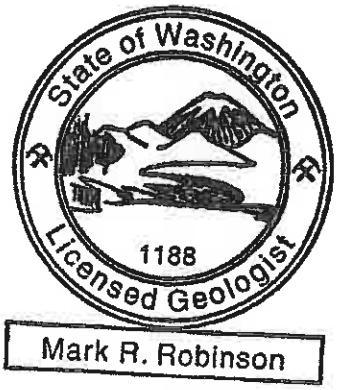
Please call me for any questions regarding this investigation. We appreciate this opportunity to be of service to you.

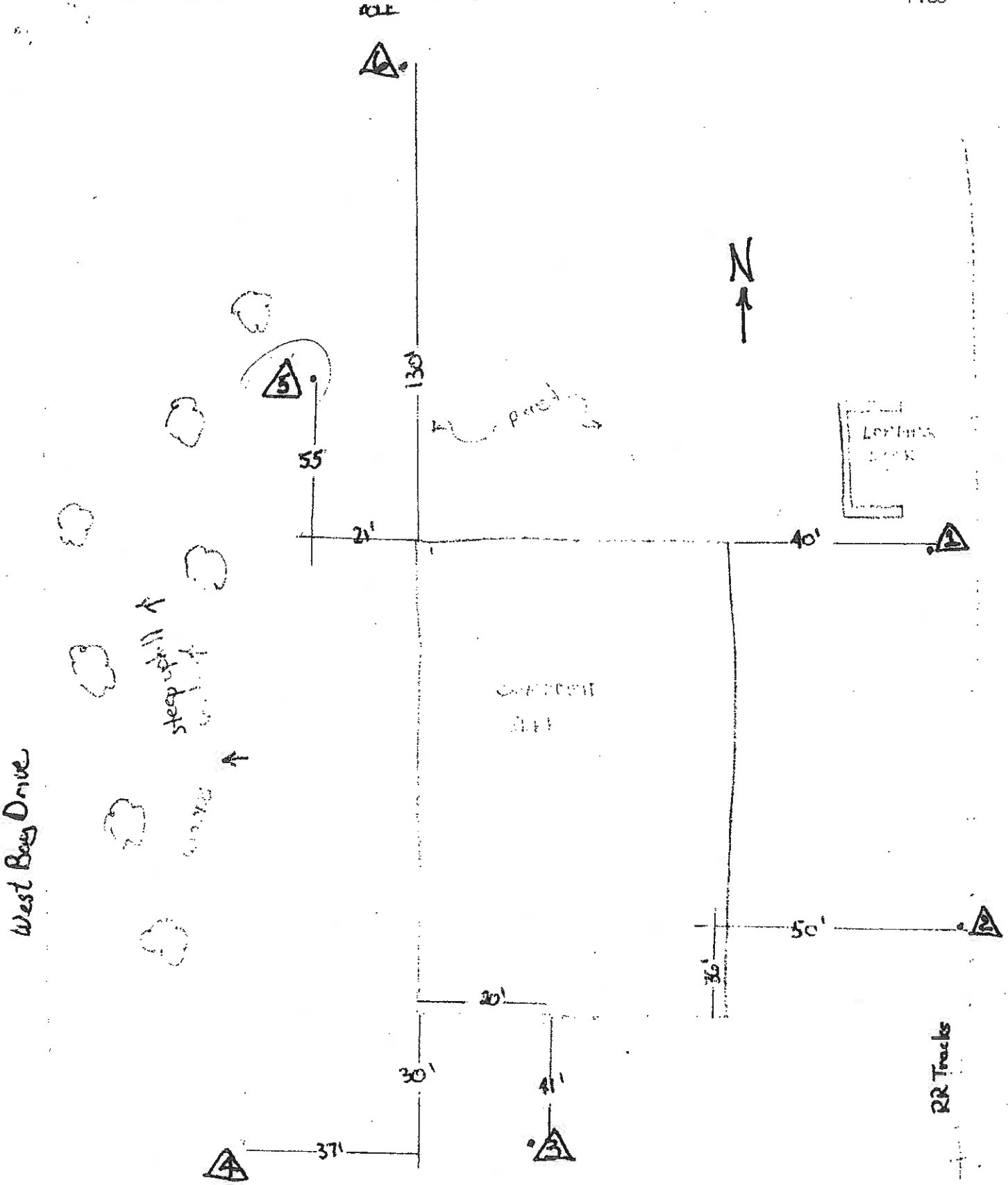
Cordially,

NORTHWEST TESTING COMPANY, INC.

Mark Robinson

Mark Robinson
Professional Geologist
Registered Site Assessor





SOLID WOOD SITE

OCTOBER 10th SAMPLE AREAS

ESN NORTHWEST CHEMISTRY LABORATORY

SOLID WOOD PROJECT
Olympia, Washington
Northwest Testing Company .

Hydrocarbon Identification by NWTPH-HCID for Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)	Diesel (mg/kg)	Heavy Oil (mg/kg)	Mineral Oil (mg/kg)
Method Blank	10/14/02	95	nd	nd	nd	nd
021010-1	10/14/02	int.	nd	nd	D	nd
021010-2	10/14/02	73	nd	nd	D	nd
021010-3	10/14/02	int.	nd	D	D	nd
021010-4	10/14/02	79	nd	nd	nd	nd
021010-5	10/14/02	78	nd	nd	D	nd
021010-6	10/14/02	85	nd	nd	nd	nd
Method Detection Limits			20	50	100	100

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Marilyn Farmer & Tim McCall

ESN NORTHWEST CHEMISTRY LABORATORY

SOLID WOOD PROJECT
Olympia, Washington
Northwest Testing Company

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	10/14/02	95	nd	nd	nd
021010-1	10/14/02	int.	nd	880	nd
021010-2	10/14/02	73	nd	140	nd
021010-3	10/14/02	int.	120	530	nd
021010-5	10/14/02	78	nd	430	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

10-10-02 1:10 pm Solid Wood site
Clear, 63°

#1 0-12" duff
0'-4' 12"-16" gravel
13:35 16" 20" black sand slight odor
20"-48" sandy gravel - dry / clean

#2 Surface - buried RR ties
0'-4' 12" - 18" duff + gravel
14:00 18" - 46" sandy gravel
46" - 48" black, moist clayey gravel

#3 0" 16" sawdust / woodwaste mixed w/ gravel - slight sheen
16" - 22" stiff silty gravel
0'-4' 22" - 48" wet blue sandy gravel
14:12

#4 0" - 15" wood waste + gravel
15" - 24" sawdust - wet
0'-4' 24" - 40" green + brown sandy gravel
14:24 40" - 48" very wet brown gravel, no sheens

#5 0' - 12" duff + organics
0'-40" 12" - 38" silty gravel - wet bottom
14:40

#6 0' - 20" silty gravel / duff
20" - 42" dry silty gravel
0'-60" 42" - 58" moist gray sandy gravel
14:55

ESN NORTHWEST | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: Northwest Testing Company
ADDRESS: PO Box 11581 Olympia, WA 98508-1581
PHONE: (360) 866-3647 FAX: (360) 866-3647
CLIENT PROJECT #: Solid Wood PROJECT MANAGER: Mark Robinson

DATE: 10-11-02 PAGE 1 OF 1
PROJECT NAME: Solid Wood
LOCATION: 700 West Bay Drive N.W.
COLLECTOR: Mark Robinson DATE OF COLLECTION 10/10/02

Sample Number	Depth	Time	Sample Type	Container Type	SEMI VOL 8270	NOTES	Total Number of Containers	Laboratory Number
1. 021010-1	0'-4'	13:35	soil	4 oz glass	✓		1	
2. -2	0'-4'	14:00	"	"	✓		1	
3. -3	0'-4'	14:12	"	"	✓		1	
4. -4	0'-4'	14:29	"	"	✓		1	
5. -5	0'-4'	14:40	"	"	✓		1	
6. -6	0'-4'	14:55	"	"	✓		1	
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								
16.								
17.								
18.								

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

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
Mark Robinson		[signature]	10-11-02
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	6
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:
Quantify Hits on pm
Mark 10/14/02

Turn Around Time: 24 HR 48 HR (5 DAY)

JAN-26-2004 03:37 Parametrix Summer P.09

ATTACHMENT 2

GPR Survey Report

GEO RECON INTERNATIONAL

applied geophysics

March 18, 2004
J04-755

Parametrix Inc
5700 Kitsap Way
Bremerton, Wa 98312

West Bay Environmental Assessment
Geophysical Survey

This report presents the results of the Geophysical Survey in conjunction with the West Bay Environmental Assessment, Olympia, Washington. The survey utilized Electro-magnetic (EM) and Ground Penetrating Radar (GPR) methods to locate potential Underground Storage Tanks (UST), clear boring locations for drill hole hazards and provide an estimate of the depth of "bark" deposits or other fill materials in the former material storage area. The survey was made on March 3, 2004. A verbal report of findings was made prior to your site investigation.

Results

Burn Area

Soil conductivity measurements were made in the "burn area" located on the small spit in the middle of the property. Figure 1 attached to this report shows the location of the 50 by 60 foot grid area. The conductivity measurements were made with an EM-31 on a 10 foot grid. The results are shown in Figure 2. The area did not show evidence of "buried metal structures". The rebar in the concrete bulkhead surround the area did lower the measured conductivities however the instrument did not cross the bulkhead. The conductivity response to buried metal would be to produce artificial negative values on conductivity.

Foundation Pad

The exterior of the foundation pad was traversed with the EM-31. The traverse was made approximately 10 feet from the edge of the foundation pad, beginning and ending at the Northeast corner of the pad. The conductivity profile of the EM measurements is shown in Figure 3. The traverse detected two negative going conductivity areas that are indicative of buried metal, i.e. possible USTs.

P.O. Box 55189 • Seattle, Wa. 98155 USA • (206) 362-9484 FAX (206) 362-9486

The first negative going conductivities occurred along the East edge of the foundation pad. A GPR traverse was made across this area. The GPR image of the line is shown in page 3 of the attached GPR data. The negative area was determined to be a result of the rebar in the concrete pad that runs from the loading platform along side the railroad tracts to the foundation pad. It is noted that inspection of the aerial photographs of the former structure on the side did not reveal a "door" in the side of the building at this point. The concrete runway pad is covered with asphalt adjacent to the foundation pad. No evidence of a UST was found in the GPR data.

Negative conductivity values were also found along the South edge of the foundation pad, and along a small portion of the Southeast corner of the pad. The negative values are assumed to be a result of the rebar in the pad, and from a metal in the pole at the SE corner.

The sanitary sewer system associated with restroom facilities of the former building is located in the Northwest corner of the foundation pad. The sewer line runs to the toe of the slope (to the west) and the sewerage effluent is then pumped to the sewer line upslope.

Former Material Storage Area.

Two GPR traverses (North Line and South Line) were made in the former material storage area to estimate potential depth of "bark" and other material. The area lies between the foundation pad and the pond to the south of the pad. The lines were centered in the approximate center of the area, and are 25 feet apart, approximately 100 feet in length. The GPR data is shown in the GPR images attached to the report on Pages 1 and 2. The lines were run from approximately the toe of the slope east to the road running along side of the area.

The GPR data in both of the lines show two layers of material. The material is largely sand/gravel deposits with sections of finer grained material (silts). The upper section may be fill material. No "bark" or other wood products are evident in the data.

Drill Hole Hazard Clearance

The four proposed bore hole locations were marked and GPR lines run over the locations to detect possible drilling hazards. The boring locations did not show evidence of drill hazards i.e. buried pipes underlying the locations. The area lying between the two railroad tracks east of the former locating dock was also scanned for possible hazards. No hazards were found.

Methods

The Ground Penetrating Radar (a GSSI, SIR System 2) utilized a 400 Mega-Hertz antenna. The GPR antenna used for this investigation transmits a 2.5 nano-second (ns) pulse at a center frequency of 400 Mega-Hertz for the selected scan rate of 16 times per second. When the signal encounters a change in electrical properties (a change in electrical permittivity), a portion of the signal energy is reflected back to the surface. The reflected signal received by the antenna, is digitally processed and recorded in the instrument consol. The character of the reflection is used to interpret the source of the reflection.

The GPR records were recorded at a full-scale sweep of 60 nano-seconds. The depth of an object is determined by the electro-magnetic wave propagation rate (inverse of wave velocity) of the site materials. The recorded time is two-way time; that is the time down to the surface and then back to the antenna. The two-way time is estimated to be between 5 to 6 nano-seconds per foot. The electro-magnetic velocity may vary across the site, both horizontally and vertically. The data was recorded in metres and then converted to feet by software analysis.

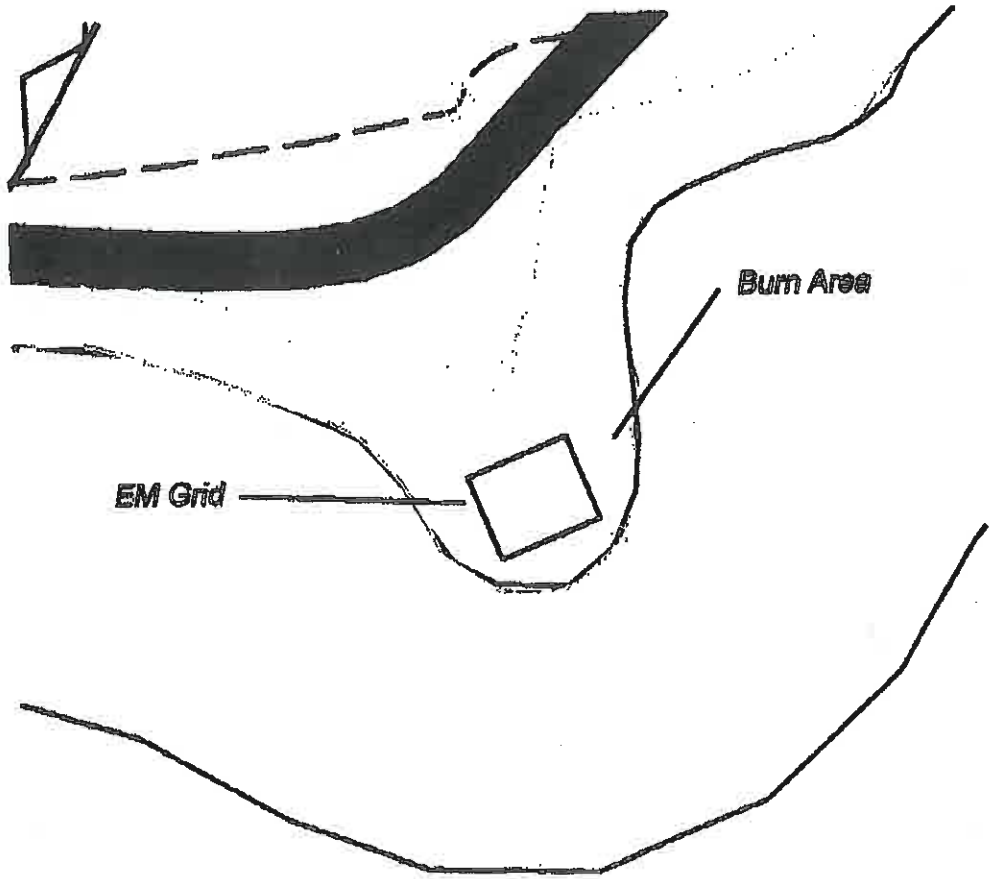
The soil conductivity measurements were made with a Geonics EM-31. The instrument measures an elliptical area approximately 8 by 6 feet. The instrument operates at a frequency of 9.8 KHz. The transmitted EM wave interacts with the soil materials, which conducts the signal and in turn transmits a wave which interacts at the transmitted wave at the receiver coil of the instrument. The resulting signal is compared to the transmitted signal; the difference is a function of the ground conductivity. The ground current is concentrated by buried metal objects, and produces a negative response in the measured conductivity. The depth of the signal is approximately 19 feet, however, the majority of the signal is conducted at a depth 12 feet.

The information presented in this report is based upon geophysical measurements made by generally accepted methods and field procedures, and our interpretation of these data. The presented information is based upon our best estimate of subsurface conditions considering the geophysical results and all other information available to us. These results are interpretive in nature and are considered to be a reasonably accurate presentation of the existing conditions within the limitations of the method or methods employed.

We trust that the above is sufficient for your requirements. Please let us know if you have any questions or if we may be of further assistance.

For Geo-Recon International

John M Musser
Principal Geophysicist



North

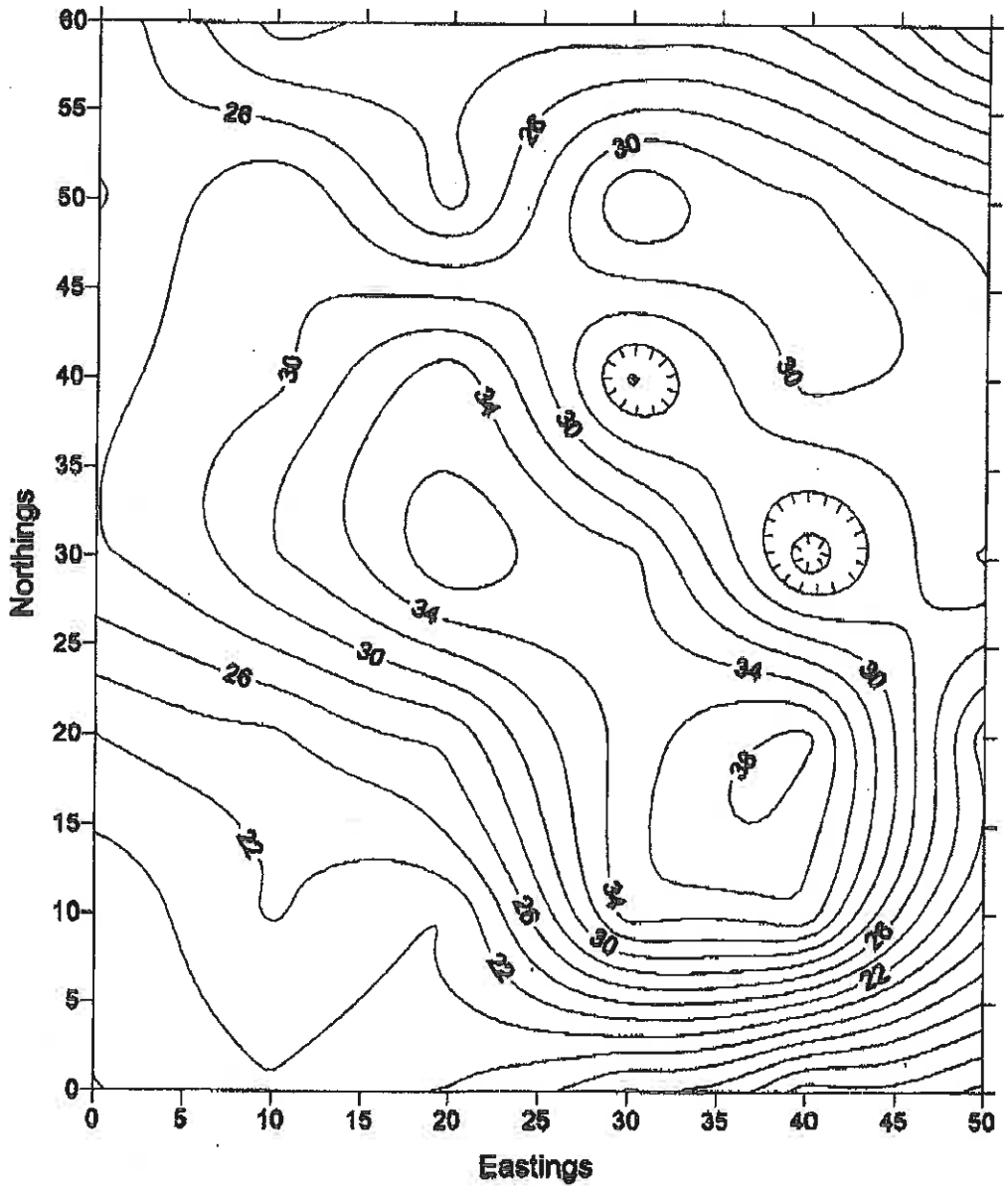
Scale: 1 inch = 100 feet

Burn Area Location	Proposed Olympic Park, Olympic, Washington

EM Survey
J04-755

GEO-RECON INTERNATIONAL

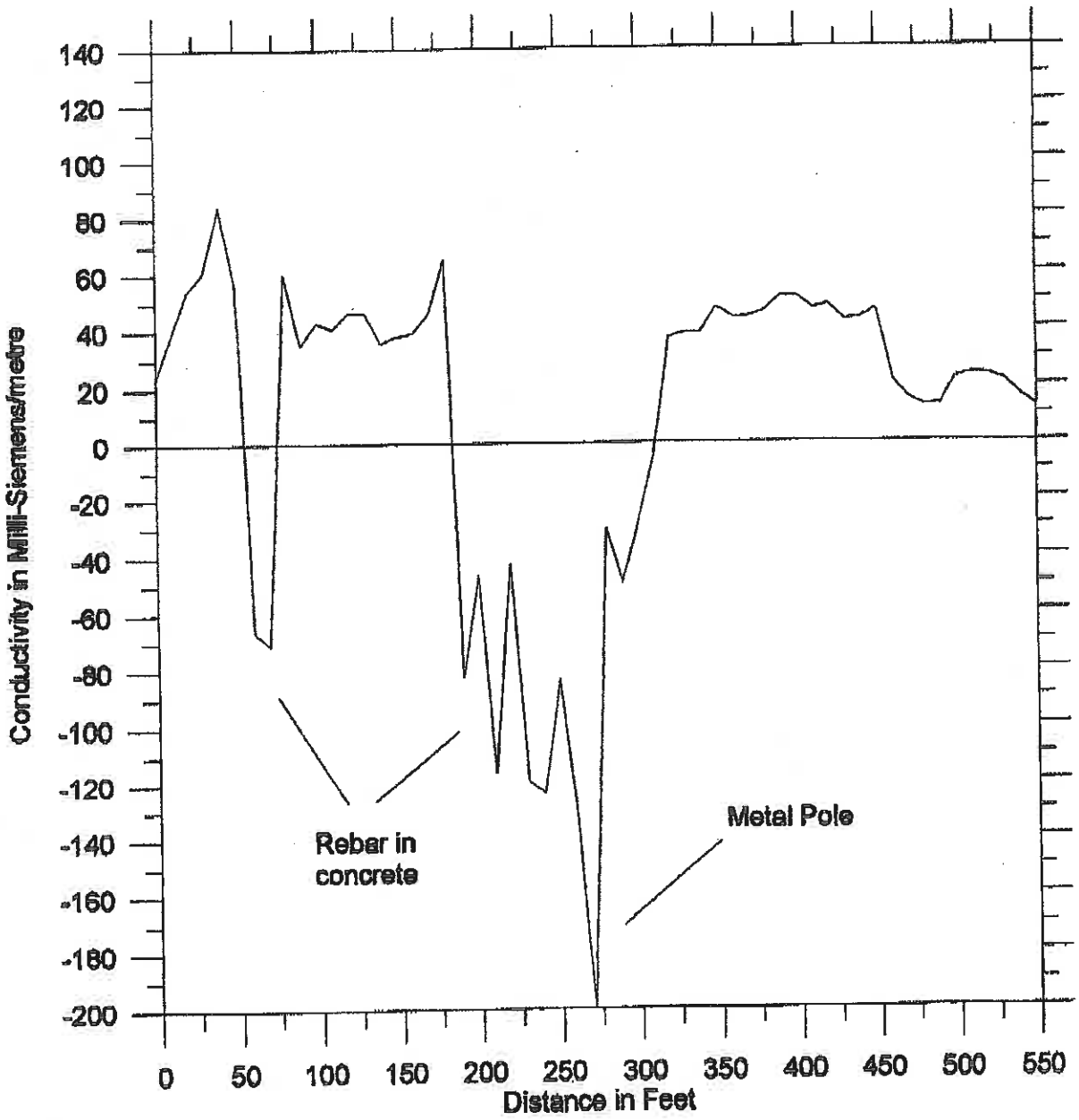
FIG. 1



Conductivity Contours - Burn Area

Conductivity in Milli-Siemens/metre

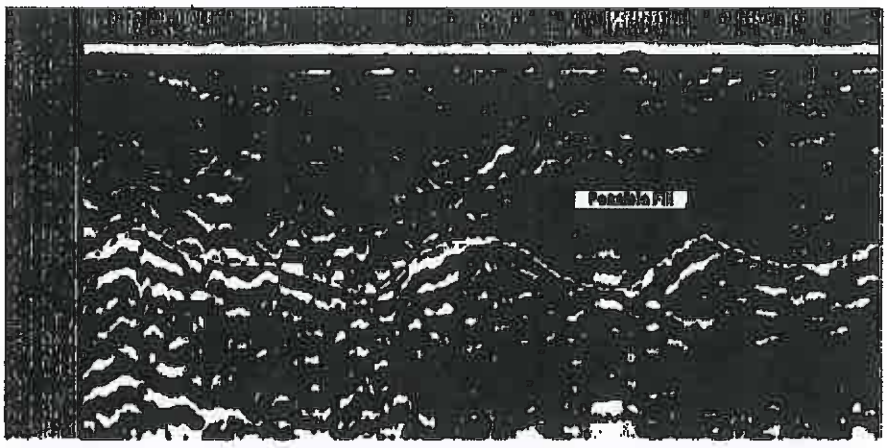
Figure 2

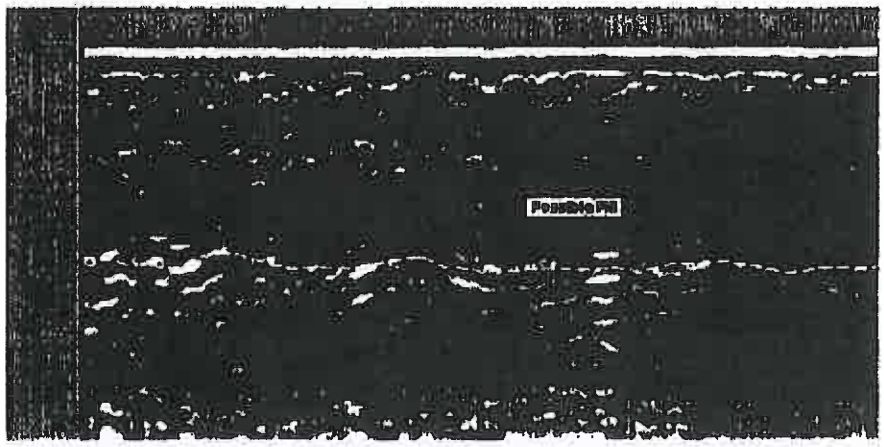


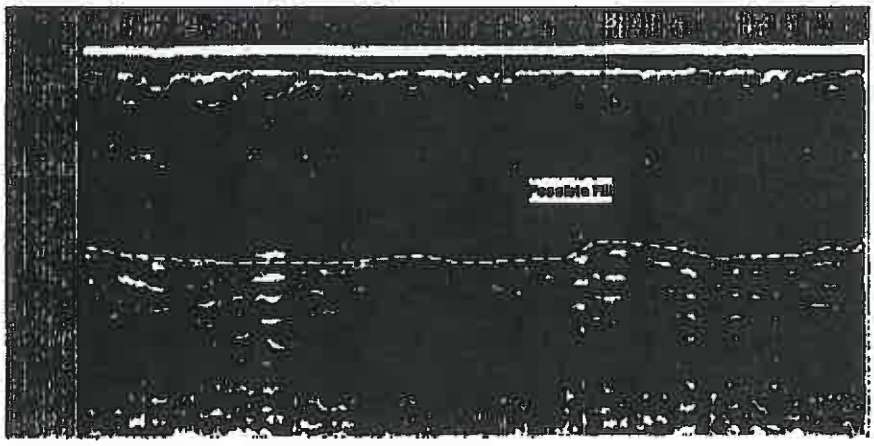
Proposed Olympic Park, Olympia, Wa
EM Traverse Around Foundation Pad

Figure 3

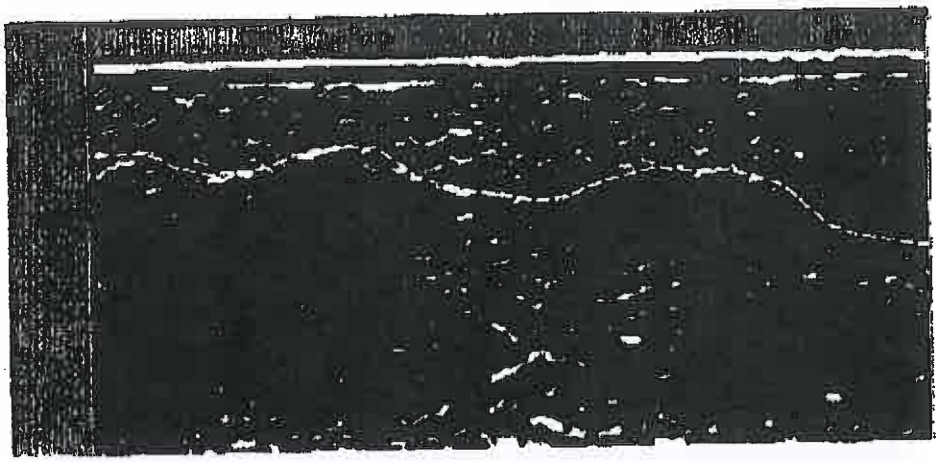
North Line – Run from West to East

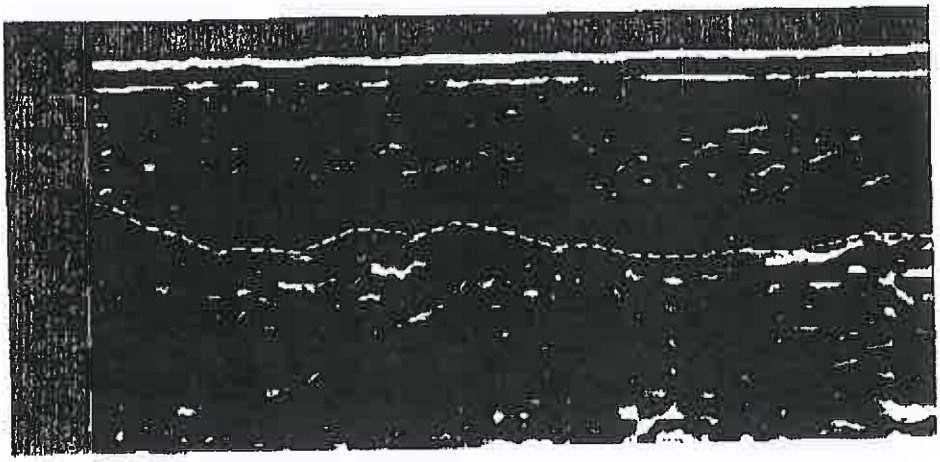


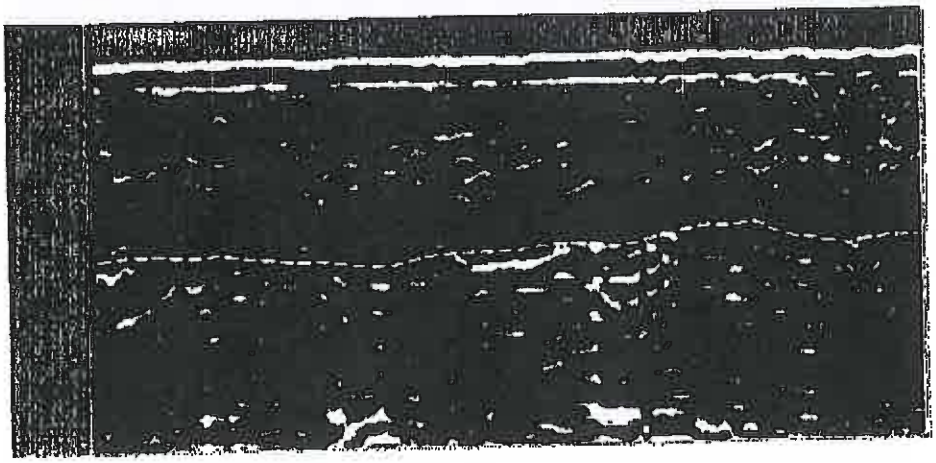




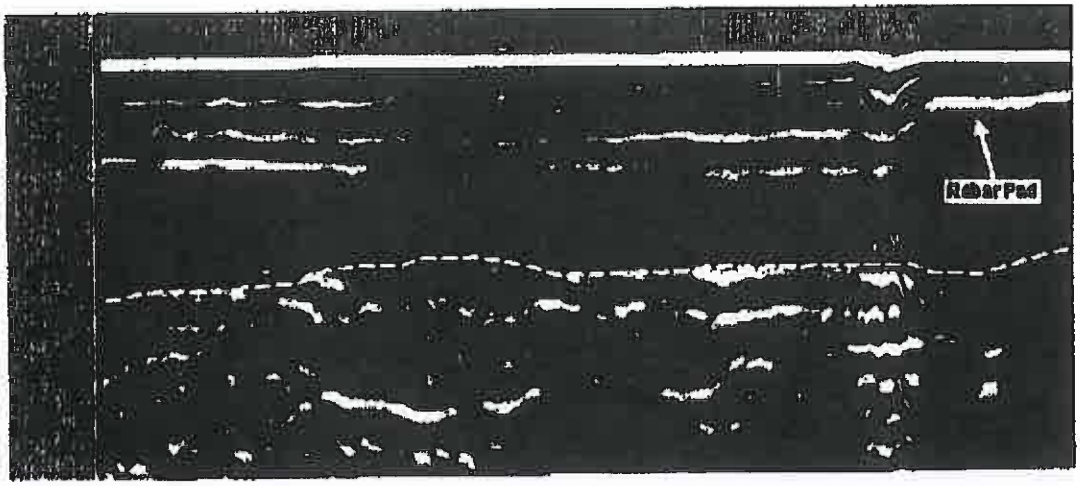
South Line – Run from West to East

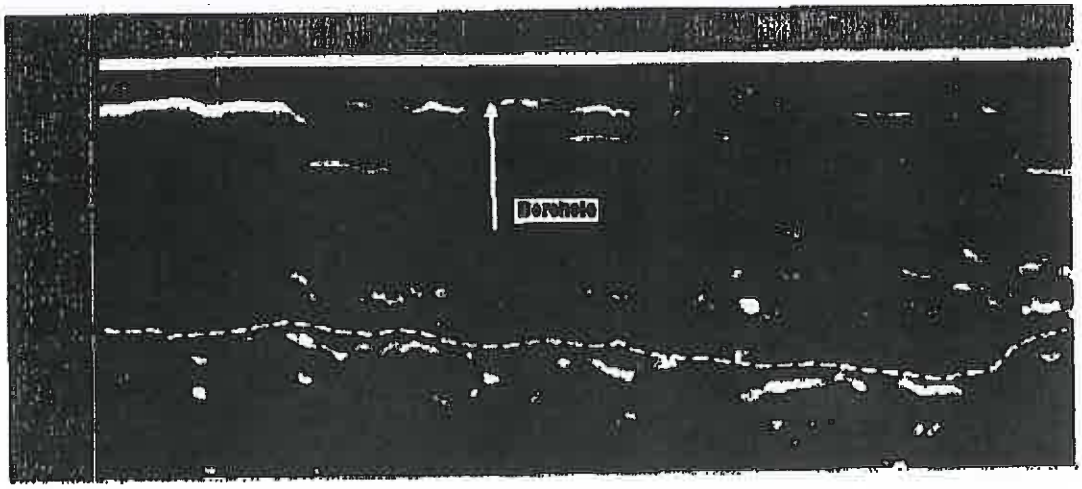






Line run along side East side of foundation pad – Run from North to South





ATTACHMENT 3

2004 Phase II ESA Data

TEST PIT & PROBE LOGS

DLD NOTES 4/10/08

GP-03
GP-04
TP-06

Daily Report
Prepared by Christopher J. Hamilton
West Bay – 08 March 2004
PMX 215-4764-001-01-04

0745 Arrive on site, 45 F, Foggy
0800 Sandra Matthews arrives on site
0805 Anisa, ESN Driller, arrives on site, walk site to review sample locations
0820 Dave Oakerland arrives on site, unlocks gate
0900 Sandra departs site
0915 Setup to drill WBGP-01 by gate
1030 Sample WBGP-01S & -01G
0-4 feet, ½ recovery, 7.5 YR 3/2 Dark brown sand and gravel (SM-GM), medium to fine sand, round gravel
4-8 feet, full recovery, Gley 1 4/1 dark greenish grey clay (CL) (2 feet)
5Y 4/1 dark gray sand medium to coarse (SM) (12 inches)
Dark brown wood (12 inches)
8-12 feet, full recovery, 5Y 4/1 dark gray sad and gravel (SM-GM), medium to coarse sand (36 inches)
Black wood and silt (6 inches)
12-16 feet, ¾ recovery, 5Y 4/1 dark gray clay (CL) (6 inches)
Silty sand (SM) (18 inches)
Wood and silt (6 inches)
Silt and crushed shells (oyster) (2 inches)
Water at 11.5 feet
1145 WBGP-02S & -02G Sample collected by storm drains at end of Giles Avenue
0-4 feet, ½ recovery, 2.5Y 4/1 Dark gray sand and gravel (GM)
4-8 feet, full recovery, 2.5Y 4/1 Dark gray sand and gravel (GM) (18 inches)
2.5Y 4/1 Dark gray, silt and crushed shell (oyster), bedded, some pink shells (30 inches)
8-12 feet, full recovery, 2.5Y 4/1 Dark gray silt and shells (SM), some interbedded clay lenses, saturated
Water at 7 feet
1245 Sample WBGP-03S & -03G, east of large foundation
0-4 feet, ¾ recovery, 5Y 6/1 gray, silty sand with gravel (SM-GM) fine to medium sand, subround gravel
4-8 feet, full recovery, 5Y 5/1 gray silty sand (SM), with interbedded 1 inch dark brown sand and gravel lens, damp
8-12 feet, ¾ recovery, 2.5Y 4/1 Dark gray, Wet/saturated, silt and crushed shells (oyster) bedded, some pink, multiple ½ to 1 inch clay lenses
Water at 7 feet
1330 Sample WBGP-04S & -04G, south end of large foundation
0-4 feet, ¾ recovery, Dark brown sand and wood (12 inches)
Light gray sand and gravel, petroleum odor (24 inches)
4-8 feet, ½ recovery, light gray sand with gravel, petroleum odor (12 inches)
Dark brown sand and shell (12 inches)
8-12 feet, ½ recovery, Dark brown sand and shell, saturated (24 inches)

HC ID ND

1345 Sample WBGP-06S collected from petroleum odor soil from 0-4 and 4-8 samples of WBGP-04

1430 Sample WBGP-05S & -05G, Railroad track – south, just north of Lagoon end and sprinkler system

0-4 feet, ½ recovery, red bark (2 inches)

Sandy gravel (GM) (12 inches)

2.5Y 4/3 Olive brown silty sand (SM) (12 inches)

4-8 feet, ½ recovery, 2.5 Y 4/3 Olive brown, Silty sand (SM), damp

8-12 feet, ½ recovery, Silty sand (18 inches)

Wood with petroleum odor (6 inches)

12-16 feet, ½ recovery, silty sand, with 1 inch round gravel lens

wood chips with petroleum odor

1445 WBGP-07S taken from 8-12 foot sample because hole did not yield much in recovery

Water at 8 feet

1500 collected Outfall and Seep sediment samples

1530 Departed site after locking gate, called Dave to let him know that we had left the site

1545 Delivered samples to ESN laboratory

Daily Report
Prepared by Christopher J. Hamilton
West Bay – 09 March 2004
PMX 215-4764-001-01-04

0815 Arrive on site, 45 F, slight drizzle,
0820 Paul Stemen, Stemen Environmental arrives on site
0825 Equipment arrives on site, Dave Oakerland opens gate
0930 Start digging WBTP-01, 20 feet south of property line (WBTP-01S & -01G)
Wire conduit and two 4 inch metal pipes uncovered while clearing brush
4 feet light brown sand and clay
6 inches light gray clay with petroleum odor (shoe polish)
6 inches dark brown moist sawdust/wood chips (red/brown)
Water at 5 feet
Called Sandra Matthews to confirm sample to be collected: Collect sample from immediately above water table and note any odors or discolorations.
Sandra requested that we dig just north of test pit to attempt to determine extent of contamination. Moved 5 feet north, towards property line. Test pit revealed same configuration except that a larger amount of gray clay was observed - horizontally.
Sample collected from wood chips, should probable run silica gel cleanup on NWTPH if results are high – will remove organic false positives.
1030 WBTP-02, 30 feet east of WBTP-01 and 20 feet south of property line (WBTP-02S & -02G)
3 feet light brown to tan sand
1 foot light gray clay with petroleum odor
6 inches red/brown wood chips
Water at 5 feet
Sample collected from wood chips for same reason as WBTP-01
1120 WBTP-03S, excavated 40 feet south of WBTP-02
12 feet medium brown silty sand and clay with a 1 to 2 foot gray clay lens at 4 feet, wood at 12 feet, no water in excavation
1200 WBTP-04S, southwest of burner
Creosote piles 12" x 12" x 6 feet
Dark brown top soil 6 inches
Black ash and burnt wood 6 inches
Light gray sand and gravel 9 feet with some grey clay and wood chunks
Strange odor, not quite marine but could be decaying organics
Called Sandra to determine what Fly ash looked like
Water at 10 feet WBTP-ASH
1240 WBTP-05S, northeast of burner
Dark brown top soil 6 inches
Black ash and burnt wood 6 inches – sample collected from this material
Light gray sand and gravel
Collected FLY ASH 1 from sediments along wall northeast of WBTP-05
1300 WBTP-06S, by dock and large foundation
Gray sand and gravel (12 inches)

Light tan sand and gravel (18 inches)
Black wood (6 inches)
Black wood and shells (6 inches)
Water at 4.5 feet
Sump sample collected, Sandra called to let me know that QA duplicates needed to be collected (1 soil, 1 water). Decided to collect duplicate soil from the sump (Sump 2)
1400 WBTP-07S & -07G, Railroad tracks, tide out
Sand and large gravel, strong creosote odor, hole kept collapsing, hard to collect water sample
1430 WBTP-08S, east of pond, gray sand and large gravel (4 feet)
Gray sand (4 feet)
Water at 8 feet
1500 WBTP-09S, west of pond gray sand and large gravel (3 feet)
Water at 3 feet
1515 Collected Pond water sample from eastern part of pond
1645 Finish collecting samples and depart site
1700 Drop samples off at ESN Laboratory

Daily Report
Prepared by Christopher J. Hamilton
West Bay – 10 March 2004
PMX 215-4764-001-01-04

1330 Arrive on site, 50 F, clear
Collect Outfall water sample, and duplicate
Collect Wood sediment sample from areas around wood on beach
Collect Seep water sample
Collect WBNT-01S & -01G from outfall near the northern tip of the property
Observed two seeps just south of the outfall, but not collected
1500 Depart site and deliver samples to ESN Laboratory

GP-04

ESN NORTHWEST CHEMISTRY LABORATORY

WESTBAY-2 PROJECT
Olympia, Washington
Parametrix
Client Project #4767-001

HYDROCARBON IDENTIFICATION BY NWTPH-HCID FOR SOIL

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)	Diesel (mg/kg)	Heavy Oil (mg/kg)	Mineral Oil (mg/kg)
Method Blank	3/9/04	116	nd	nd	nd	nd
WBGP-04S	3/9/04	98	nd	nd	nd	nd
WBGP-05S	3/9/04	92	nd	nd	nd	nd
WBGP-05S Dup	3/9/04	96	nd	nd	nd	nd
Method Detection Limits			20	50	100	100

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Dean Phillips

ESN NORTHWEST CHEMISTRY LABORATORY

WESTBAY-2 PROJECT
Olympia, Washington
Parametrix
Client Project #4767-001

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Soil

Sample Description		Method Blank	WBGP-04S	WBGP-05S	WBGP-05S Dup.	WBGP-06S
Date Sampled			3/8/04	3/8/04	3/8/04	3/8/04
Date Analyzed		3/9/04	3/9/04	3/9/04	3/9/04	3/9/04
	MDL (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Vinyl chloride	0.25	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd
Toluene	0.05	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd
Total Xylenes	0.05	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd
Methylene chloride	0.02	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
cis-1,2-Dichloroethene	0.05	nd	nd	nd	nd	nd
Chloroform	0.05	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.05	nd	nd	nd	nd	nd
Carbon tetrachloride	0.05	nd	nd	nd	nd	nd
1,2-Dichloroethane	0.05	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd
Surrogate Recovery (%)		104	104	80	116	73

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Marilyn Farmer

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

ESN Job Number:	S40309-3
Client:	PARAMETRIX
Client Job Name:	WESTBAY
Client Job Number:	4767-001

Analytical Results

8270, mg/kg		MTH BLK	LCS	WBGP-04S	WBGP-05S	SEEP-1G
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	03/15/04		03/15/04	03/15/04	03/15/04
Date analyzed	Limits	03/15/04	03/15/04	03/15/04	03/15/04	03/15/04
Moisture, %				28%	18%	36%
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		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		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	87%	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		131%	96%	76%	135%	107%
Phenol-d6		108%	78%	25%	96%	50%
Nitrobenzene-d5		131%	112%	122%	129%	127%
2-Fluorobiphenyl		139%	123%	132%	137%	136%
2,4,6-Tribromophenol		103%	65%	73%	102%	97%
4-Terphenyl-d14		143%	127%	132%	138%	148%

Data Qualifiers and Analytical Comments

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

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

ESN Job Number: S40309-3
Client: PARAMETRIX
Client Job Name: WESTBAY
Client Job Number: 4767-001

Analytical Results

8270, mg/kg		MTH BLK	LCS	WBGP-04S	WBGP-05S	SEEP-1G
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	03/15/04		03/15/04	03/15/04	03/15/04
Date analyzed	Limits	03/15/04	03/15/04	03/15/04	03/15/04	03/15/04
Moisture, %				28%	18%	36%
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		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		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	100%	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 NORTHWEST CHEMISTRY LABORATORY

WESTBAY-2 PROJECT
Olympia, Washington
Parametrix
Client Project #4767-001

PCB Analyses of Soil (EPA Method 8082)

Sample Description		Method Blank	WBGP-04S	WBGP-05S	WBGP-05S Dup.
Date Sampled			3/8/04	3/8/04	3/8/04
Date Analyzed		3/9/04	3/9/04	3/9/04	3/9/04
	MDL (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
PCB-1016	0.20	nd	nd	nd	nd
PCB-1221	0.20	nd	nd	nd	nd
PCB-1232	0.20	nd	nd	nd	nd
PCB-1242	0.05	nd	nd	nd	nd
PCB-1248	0.05	nd	nd	nd	nd
PCB-1254	0.05	nd	nd	nd	nd
PCB-1260	0.05	nd	nd	nd	nd
Total	0.05	0.00	0.00	0.00	0.00
Surrogate Recovery (TCMX) (%)		100	86	91	108
Surrogate Recovery (DCBP) (%)		108	92	108	98

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (TCMX) AND (DCBP): 65% - 135%

ANALYSES PERFORMED BY: Marilyn Farmer

ESN NORTHWEST CHEMISTRY LABORATORY

WESTBAY-2 PROJECT
Olympia, Washington
Parametrix
Client Project #4767-001

Pesticide Analyses of Soil (EPA Method 8081)

Sample Description		Method Blank	WBGP-04S	WBGP-05S	WBGP-05S Dup.
Date Sampled		3/8/04	3/8/04	3/8/04	3/8/04
Date Analyzed		3/9/04	3/9/04	3/9/04	3/9/04
	MDL (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
a-BHC	0.001	nd	nd	nd	nd
b-BHC	0.001	nd	nd	nd	nd
g-BHC	0.001	nd	nd	nd	nd
d-BHC	0.001	nd	nd	nd	nd
Heptachlor	0.001	nd	nd	nd	nd
Aldrin	0.001	nd	nd	nd	nd
Heptachlor epoxide	0.001	nd	nd	nd	nd
Endosulfan I	0.001	nd	nd	nd	nd
Dieldrin	0.001	nd	nd	nd	nd
4,4'-DDE	0.001	nd	nd	nd	nd
Endrin	0.001	nd	nd	nd	nd
Endosulfan II	0.001	nd	nd	nd	nd
4,4'-DDD	0.001	nd	nd	nd	nd
Endrin aldehyde	0.001	nd	nd	nd	nd
Endosulfan sulfate	0.001	nd	nd	nd	nd
4,4'-DDT	0.001	nd	nd	nd	nd
Surrogate Recovery (TCMX) (%)		100	86	91	108
Surrogate Recovery (DCBP) (%)		108	92	108	98

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (TCMX) AND (DCBP): 65% - 135%

ANALYSES PERFORMED BY:

Table 5-3. Summary of Metals Analyzed in Soils

Sample Number	Location	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)	Nickel (Ni) EPA 7520 (mg/kg)	Copper (Cu) EPA 7210 (mg/kg)	Thallium (Tl)) EPA 7840 (mg/kg)	Antimony (Sb) EPA 7040 (mg/kg)	Zinc (Zn) EPA 7950 (mg/kg)	Selenium (Se) EPA 7741 (mg/kg)	Mercury (Hg) EPA 7471 (mg/kg)	Barium (Ba) EPA 7080 (mg/kg)
MTCA Method A Soil Cleanup Level		250	2	19	20	NS[a]	NS	NS	NS	NS	NS	NS	2	NS
Seep-1S[b]	Shoreline Seep	9	ND[c]	6	ND	ND	ND	ND	ND	ND	20	ND	ND	ND
Outfall-1S	Outfall	19	ND	ND	ND	ND	ND	ND	ND	ND	200	ND	ND	ND
Outfall-1S Dup	Outfall	16	ND	ND	ND	ND	ND	ND	ND	ND	190	ND	ND	ND
WBGP[d]-01S	North Railroad Tracks	7	ND	6	ND	ND	ND	ND	ND	ND	30	ND	ND	ND
WBGP-04S	Solid Wood, Inc.	6	ND	ND	ND	ND	ND	ND	ND	ND	24	ND	ND	ND
WBGP-05S	South Railroad Track	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBTP[e]-01S	Northern Tip	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBTP-02S	Northern Tip	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBTP-03S	Northern Tip	ND	ND	10	ND	ND	16	ND	ND	ND	ND	ND	ND	ND
WBTP-04S	Wood Handling Area	56	ND	ND	ND	ND	10	46	ND	ND	43	ND	ND	ND
WBTP-ASH	Wood Burner	23	ND	ND	ND	ND	ND	33	ND	ND	69	ND	ND	ND
WBB[f]-Sediment	Wood Burner	8	ND	ND	ND	ND	ND	ND	ND	ND	45	ND	ND	ND
SUMP-2	Solid Wood, Inc. Sump	29	ND	ND	ND	ND	ND	68	ND	ND	43	ND	ND	ND
WBTP-06S	Loading Dock	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBTP-07S	South of Solid Wood, Inc.	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBTP-08S	South of Solid Wood, Inc.	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBTP-09S	South Wood Pile	8	ND	ND	ND	ND	ND	ND	ND	ND	20	ND	ND	ND
SUMP soil	Solid Wood, Inc. Sump	18	ND	ND	ND	ND	ND	55	ND	ND	46	ND	ND	ND
WBNT-01S	Northern Tip	11	ND	ND	ND	ND	ND	ND	ND	ND	20	ND	ND	ND
WBNT[g]-01S Dup	Northern Tip	9	ND	ND	ND	ND	ND	ND	ND	ND	20	ND	ND	ND
WOOD	Shoreline Wood Pile	17	ND	ND	ND	ND	10	ND	ND	ND	23	ND	ND	ND

[a] NS – No standard listed under MTCA Method A.

[c] ND – Not detected.

[b] S – Soil.

[e] WBTP – Test pit.

[d] WBGP – Geoprobe.

[g] WBNT – Outfall near northern tip area.

[f] WBB – Sediment sample near burner area.

ESN NORTHWEST CHEMISTRY LABORATORY

WESTBAY-2 PROJECT
Olympia, Washington
Parametrix
Client Project #4767-001

Hydrocarbon Identification by NWTPH-HCID for Waters

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (ug/l)	Diesel (ug/l)	Heavy Oil (ug/l)	Mineral Oil (ug/l)
Method Blank	3/10/04	109	nd	nd	nd	nd
WBGP-04G	3/10/04	95	nd	nd	nd	nd
Method Detection Limits			250	500	500	500

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Marilyn Farmer & Dean Phillips

ESN NORTHWEST CHEMISTRY LABORATORY

WESTBAY-2 PROJECT
Olympia, Washington
Parametrix
Client Project #4767-001

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Water

Sample Description		Method Blank	WBGP-04G	WBGP-05G
Date Sampled			3/8/04	3/8/04
Date Analyzed		3/11/04	3/11/04	3/11/04
	MDL (ug/l)	(ug/l)	(ug/l)	(ug/l)
Vinyl chloride	5.0	nd	nd	nd
Benzene	1.0	nd	nd	nd
Toluene	1.0	nd	nd	nd
Ethylbenzene	1.0	nd	nd	nd
Total Xylenes	1.0	nd	nd	nd
1,1-Dichloroethene	1.0	nd	nd	nd
Methylene chloride	1.0	nd	nd	nd
trans-1,2-Dichloroethene	1.0	nd	nd	nd
1,1-Dichloroethane	1.0	nd	nd	nd
cis-1,2-Dichloroethene	1.0	nd	nd	nd
Chloroform	1.0	nd	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd	nd
Carbon tetrachloride	1.0	nd	nd	nd
1,2-Dichloroethane	1.0	nd	nd	nd
Trichloroethene (TCE)	1.0	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd
Surrogate Recovery (%)		102	108	83

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Marilyn Farmer

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

ESN Job Number: S40309-3
Client: PARAMETRIX
Client Job Name: WESTBAY
Client Job Number: 4767-001

Analytical Results

8270, µg/L		MTH BLK	LCS	WBGP-04G	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	
Date extracted	Reporting	03/15/04		03/15/04	03/15/04	03/15/04	
Date analyzed	Limits	03/15/04	03/15/04	03/15/04	03/15/04	03/15/04	
Pyridine	1.0	nd		nd			
Analine	1.0	nd		nd			
Phenol*	1.0	nd		nd			
2-Chlorophenol*	1.0	nd		nd			
Bis (2-chloroethyl) ether	1.0	nd		nd			
1,3-Dichlorobenzene	1.0	nd		nd			
1,4-Dichlorobenzene	1.0	nd		nd			
1,2-Dichlorobenzene	1.0	nd		nd			
2-Methylphenol (o-cresol)*	1.0	nd		nd			
Bis (2-chloroisopropyl) ether	5.0	nd		nd			
3,4-Methylphenol (m,p-cresol)*	1.0	nd		nd			
Hexacholorethane	1.0	nd		nd			
N-Nitroso-di-n-propylamine	1.0	nd		nd			
Nitrobenzene	1.0	nd		nd			
Isophorone	1.0	nd		nd			
2-Nitrophenol*	5.0	nd		nd			
4-Nitrophenol*	5.0	nd		nd			
2,4-Dimethylphenol*	1.0	nd		nd			
Bis (2-chloroethoxy) methane	1.0	nd		nd			
2,4-Dichlorophenol*	5.0	nd		nd			
1,2,4-Trichlorobenzene	1.0	nd		nd			
Naphthalene	1.0	nd		nd			
4-Chloroanaline	5.0	nd		nd			
Hexachlorobutadiene	1.0	nd		nd			
4-Chloro-3-methylphenol*	5.0	nd		nd			
2-Methylnapthalene	1.0	nd		nd			
1-Methylnapthalene	1.0	nd		nd			
2,4,6-Trichlorophenol*	5.0	nd		nd			
2,4,5-Trichlorophenol*	5.0	nd		nd			
2-Chloronaphthalene	1.0	nd		nd			
2-Nitroanaline	5.0	nd		nd			
1,4-Dinitrobenzene	5.0	nd		nd			
Dimethylphthalate	1.0	nd		nd			
Acenaphthylene	0.1	nd		nd			
1,3-Dinotrobenzene	5.0	nd		nd			
2,6-Dinitrotoluene	1.0	nd		nd			
1,2-Dinitrobenzene	1.0	nd		nd			
Acenaphthene	0.1	nd	100%	nd	116%	107%	8%
3-Nitroanaline	5.0	nd		nd			
Dibenzofuran	1.0	nd		nd			
2,4-Dinitrotoluene	1.0	nd		nd			
2,4-Dinitrophenol*	5.0	nd		nd			
Fluorene	0.1	nd		nd			
4-Chlorophenylphenylether	1.0	nd		nd			
Diethylphthalate	1.0	nd		nd			
4-Nitroanaline	5.0	nd		nd			
4,6-Dinitro-2-methylphenol*	5.0	nd		nd			

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

ESN Job Number:	S40309-3
Client:	PARAMETRIX
Client Job Name:	WESTBAY
Client Job Number:	4767-001

Analytical Results

8270, µg/L		MTH BLK	LCS	WBGP-04G	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	
Date extracted	Reporting	03/15/04		03/15/04	03/15/04	03/15/04	
Date analyzed	Limits	03/15/04	03/15/04	03/15/04	03/15/04	03/15/04	
N-nitrosodiphenylamine	1.0	nd		nd			
Azobenzene	1.0	nd		nd			
4-Bromophenylphenylether	1.0	nd		nd			
Hexachlorobenzene	1.0	nd		nd			
Pentachlorophenol	5.0	nd		nd			
Phenanthrene	0.1	nd		nd			
Anthracene	0.1	nd		nd			
Carbazole	1.0	nd		nd			
Di-n-butylphthalate	1.0	nd		nd			
Fluoranthene	0.1	nd	101%	nd	128%	115%	11%
Pyrene	0.1	nd		nd			
Butylbenzylphthalate	1.0	nd		nd			
Bis(2-ethylhexyl) adipate	1.0	nd		nd			
Benzo(a)anthracene	0.1	nd		nd			
Chrysene	0.1	nd		nd			
Bis (2-ethylhexyl) phthalate	1.0	nd		nd			
Di-n-octyl phthalate	1.0	nd		nd			
Benzo(b)fluoranthene	0.1	nd		nd			
Benzo(k)fluoranthene	0.1	nd		nd			
Benzo(a)pyrene	0.1	nd	87%	nd	125%	121%	3%
Dibenzo(a,h)anthracene	0.1	nd		nd			
Benzo(ghi)perylene	0.1	nd		nd			
Indeno(1,2,3-cd)pyrene	0.1	nd		nd			
Surrogate recoveries							
2-Fluorophenol*				51.2%			
Phenol-d6*				31.3%			
Nitrobenzene-d5		124%	112%	110%	117%	95%	
2-Fluorobiphenyl		128%	123%	102%	93%	78%	
2,4,6-Tribromophenol*				83.1%			
4-Terphenyl-d14		137%	127%	114%	108%	89%	

*Results by STL

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery Limits (ARL): 50% TO 150%
Acceptable RPD limit: 35%
B - found in Blank
ARL 2-flourophenol: 10%-112%
ARL Phenol-d5: 10%-85%
ARL 2,4,6-Tribromophenol: 29%-159%

#DIV/0!

ESN NORTHWEST CHEMISTRY LABORATORY

WESTBAY-2 PROJECT
Olympia, Washington
Parametrix
Client Project #4767-001

PCB Analyses of Water (EPA Method 8082)

Sample Description		Method Blank	WBGP-04G	WBGP-05G	WBGP-05G Dup.
Date Sampled			3/8/2004	3/8/2004	3/8/2004
Date Analyzed		3/10/2004	3/10/2004	3/10/2004	3/10/2004
	MDL (ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
PCB-1016	1.0	nd	nd	nd	nd
PCB-1221	1.0	nd	nd	nd	nd
PCB-1232	1.0	nd	nd	nd	nd
PCB-1242	1.0	nd	nd	nd	nd
PCB-1248	1.0	nd	nd	nd	nd
PCB-1254	1.0	nd	nd	nd	nd
PCB-1260	1.0	nd	nd	nd	nd
Total	1.0	0.0	0.0	0.0	0.0
Surrogate Recovery (TCMX) (%)		100	86	91	108
Surrogate Recovery (DCBP) (%)		108	92	108	98

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (TCMX) AND (DCBP): 65% -135%

ANALYSES PERFORMED BY: Marilyn Farmer

ESN NORTHWEST CHEMISTRY LABORATORY

WESTBAY-2 PROJECT
Olympia, Washington
Parametrix
Client Project #4767-001

Pesticide Analyses of Water (EPA Method 8081)

Sample Description		Method Blank	WBGP-04G	WBGP-05G	WBGP-05G Dup.
Date Sampled			3/8/2004	3/8/2004	3/8/2004
Date Analyzed		3/10/2004	3/10/2004	3/10/2004	3/10/2004
	MDL (ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
a-BHC	0.05	nd	nd	nd	nd
b-BHC	0.05	nd	nd	nd	nd
g-BHC	0.05	nd	nd	nd	nd
d-BHC	0.05	nd	nd	nd	nd
Heptachlor	0.05	nd	nd	nd	nd
Aldrin	0.05	nd	nd	nd	nd
Heptachlor epoxide	0.05	nd	nd	nd	nd
Endosulfan I	0.05	nd	nd	nd	nd
Dieldrin	0.05	nd	nd	nd	nd
4,4'-DDE	0.05	nd	nd	nd	nd
Endrin	0.05	nd	nd	nd	nd
Endosulfan II	0.05	nd	nd	nd	nd
4,4'-DDD	0.05	nd	nd	nd	nd
Endrin aldehyde	0.05	nd	nd	nd	nd
Endosulfan sulfate	0.05	nd	nd	nd	nd
4,4'-DDT	0.05	nd	nd	nd	nd
Surrogate Recovery (TCMX) (%)		100	86	91	108
Surrogate Recovery (DCBP) (%)		108	92	108	98

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (TCMX) AND (DCBP): 65% -135%

ANALYSES PERFORMED BY: Marilyn Farmer

Table 5-5. Summary of Metals Analyses in Water

Sample Number	Location	Lead (Pb) EPA 6020 (ug/L)	Cadmium (Cd) EPA 6020 (ug/L)	Chromium (Cr) EPA 6020 (ug/L)	Arsenic (As) EPA 6020 (ug/L)	Silver (Ag) EPA 6020 (ug/L)	Nickel (Ni) EPA 6020 (ug/L)	Copper (Cu) EPA 6020 (ug/L)	Thallium (Tl) EPA 6020 (ug/L)	Antimony (Sb) EPA 6020 (ug/L)	Zinc (Zn) EPA 6020 (ug/L)	Selenium (Se) EPA 6020 (ug/L)	Mercury (Hg) EPA 7470 (ug/L)
MTCA Method A		15	5	50	5	NS[a]	NS	NS	NS	NS	NS	NS	2
WBGP[b]-04G[c]	South of Solid Wood, Inc.	ND[d]	ND	3	11.1	ND	1.5	ND	ND	ND	3.57	1.2	ND
WBTP[e]-01G	Northern Tip	0.535	ND	3.57	2.74	ND	2.44	ND	ND	ND	7.89	ND	ND
WBTP-02G	Northern Tip	ND	ND	6.05	0.865	ND	3.85	ND	ND	ND	8.58	ND	ND
SUMP	Solid Wood, Inc. Sump	0.555	ND	1.7	1.89	ND	1.18	2.85	ND	ND	63.9	ND	ND
WBNT[f]-01G	Northern Tip	0.94	ND	ND	1.11	ND	0.79	0.84	ND	ND	7.35	2.6	ND
OUTFALL	Outfall	ND	ND	0.69	0.945	ND	1.06	0.93	ND	ND	13.7	1.21	ND
OUTFALL 2	Outfall	ND	ND	1.35	1.05	ND	0.515	ND	ND	ND	2.14	1.01	ND
SEEP	Seep	ND	ND	0.805	1.11	ND	1.45	0.58	ND	ND	9.91	2.17	ND
POND	South Pond	0.805	ND	3.76	3.61	ND	4.72	10.6	ND	ND	15.8	ND	ND
WBTP-07G	South of Solid Wood, Inc	ND	ND	1.92	6.98	ND	2.71	4.22	ND	ND	7.72	ND	ND

[a] NS – No standard listed under MTCA Method A.

[b] WBGP – Geoprobe.

[c] G – Groundwater.

[d] ND – Not detected.

[e] WBTP – Test pit.

[f] WBNT – Outfall near northern tip.

ESN NORTHWEST CHEMISTRY LABORATORY

WESTBAY PROJECT
Olympia, Washington
Parametrix
Client Project #4767-001

Hydrocarbon Identification by NWTPH-HCID for Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)	Diesel (mg/kg)	Heavy Oil (mg/kg)	Mineral Oil (mg/kg)
Method Blank	3/15/04	115	nd	nd	nd	nd
Method Blank	3/16/04	91	nd	nd	nd	nd
WBTP-04S	3/16/04	93	nd	nd	nd	nd
WBTP-ASH	3/16/04	98	nd	nd	nd	nd
WBB-Sediment	3/16/04	91	nd	nd	nd	nd
WBB-Sediment Dup.	3/16/04	93	nd	nd	nd	nd
SUMP 2	3/16/04	108	nd	nd	nd	nd
WBTP-06S	3/16/04	91	nd	nd	D	nd
WBTP-07S	3/16/04	86	nd	nd	nd	nd
SUMP (soil)	3/16/04	105	nd	nd	nd	nd
WBNT-01S	3/15/04	65	nd	nd	nd	nd
WOOD	3/15/04	87	nd	nd	nd	nd
Method Detection Limits			20	50	100	100

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Marilyn Farmer & Dean Phillips

TP-06

5.2 GEOPHYSICAL SURVEY

No underground structures were detected by the survey. Some pieces of buried debris were identified. However, no typical structures of environmental concerns such as USTs were identified. The Phase I SA indicated that a UST used to store leaded gasoline existed on the site and was closed in place. However, no UST structures were detected by the geophysical survey. Therefore, the UST may have been removed. The wood debris in the southern area of the site was determined to be at least 5 feet thick. Data from the geophysical survey are provided in Appendix D.

5.3 CHEMICAL ANALYSES

This section presents results of laboratory analysis of chemicals in each media sampled. Results are compared to the MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses (hereafter referenced as "Method A Cleanup Levels"). In the majority of samples, chemicals were reported as being below analytical detection levels; and in most cases, chemicals were below the MTCA Method A Cleanup Levels. The following sections primarily focus on areas where chemicals were measured above the analytical detection limits. A full chemical analysis data report for each sample is included in Appendix B.

5.3.1 Soil

No pesticides, PCBs, PAHs, or VOCs were detected in the soils.

Approximately nine soil samples were sent for hydrocarbon identification analysis (HCID). Two samples, WBGP-01S and WBTP-06S, showed detections in the heavy oil fraction. These two samples were sent with three other samples for NWTPH-Dx analysis. The results indicated 260 mg/kg of heavy oil in WBGP-01S and 1,600 mg/kg of heavy oil in WBTP-06S (see Table 5-1). Two of the other three samples had detections of 570 mg/kg of diesel for WBTP-01S and 1,100 mg/kg of diesel in WBTP-02S. All of the detected hydrocarbons are below the MTCA Method A Soil Cleanup Level of 2,000 mg/kg.

Table 5-1. Summary of Total Petroleum Hydrocarbons (TPH) Analyses in the Soil

Sample Number	Location	Diesel (mg/kg)	Heavy Oil (mg/kg)	Mineral Oil (mg/kg)
MTCA Method A Soil Cleanup Level	—	2,000	2,000	4,000
WBTP[a]-01S[b]	Northern Tip	570	ND[c]	ND
WBTP-02S	Northern Tip	1,100	ND	ND
WBTP-03S	Northern Tip	ND	ND	ND
WBTP-06S	Loading Dock	ND	1,600	ND
WBGP[d]-01S	North Railroad Tracks	ND	260	ND

[a] WBTP – Test pit.

[b] S – Soil.

[c] ND – Not Detected

[d] WBGP – Geoprobe.

Table 5-3. Summary of Metals Analyzed in Soils

Sample Number	Location	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)	Nickel (Ni) EPA 7520 (mg/kg)	Copper (Cu) EPA 7210 (mg/kg)	Thallium (Tl)) EPA 7840 (mg/kg)	Antimony (Sb) EPA 7040 (mg/kg)	Zinc (Zn) EPA 7950 (mg/kg)	Selenium (Se) EPA 7741 (mg/kg)	Mercury (Hg) EPA 7471 (mg/kg)	Barium (Ba) EPA 7080 (mg/kg)
MTCA Method A Soil Cleanup Level		250	2	19	20	NS[a]	NS	NS	NS	NS	NS	NS	2	NS
Seep-1S[b]	Shoreline Seep	9	ND[c]	6	ND	ND	ND	ND	ND	ND	20	ND	ND	ND
Outfall-1S	Outfall	19	ND	ND	ND	ND	ND	ND	ND	ND	200	ND	ND	ND
Outfall-1S Dup	Outfall	16	ND	ND	ND	ND	ND	ND	ND	ND	190	ND	ND	ND
WBGP[d]-01S	North Railroad Tracks	7	ND	6	ND	ND	ND	ND	ND	ND	30	ND	ND	ND
WBGP-04S	Solid Wood, Inc.	6	ND	ND	ND	ND	ND	ND	ND	ND	24	ND	ND	ND
WBGP-05S	South Railroad Track	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBTP[e]-01S	Northern Tip	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBTP-02S	Northern Tip	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBTP-03S	Northern Tip	ND	ND	10	ND	ND	16	ND	ND	ND	ND	ND	ND	ND
WBTP-04S	Wood Handling Area	56	ND	ND	ND	ND	10	46	ND	ND	43	ND	ND	ND
WBTP-ASH	Wood Burner	23	ND	ND	ND	ND	ND	33	ND	ND	69	ND	ND	ND
WBB[f]-Sediment	Wood Burner	8	ND	ND	ND	ND	ND	ND	ND	ND	45	ND	ND	ND
SUMP-2	Solid Wood, Inc. Sump	29	ND	ND	ND	ND	ND	68	ND	ND	43	ND	ND	ND
WBTP-06S	Loading Dock	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBTP-07S	South of Solid Wood, Inc.	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBTP-08S	South of Solid Wood, Inc.	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBTP-09S	South Wood Pile	8	ND	ND	ND	ND	ND	ND	ND	ND	20	ND	ND	ND
SUMP soil	Solid Wood, Inc. Sump	18	ND	ND	ND	ND	ND	55	ND	ND	46	ND	ND	ND
WBNT-01S	Northern Tip	11	ND	ND	ND	ND	ND	ND	ND	ND	20	ND	ND	ND
WBNT[g]-01S Dup	Northern Tip	9	ND	ND	ND	ND	ND	ND	ND	ND	20	ND	ND	ND
WOOD	Shoreline Wood Pile	17	ND	ND	ND	ND	10	ND	ND	ND	23	ND	ND	ND

[a] NS – No standard listed under MTCA Method A.

[c] ND – Not detected.

[b] S – Soil.

[e] WBTP – Test pit.

[d] WBGP – Geoprobe.

[g] WBNT – Outfall near northern tip area.

[f] WBB – Sediment sample near burner area.

ESN NORTHWEST CHEMISTRY LABORATORY

WESTBAY PROJECT
Olympia, Washington
Parametrix
Client Project #4767-001

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Soil

Sample Description		Method Blank	Sump-2	WBTP-06S	WBTP-06S Dup.	WBTP-07S	Sump
Date Sampled			3/9/04	3/9/04	3/9/04	3/9/04	3/9/04
Date Analyzed		3/12/04	3/12/04	3/12/04	3/12/04	3/12/04	3/12/04
	MDL (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Vinyl chloride	0.25	nd	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.05	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd	nd
Total Xylenes	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.01	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.05	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Chloroform	0.05	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.05	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.05	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	0.05	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
Surrogate Recovery (%)		98	122	98	115	111	66

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Marilyn Farmer

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

ESN Job Number: S40312-2
Client: PARAMETRIX
Client Job Name: WESTBAY
Client Job Number: 4767

Analytical Results

8270, mg/kg		MTH BLK	LCS	SUMP	WBTP-06S	WBTP-07S
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	03/15/04		03/15/04	03/15/04	03/15/04
Date analyzed	Limits	03/15/04	03/15/04	03/15/04	03/15/04	03/15/04
Moisture, %				86%	13%	7%
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		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		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	100%	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
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

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

ESN Job Number: S40312-2
Client: PARAMETRIX
Client Job Name: WESTBAY
Client Job Number: 4767

Analytical Results

8270, mg/kg		MTH BLK	LCS	SUMP	WBTP-08S	WBTP-07S
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	03/15/04		03/15/04	03/15/04	03/15/04
Date analyzed	Limits	03/15/04	03/15/04	03/15/04	03/15/04	03/15/04
Moisture, %				86%	15%	7%
N-nitrosodiphenylamine	1.0	nd		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		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	87%	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		131%	96%	108%	125%	67%
Phenol-d6		108%	78%	57%	72%	50%
Nitrobenzene-d5		131%	112%	128%	129%	90%
2-Fluorobiphenyl		139%	123%	132%	137%	91%
2,4,6-Tribromophenol		103%	65%	96%	88%	68%
4-Terphenyl-d14		143%	127%	150%	130%	97%

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

WESTBAY PROJECT
Olympia, Washington
Parametrix
Client Project #4767-001

Pesticide Analyses of Soil (EPA Method 8081)

Sample Description		Method Blank	WBTP-06S	WBTP-06S Dup.	WBTP-07S
Date Sampled			3/9/2004	3/9/2004	3/9/2004
Date Analyzed		3/15/2004	3/15/2004	3/15/2004	3/15/2004
	MDL (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
a-BHC	0.001	nd	nd	nd	nd
b-BHC	0.001	nd	nd	nd	nd
g-BHC	0.001	nd	nd	nd	nd
d-BHC	0.001	nd	nd	nd	nd
Heptachlor	0.001	nd	nd	nd	nd
Aldrin	0.001	nd	nd	nd	nd
Heptachlor epoxide	0.001	nd	nd	nd	nd
Endosulfan I	0.001	nd	nd	nd	nd
Dieldrin	0.001	nd	nd	nd	nd
4,4'-DDE	0.001	nd	nd	nd	nd
Endrin	0.001	nd	nd	nd	nd
Endosulfan II	0.001	nd	nd	nd	nd
4,4'-DDD	0.001	nd	nd	nd	nd
Endrin aldehyde	0.001	nd	nd	nd	nd
Endosulfan sulfate	0.001	nd	nd	nd	nd
4,4'-DDT	0.001	nd	nd	nd	nd
Surrogate Recovery (TCMX) (%)		88	105	120	123
Surrogate Recovery (DCBP) (%)		101	110	104	88

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (TCMX) AND (DCBP): 65% - 135%

ANALYSES PERFORMED BY: Marilyn Farmer

ATTACHMENT 4

2007 Phase II ESA Data

Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-021
PROJECT NAME Westbay Bail SPar Phase II
LOCATION Olympia WA
COORDINATES N/A
DRILLING METHOD Direct Push
SAMPLING METHOD Split Spoon
GROUND ELEVATION Sea level

BORING/WELL NUMBER # SB-04
DATE COMPLETED 2907
TOTAL DEPTH OF BORING 8 Ft
INITIAL WATER LEVEL ▽ 4 Ft
STATIC WATER LEVEL ▼ N/A
LOGGED BY Bethune
TOP OF CASING ELEVATION NA

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		36/48		Ballast	0		Ballast	0-18" R. Road Balast 18-36" Sand, SW, 10YR 4/2 NP; Sand = Fine → course Gravel = Fine → med, DAMP Black discoloration @ 33" to 24" 33-36" mild Petroleum odor.	0	Bentonite chip Backfill
			SB-4-03 SB-4-04 SB-4-S24		5		Sand		5	
		36/48			10			Gravel SW 10YR 4/2 75% Gravel, 25% Sand 0-24" Gravel Same as Above 24-48", Sand, SW, 10YR 4/2 → 10YR 4/1, Rest is same as above. Shells Bottom 18"	10	
					15				15	
					20				20	
					25				25	

Continued Next Page

BWC BLANK 2/4/99

Table 5-1. West Jackson Street to Bowman Avenue Soil Results

			Depth (ft bgs):	Boring Location								Surface Sample Location
				SB-01	SB-02	SB-03	SB-04	SB-05	SB-05 (dup)	SB-06	SB-07	SS-11
	Analyte	MTCA A	Units	2	2	3	3	8	8	2	2	0
Petroleum	Motor Oil	2000	mg/kg	270	ND	1100	46JB	4900B	350B	1700	2400	120B
	Diesel	2000	mg/kg	70B	17JB	220B	20JB	2400B	170B	380B	270B	19JB
Pesticides	Aldrin	NS	ug/kg	ND*	ND*	ND*	ND*	ND*	ND*	0.33J*	ND*	0.14J*
	alpha-BHC	NS	ug/kg	0.66J	0.42J	ND	0.28J	ND	ND	0.36J	ND	0.16J
	beta-BHC	NS	ug/kg	0.48J*	ND*	0.8J*	0.23J	ND*	ND*	0.86J*	ND*	0.8J*
	delta-BHC	NS	ug/kg	0.3J	ND	ND	ND	ND	ND	0.37J	ND	ND
	gamma-BHC (Lindane)	10	ug/kg	0.69J*	ND*	ND*	0.8J*	ND*	ND	0.32J*	ND*	0.34J*
	4,4'-DDD	NS	ug/kg	0.52J	0.47J*	4.8J*	0.91J*	ND	ND	1.9J*	ND*	ND*
	4,4'-DDE	NS	ug/kg	ND*	ND*	ND*	0.95J	14J*	1J*	1.5J	ND*	ND*
	4,4'-DDT	3,000	ug/kg	0.34J	0.4J	ND	0.33J	ND	ND	0.57J	ND	0.64J
	Endosulfan I	NS	ug/kg	ND*	ND*	ND*	0.18J*	ND*	ND*	ND*	ND*	ND*
	Endosulfan II	NS	ug/kg	ND	ND	2.2J	ND	ND	ND	ND	ND	ND
	Endosulfan sulfate	NS	ug/kg	ND	ND	ND	ND	ND	ND	0.40J	ND	ND
	Endrin aldehyde	NS	ug/kg	ND	ND	2.1J	ND	ND	ND	ND	ND	0.36J
	Heptachlor	NS	ug/kg	0.16J*	ND*	ND*	0.26J*	ND*	ND*	0.32J*	ND*	ND*
	Heptachlor epoxide	NS	ug/kg	0.41J*	0.17J*	ND*	0.23J*	ND*	ND*	0.17J*	ND*	0.21J*
	Endrin ketone	NS	ug/kg	ND*	ND*	ND*	ND*	ND*	ND*	ND*	3.1J*	ND*
	gamma-Chlordane	NS	ug/kg	0.19J*	0.27J*	ND*	ND*	ND*	ND*	ND*	ND*	0.38J*

(Table Continues)

Table 5-1. West Jackson Street to Bowman Avenue Soil Results
(Continued)

				Boring Location								Surface Sample Location
			Depth (ft bgs):	SB-01	SB-02	SB-03	SB-04	SB-05	SB-05 (dup)	SB-06	SB-07	SS-11
	Analyte	MTCA A	Units	2	2	3	3	8	8	2	2	0
PCBs	PCB-1260	10	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	0.011J
Herbicides	Pentachlorophenol	NC	ug/kg	ND	ND	250	ND	ND	ND	ND	ND	ND
PAHs	Naphthalene	5,000	ug/kg	270	0.56J	280	110	40	5.4J	940	94	1.5J
	2-Methylnaphthalene	NC	ug/kg	130	0.43J	310	52	ND	100	180	54	1.1J
	1-Methylnaphthalene	NC	ug/kg	76	0.32J	160	32	ND	78	110	36	0.64J
	Acenaphthylene	NC	ug/kg	37	0.26J	41	13	ND	4J	300	15	3.8J
	Acenaphthene	NC	ug/kg	24	ND	29	17	ND	26	48	14	ND
	Fluorene	NC	ug/kg	24	0.24J	35	17	390	34	67	22	1.1J
	Phenanthrene	NC	ug/kg	250B	1.1JB	280B	100B	ND	40B	500B	110B	4.2JB
	Anthracene	NC	ug/kg	41B	0.34JB	93B	22B	ND	12B	38B	10B	6.2JB
	Fluoranthene	NC	ug/kg	270B	0.69JB	280B	130B	250B	20B	470B	100B	11B
	Pyrene	NC	ug/kg	180B	0.81JB	260B	96B	440B	45B	440B	94B	8.9B
	Benzo[g,h,i]perylene[a]	NC	ug/kg	77	3.2J	120	21	21	9.4	30	46	9.8
	Benzo[a]anthracene[a]	*	ug/kg	49	ND	88	32	300	13	31	ND	3.1J
	Chrysene[a]	*	ug/kg	83	ND	170	64	730	60	51	300	9
	Benzofluoranthene[a]	*	ug/kg	98	ND	180	71	ND	18	58	110	16
	Benzo[a]pyrene[a]	100	ug/kg	39	3.5J	96	35	110	18	24	37	8.3
	Indeno[1,2,3-cd]pyrene[a]	*	ug/kg	71	4.2J	110	28	ND	9.7	21	38	13
	Dibenz(a,h)anthracene[a]	*	ug/kg	14	4.1J	26	7.7	4.1J	8.7	8.5	22	7

(Table Continues)

Table 5-1. West Jackson Street to Bowman Avenue Soil Results (Continued)

				Boring Location								Surface Sample Location
			Depth (ft bgs):	SB-01	SB-02	SB-03	SB-04	SB-05	SB-05 (dup)	SB-06	SB-07	SS-11
	Analyte	MTCA A	Units	2	2	3	3	8	8	2	2	0
PAHs	Total cPAHs as Benzo[a]pyrene**	100	ug/kg	67.23	5.56	145.9	51.82	148.94	24.35	38.91	63.6	14.4
Metals	Arsenic	20	mg/kg	2.8	2J	5.3	1.5J	2J	1.7J	3.9	3.1	ND
	Antimony	NC	mg/kg	2.4J	1.2J	5.5	2.3J	ND	ND	7.7	2.1	2.2J
	Beryllium	0.6	mg/kg	0.1	0.16	0.18	0.097	0.044J	0.046J	0.086	0.15	ND
	Cadmium	2	mg/kg	0.11J	0.015J	0.18J	ND	0.43	0.15J	0.54	0.11J	0.11J
	Chromium	19	mg/kg	12B	20B	17B	9.5B	9.3B	8.3B	19B	25B	16B
	Copper	NC	mg/kg	44B	21B	130B	41B	4.5B	4.4B	71B	41B	67B
	Lead	250	mg/kg	120B	4.8B	110B	30B	0.88B	1.3B	110	30	13B
	Nickel	NC	mg/kg	20	12	46	13	9.2	10	21B	31B	24
	Selenium	NC	mg/kg	1.6J	0.57J	2.3J	0.48J	ND	ND	3.2	2.8	1.9J
	Zinc	NC	mg/kg	110B	29B	84B	33B	15B	17B	200B	61B	98B
	Mercury	2	mg/kg	0.036	0.019J	1.1	0.085	ND	ND	0.038	0.032	0.016J

NOTES:

Exceeds MTCA A Concentration

J = Analyte detected at an estimated concentration

B = Analyted detected in laboratory blank

ND = Not Detected

NC = No cleanup level listed under MTCA

a = Carcinogenic PAH

* = Cleanup level determined by toxicity equivalency method (not shown here)

** = Total of individual cPAHs multiplied by benzo(a)pyrene toxicity equivalency factor

Table 5-2. West Jackson Street to Bowman Avenue Groundwater Results

	Analyte	MTCA	Depth (ft bgs): Units	Boring Location				
				SB-01	SB-03	SB-04	SB-04-dup	SB-05
				8	9	4	4	9
Petroleum	Motor Oil	0.5	mg/l	0.21JB	2.7B	2.2B	1.5B	28B
	Diesel	0.8	mg/l	0.096JB	1.1B	0.39B	0.28B	10B
	Gasoline	0.5	mg/l	NA	NA	NA	NA	0.057
Pesticides	alpha-BHC	NC	ug/L	ND	0.0022J	ND	ND	NA
	beta-BHC	NC	ug/L	ND	0.026	0.0068J	0.0031J	NA
	delta-BHC	NC	ug/L	ND	0.011	0.0074J	ND	NA
	gamma-BHC (Lindane)	0.2	ug/L	ND	0.0021J	ND	ND	NA
	4,4'-DDD	NC	ug/L	ND	ND	0.0037J	ND	NA
	4,4'-DDT	0.3	ug/L	ND	0.014J	0.0058J	0.034	NA
	Dieldrin	NC	ug/L	ND	0.0039J	ND	ND	NA
	Endosulfan II	NC	ug/L	ND	ND	0.0037J	ND	NA
	Endosulfan sulfate	NC	ug/L	ND	0.0078J	ND	ND	NA
	Endrin aldehyde	NC	ug/L	ND	ND	0.0051J	0.0045J	NA
	Methoxychlor	NC	ug/L	ND	0.027J	0.0054J	0.019J	NA
	alpha-Chlordane	NC	ug/L	ND	0.0023J	ND	ND	NA
	gamma-Chlordane	NC	ug/L	ND	0.0044J	ND	ND	NA
PAHs	Naphthalene	160	ug/L	0.028JB	0.074JB	0.59B	0.73B	NA
	2-Methylnaphthalene	NC	ug/L	0.02JB	0.036JB	0.31B	0.35B	NA
	1-Methylnaphthalene	NC	ug/L	ND	ND	0.32	0.33	NA

(Table Continues)

Table 5-2. West Jackson Street to Bowman Avenue Groundwater Results (Continued)

	Analyte	MTCA	Depth (ft bgs): Units	Boring Location: SB-01	SB-03	SB-04	SB-04-dup	SB-05
				8	9	4	4	9
	Acenaphthylene	NC	ug/L	ND	0.02J	0.054J	0.065J	NA
	Acenaphthene	NC	ug/L	0.09JB	0.029JB	1.8B	1.8B	NA
	Fluorene	NC	ug/L	0.031J	0.46	1.2	1.1	NA
	Phenanthrene	NC	ug/L	0.027JB	0.066JB	0.96B	0.91B	NA
	Anthracene	NC	ug/L	0.013J	0.053J	0.22	0.21	NA
	Fluoranthene	NC	ug/L	0.021J	0.079J	1.3	1.3	NA
	Pyrene	NC	ug/L	0.019J	0.072J	0.98	0.91	NA
	Benzo[g,h,i]perylene[a]	NC	ug/L	0.029J	0.052J	0.09J	0.097	NA
	Benzo[a]anthracene[a]	*	ug/L	ND	ND	0.28	0.28	NA
	Chrysene[a]	*	ug/L	ND	0.093J	0.33	0.32	NA
	Benzofluoranthene[a]	*	ug/L	ND	0.046J	0.34	0.35	NA
	Benzo[a]pyrene[a]	0.1	ug/L	ND	ND	0.17J	0.17J	NA
	Indeno[1,2,3-cd]pyrene[a]	*	ug/L	0.036J	0.06J	0.12	0.12	NA
	Dibenz(a,h)anthracene[a]	*	ug/L	0.037J	0.049J	0.051J	0.055J	NA
	Total cPAHs as Benzo[a]pyrene	0.1	ug/L	0.0184	0.01913	0.2677	0.2702	
Metals	Beryllium	NC	mg/l	ND	0.00074J	0.00022J	0.00024J	NA
	Chromium	0.5	mg/l	0.0012J	0.093	0.016	0.019	NA
	Copper	NC	mg/l	ND	0.16B	0.1B	0.11B	NA
	Nickel	NC	mg/l	0.0014JB	0.51B	0.038B	0.043B	NA
	Zinc	NC	mg/l	ND	0.19	0.031	0.035	NA

(Table Continues)

Table 5-2. West Jackson Street to Bowman Avenue Groundwater Results (Continued)

Analyte	MTCA	Depth (ft bgs): Units	Boring Location				
			SB-01	SB-03	SB-04	SB-04-dup	SB-05
			8	9	4	4	9
Arsenic	.005	mg/l	ND	0.0091	ND	ND	NA
Antimony	NC	mg/l	0.00034JB	0.0034B	0.0034B	0.0039B	NA
Cadmium	.005	mg/l	ND	0.0051	0.00007J	ND	NA
Lead	.015	mg/l	0.00065J	0.13	0.036	0.038	NA
Selenium	NC	mg/l	ND	0.0021	ND	ND	NA
Thallium	NC	mg/l	ND	0.00062J	0.000075J	0.000075J	NA
Mercury	.002	mg/l	ND	0.00035	ND	ND	NA

NOTES:

Exceeds MTCA A Concentration

J = Analyte detected at an estimated concentration

B = Analyted detected in laboratory blank

ND = Not detected

NC = No cleanup level listed under MTCA

a = Carcinogenic PAH

NA = Not analyzed

* = Cleanup level determined by toxicity equivalency method (not shown here)

** = Total of individual cPAHs multiplied by benzo(a)pyrene toxicity equivalency factor

ATTACHMENT 5

RI/FS Data

Parametrix, Inc.

0852-0910

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024
PROJECT NAME West Bay
LOCATION
COORDINATES
DRILLING METHOD Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-25
DATE COMPLETED 5/27/08
TOTAL DEPTH OF BORING 12 ft
INITIAL WATER LEVEL ▽ 8 ft
STATIC WATER LEVEL ▽
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		9/48					Asphalt	Bark debris 0-2" 2-12" Black asphalt, SB/F		
							Fill	12"-48" Brn fill, rounded to angular gravel mix w/ sand base (brn) Black staining @ 3.5-4ft, mild odor, moist		
		48/48			5			Brn sand gravel fill, 4-5 ft, moist, no odor	5	Bentonite Backfill
							SW	5-7ft Brn sand (f-c), 50% shell, moist, 6" layer @ 6.5-7ft solid shell, no odor		
							▽	7-12 ft, gray sand, native, 25-50% shell, no odor		
		12/48			10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

0940

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024
PROJECT NAME West Bay
LOCATION
COORDINATES
DRILLING METHOD Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-26
DATE COMPLETED 5/27/08
TOTAL DEPTH OF BORING 12 ft
INITIAL WATER LEVEL ▽ 7.5 ft
STATIC WATER LEVEL ▽
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		24/48			0	Fill		0-2" Asphalt 2-6" fill, gray-brn, dry; angular gravel w/ sand & silt 6"-3ft Remove piling, strong petro odor 3-5' gravel fill; gray-brn, mild petro odor, moist	0	
		48/48			5	SW		5-6.5 ft brn sand, SW, NP, (f-m), moist to wet, no odor 6.5-12 ft gray sand, SW, NP, wet to moist, 50% shell, areas of silt w/ grass & organic debris, no odor	5	Bentonite Backfill
		48/48			10				10	
					15				15	
					20				20	
					25				25	

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BWC BLANK 2/4/99

Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1977-024
PROJECT NAME West Bay
LOCATION
COORDINATES
DRILLING METHOD Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-27
DATE COMPLETED 5/27/03
TOTAL DEPTH OF BORING 12ft
INITIAL WATER LEVEL ▽ 6ft
STATIC WATER LEVEL ▽
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		36/48				ballast		0-6" ballast 6"-3.5ft fill, sand and gravel, angular moist @ bottom; mild petro odor		
						Fill		3.5-4 piling or RR tie		
						piling/RR tie fill		4-5 fill gray to brn gravel, mild petro odor 5-5.5 brn organic layer w/ roots & organic odor		Bentonite Backfill
		42/48			5		▽		5	
						SW		5.5-12 gray sand, SW, NP, (f-m) wet @ 12ft, shell ~ 50%, silt layers interbedded, no odor, slow drill occassional		
		48/48			10				10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024
PROJECT NAME West Bay
LOCATION
COORDINATES
DRILLING METHOD Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-28
DATE COMPLETED 5/27/08
TOTAL DEPTH OF BORING 12 ft
INITIAL WATER LEVEL ▽ 7 ft
STATIC WATER LEVEL ▽
LOGGED BY L. Lundt
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		36/48				Fill		0-3.5 ft fill, gray gravel angular to round, dry, petro odor @ 0.5 ft & 1 ft bgs		
						Organic		3.5-4 ft, organic layer, dk brn silty w/ plant debris & grass, organic odor		
		44/48			5	Fill		4-5 ft fill, gray gravel, rounded	5	Bentonite Backfill
						SW	▽	Slight odor @ 5 ft, visibly dk in color		
		48/48			10			5-12 ft, sand, SW, gray, NP, f-m, wet @ 7 ft, silt interbedded, ~5% shell fragments & sawdust (assumed) @ 11.5 ft	10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024 | BORING/WELL NUMBER # SB-29
PROJECT NAME West Bay | DATE COMPLETED 5/27/08
LOCATION | TOTAL DEPTH OF BORING 12 ft
COORDINATES | INITIAL WATER LEVEL ▽ 6.5 ft
DRILLING METHOD Direct Push | STATIC WATER LEVEL ▽
SAMPLING METHOD | LOGGED BY L. Linde
GROUND ELEVATION | TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		24/48			0	Ballast		0-6" Ballast w/ organic debris/topsoil	0	
						Piling or RR tie		6"-3.5 ft Piling, petro odor		
								3.5 ft-6.5 gravel fill material, visibly stained, overwhelming petro odor 3.5-4ft sm rounded gravel & sand		
		24/48			5	Fill		6.5-12ft Sand, SW, gray, NP, f-c, wet @ 6.5 ft, shell 5%	5	Bentonite Backfill
		48/48			10	SW			10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024
PROJECT NAME West Bay
LOCATION
COORDINATES
DRILLING METHOD Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-30
DATE COMPLETED 5/27/08
TOTAL DEPTH OF BORING 12 ft
INITIAL WATER LEVEL ▽ 8 ft
STATIC WATER LEVEL ▽
LOGGED BY L. Little
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		24/48				Topsoil / Piling or debris		0-6" Topsoil & ballast, dry 6"-3ft piling/debris, strong to overwhelming petro odor		
		24/48			5	Fill		3-6ft fill gravel, gray with significant black discoloration & strong to overwhelming petro odor, moist 6-7ft, gravel, gravel fill, tan to gray, slight odor	5	Bentonite Backfill
		40/48			10	SW		7-12ft gray sand, SW, shell ~50%, organic odor, silt interbedded	10	
					15				15	
					20				20	
					25				25	

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Parametrix, Inc.

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 235-1577-024
PROJECT NAME West Bay
LOCATION
COORDINATES
DRILLING METHOD Direct Push
SAMPLING METHOD
GROUND ELEVATION

BORING/WELL NUMBER # SB-31
DATE COMPLETED 5/27/08
TOTAL DEPTH OF BORING 12ft
INITIAL WATER LEVEL ▽ 10ft
STATIC WATER LEVEL ▽
LOGGED BY L. Linde
TOP OF CASING ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID.	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	DESCRIPTION SOIL: Group Name, Group Symbol, Color, Plasticity, Grain Size, Moisture Content, Density/Compaction, Miscellaneous	DEPTH (ft.)	WELL DIAGRAM
		48/48				topsoil / Fill		0-2" top soil 2"-5ft grayish gravel fill with sand, sm rounded gravel, moist, mild petro odor @2ft		
		44/48			5	SW ▽		5ft-12ft Sand, SW, gray; wet @ 5ft silt interbedded, mod mdl shell to 9ft then heavy (>90% shell) w/ decayed organic debris	5	Bentonite Backfill
		24/48			10				10	
					15				15	
					20				20	
					25				25	

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PARAMETRIX, INC. **BORING/WELL CONSTRUCTION LOG**

Project Number 235-1577-024
Project Name West Bay Park
Location See Plan
Coordinates —
Drilling Method Push Probe
Sampling Method " "
Ground Elevation ~79'

Boring/Well Number # SB-[redacted]32
Date Completed 5/28/08
Total Depth of Boring 12'
Initial Water Level 9'
Static Water Level 9'
Logged by D. Dinkuhn
Top of Casing Elevation

PID (ppm)	BLOW COUNTS	RECOVERY (inches)	SAMPLE ID	EXTENT	DEPTH (ft.)	U.S.C.S.	GRAPHIC LOG	GEOLOGIC DESCRIPTION	DEPTH (ft.)	WELL DIAGRAM
		36"			1 2 3 4			0"-4" BRN Topsoil w/wood debris		
		40"			5 6 7 8			4"-5' Gray, sandy gravel, dry, no HC odor		
0.4	(9')	43"			9 10 11 12		V 3	5'-12' Gray, med sand (Fill) w/numerous shells, broken, no odor, (~50%) wet below 9' (in interbeds to 8'		
								BOH @ 12'		
								1545		
								WB-SO-SB29-0090 (9' depth)		
								~~1600~~ 1608		
								WB-GW-SB29-0100 (10' depth)		
								Dx, cPAHs, BTEX, Diss. Pb		

Table 3-1 RI/FS Soil Sample Results Summary

		Push Probe No.	SB-19		SB-20		SB-21		SB-22		SB-24		SB-25	
		Sample Depth (ft):	6.5		5.5		6.5		5		5		3.5	
		Groundwater Depth (ft):	6.5		4		3.5		4		4		8	
PARAMETERS	**Units**	**Date Sampled:**	12/7/07		12/7/07		12/7/07		5/19/08		5/19/08		5/27/08	
		MTCA A												
TOTAL PETROLEUM HYDROCARBONS														
Diesel Range Organics	mg/kg	2000	28.0	U	28.0	U	560.0		-		-		28.0	U
Lube Oil	mg/kg	2000	55.0	U	230		2800		-		-		56.0	U
BTEX									-		-			
Benzene	mg/kg	0.03	-		-		-		-		-		0.02	U
Toluene	mg/kg	7	-		-		-		-		-		0.05	U
Ethylbenzene	mg/kg	6	-		-		-		-		-		0.05	U
Xylenes	mg/kg	9	-		-		-		-		-		0.05	U
CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS									-		-			
Benzo(a)anthracene	mg/kg	-	0.0073	U	0.0075	U	0.022		-		-		0.0074	U
Chrysene	mg/kg	-	0.0073	U	0.0079		0.13		-		-		0.014	
Benzo(b)fluoranthene	mg/kg	-	0.0073	U	0.0075	U	0.027		-		-		0.018	
Benzo(k)fluoranthene	mg/kg	-	0.0073	U	0.0075	U	0.0097		-		-		0.0074	U
Benzo(a)pyrene	mg/kg	0.1	0.0073	U	0.0075	U	0.018		-		-		0.0074	U
Indeno(1,2,3-cd)pyrene	mg/kg	-	0.0073	U	0.0075	U	0.0088	U	-		-		0.0079	
Dibenzo(a,h)anthracene	mg/kg	-	0.0073	U	0.0075	U	0.0088	U	-		-		0.074	U
Total cPAHs as Benzo(a)pyrene*	mg/kg	0.1	0.0056		0.0058		0.0260		-		-		0.011	
METALS														
Antimony	mg/kg	-	-		-		-		7.2	U	6.4	U	-	
Arsenic	mg/kg	20	-		-		-		14	U	13	U	-	
Beryllium	mg/kg	2**	-		-		-		0.72	U	0.64	U	-	
Cadmium	mg/kg	2	-		-		-		0.72	U	0.64	U	-	
Chromium	mg/kg	19/2000 CrVI/CrIII	-		-		-		13		24		-	
Copper	mg/kg	390***	-		-		-		24		12		-	
Lead	mg/kg	250			-		-		11		6.4	U	13	
Mercury	mg/kg	2	-		-		-		0.36	U	0.32	U	-	
Nickel	mg/kg	38**	-		-		-		16		34		-	
Selenium	mg/kg	-	-		-		-		14	U	13	U	-	
Silver	mg/kg	-	-		-		-		0.72	U	0.64	U	-	
Thallium	mg/kg	-	-		-		-		7.2	U	6.4	U	-	
Zinc	mg/kg	410***	-		-		-		44		38		-	

(Table Continues)

Table 3-1 RI/FS Soil Sample Results Summary

PARAMETERS	Units	Push Probe No. / Sample Depth (ft) / Groundwater Depth (ft) / Date Sampled:	MTCA A	SB-26 4 7.5 5/27/08		SB-27 3 6 5/27/08		SB-28 2 7 5/27/08		SB-28 5.5 7 5/27/08		SB-29 4 6.5 5/27/08		SB-30 4 8 5/27/08	
TOTAL PETROLEUM HYDROCARBONS															
Diesel Range Organics	mg/kg		2000	170.0		27.0	U	130.0		29.0	U	65.0		71.0	
Lube Oil	mg/kg		2000	580.0		130.0		460.0		260.0		540.0		240.0	
BTEX															
Benzene	mg/kg		0.03	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
Toluene	mg/kg		7	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Ethylbenzene	mg/kg		6	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Xyelenes	mg/kg		9	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS															
Benzo(a)anthracene	mg/kg		-	0.23		0.0072	U	0.0069	U	0.0078	U	0.46		0.2	
Chrysene	mg/kg		-	0.27		0.0072	U	0.0074		0.013		0.58		0.25	
Benzo(b)fluoranthene	mg/kg		-	0.18		0.0072	U	0.0069	U	0.013		0.4		0.18	
Benzo(k)fluoranthene	mg/kg		-	0.048		0.0072	U	0.0069	U	0.0078	U	0.11		0.046	
Benzo(a)pyrene	mg/kg		0.1	0.086		0.0072	U	0.0069	U	0.0078		0.2		0.089	
Indeno(1,2,3-cd)pyrene	mg/kg		-	0.035		0.0072	U	0.0069	U	0.0084		0.071		0.04	
Dibenzo(a,h)anthracene	mg/kg		-	0.016		0.0072	U	0.0069	U	0.0078		0.035		0.018	
Total cPAHs as Benzo(a)pyrene*	mg/kg		0.1	0.140		0.0054		0.0053		0.0124		0.313		0.140	
METALS															
Antimony	mg/kg		-	-		-		-		-		-		-	
Arsenic	mg/kg		20	-		-		-		-		-		-	
Beryllium	mg/kg		2**	-		-		-		-		-		-	
Cadmium	mg/kg		2	-		-		-		-		-		-	
Chromium	mg/kg		19/2000 CrVI/CrIII	-		-		-		-		-		-	
Copper	mg/kg		390***	-		-		-		-		-		-	
Lead	mg/kg		250	9.1		5.4	U	5.2	U	15.0		5.5	U	26.0	
Mercury	mg/kg		2	-		-		-		-		-		-	
Nickel	mg/kg		38**	-		-		-		-		-		-	
Selenium	mg/kg		-	-		-		-		-		-		-	
Silver	mg/kg		-	-		-		-		-		-		-	
Thallium	mg/kg		-	-		-		-		-		-		-	
Zinc	mg/kg		410***	-		-		-		-		-		-	

(Table Continues)

Table 3-1 RI/FS Soil Sample Results Summary

		Push Probe No.	SB-30 Dup.		SB-31		SB-32		SS-12		SS-13		SS-14	
		Sample Depth (ft):	4		2		9		0.5		0.5		0.5	
		Groundwater Depth (ft):	8		6		9		-		-		-	
PARAMETERS	Units	Date Sampled:	5/27/08		5/27/08		5/28/08		12/7/07		12/7/07		12/7/07	
		MTCA A												
TOTAL PETROLEUM HYDROCARBONS														
Diesel Range Organics	mg/kg	2000	120		50	U	34.0	U	35	U	50.0	U	34.0	U
Lube Oil	mg/kg	2000	330		545		68.0	U	69	U	100.0	U	68.0	U
BTEX														
Benzene	mg/kg	0.03	0.02	U	0.02	U	0.02	U	-		-		-	
Toluene	mg/kg	7	0.05	U	0.05	U	0.05	U	-		-		-	
Ethylbenzene	mg/kg	6	0.05	U	0.05	U	0.05	U	-		-		-	
Xylenes	mg/kg	9	0.05	U	0.05	U	0.05	U	-		-		-	
CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS														
Benzo(a)anthracene	mg/kg	-	0.21		0.0076	U	0.009	U	0.063		0.013	U	0.014	
Chrysene	mg/kg	-	0.27		0.0095		0.009	U	0.13		0.024		0.021	
Benzo(b)fluoranthene	mg/kg	-	0.19		0.0076	U	0.009	U	0.15		0.027		0.017	
Benzo(k)fluoranthene	mg/kg	-	0.049		0.0076	U	0.009	U	0.096		0.015		0.012	
Benzo(a)pyrene	mg/kg	0.1	0.093		0.0076	U	0.009	U	0.084		0.014		0.011	
Indeno(1,2,3-cd)pyrene	mg/kg	-	0.041		0.0076	U	0.009	U	0.078		0.016		0.0091	U
Dibenzo(a,h)anthracene	mg/kg	-	0.018		0.0076	U	0.009	U	0.027		0.013	U	0.0091	U
Total cPAHs as Benzo(a)pyrene*	mg/kg	0.1	0.147		0.0058		0.0068		0.127		0.033		0.016	
METALS														
Lead	mg/kg	250	26.0		5.7	U	6.8	U	-		-		-	

(Table Continues)

Table 3-2. RI/FS Groundwater Sample Results Summary

PARAMETERS	Units	Push Probe No. / Sample Depth (ft) / Groundwater Depth (ft) / Date Sampled:	MTCA A	SB-25 8 8 5/27/08		SB-26 7.5 7.5 5/27/08		SB-27 6 6 5/27/08		SB-28 7 7 5/27/08		SB-29 6.5 6.5 5/27/08		SB-30 8 8 5/27/08	
TOTAL PETROLEUM HYDROCARBONS															
Diesel Range Organics	mg/L		0.5	0.16	U	0.16	U	0.17	U	0.18	U	0.16	U	0.16	U
Lube Oil	mg/L		0.5	0.27	U	0.30	U	0.49		0.31	U	0.29	U	0.28	U
BTEX															
Benzene	ug/L		5	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Toluene	ug/L		1000	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Ethylbenzene	ug/L		700	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Xylenes	ug/L		1000	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS															
Benzo(a)anthracene	ug/L		-	0.012	U	0.011	U	0.011	U	0.011	U	0.010	U	0.011	
Chrysene	ug/L		-	0.012	U	0.011	U	0.011	U	0.011	U	0.010	U	0.010	
Benzo(b)fluoranthene	ug/L		-	0.012	U	0.011	U	0.011	U	0.011	U	0.010	U	0.0097	U
Benzo(k)fluoranthene	ug/L		-	0.012	U	0.011	U	0.011	U	0.011	U	0.010	U	0.0097	U
Benzo(a)pyrene	ug/L		0.1	0.012	U	0.011	U	0.011	U	0.011	U	0.010	U	0.0097	U
Indeno(1,2,3-cd)pyrene	ug/L		-	0.012	U	0.011	U	0.011	U	0.011	U	0.010	U	0.0097	U
Dibenzo(a,h)anthracene	ug/L		-	0.012	U	0.011	U	0.011	U	0.011	U	0.010	U	0.0097	U
Total cPAHs as Benzo(a)pyrene*	ug/L		0.1	0.0091		0.0083		0.0083		0.0083		0.0076		0.0080	
DISSOLVED METALS															
Antimony	ug/L		6***	-		-		-		-		-		-	
Arsenic	ug/L		5	-		-		-		-		-		-	
Beryllium	ug/L		4***	-		-		-		-		-		-	
Cadmium	ug/L		5	-		-		-		-		-		-	
Chromium	ug/L		50	-		-		-		-		-		-	
Copper	ug/L		2.4**	-		-		-		-		-		-	
Lead	ug/L		8.1**	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Mercury	ug/L		0.025**	-		-		-		-		-		-	
Nickel	ug/L		8.2**	-		-		-		-		-		-	
Selenium	ug/L		150**	-		-		-		-		-		-	
Silver	ug/L		1.9**	-		-		-		-		-		-	
Thallium	ug/L		0.47**	-		-		-		-		-		-	
Zinc	ug/L		81**	-		-		-		-		-		-	

(Table Continues)

Table 3-2. RI/FS Groundwater Sample Results Summary

		Push Probe No.	SB-30 Dup.		SB-31		SB-32	
		Sample Depth (ft):	4		6		10	
		Groundwater Depth (ft):	8		6		9	
PARAMETERS	Units	Date Sampled:	5/27/08		5/27/08		5/28/08	
		MTCA A						
TOTAL PETROLEUM HYDROCARBONS								
Diesel Range Organics	mg/L	0.5	0.16	U	0.16	U	0.17	U
Lube Oil	mg/L	0.5	0.28	U	0.52		0.33	U
BTEX								
Benzene	ug/L	5	1.0	U	1.0	U	1.0	U
Toluene	ug/L	1000	1.0	U	1.0	U	1.0	U
Ethylbenzene	ug/L	700	1.0	U	1.0	U	1.0	U
Xylenes	ug/L	1000	1.0	U	1.0	U	1.0	U
CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS								
Benzo(a)anthracene	ug/L	-	0.013		0.010	U	0.013	U
Chrysene	ug/L	-	0.011		0.010	U	0.013	U
Benzo(b)fluoranthene	ug/L	-	0.0096	U	0.010	U	0.013	U
Benzo(k)fluoranthene	ug/L	-	0.0096	U	0.010	U	0.013	U
Benzo(a)pyrene	ug/L	0.1	0.0096	U	0.010	U	0.013	U
Indeno(1,2,3-cd)pyrene	ug/L	-	0.0096	U	0.010	U	0.013	U
Dibenzo(a,h)anthracene	ug/L	-	0.0096	U	0.010	U	0.013	U
Total cPAHs as Benzo(a)pyrene*	ug/L	0.1	0.0081		0.0076		0.0098	
DISSOLVED METALS								
Lead	ug/L	8.1**			2.7		1.0	U

Notes:

cPAHs = Carcinogenic polycyclic aromatic hydrocarbons.

Dup. = Duplicate sample.

MTCA = Model Toxics Control Act.

U = Analyte not detected above given practical quantitation limit.

Shaded Cells = Exceeds screening concentration.

* = Total of individual cPAHs multiplied by benzo(a)pyrene toxicity equivalency factor - 1/2 the reporting limit was used for non-detected concentrations.

** = Washington State surface water Applicable or Relevant and Appropriate Requirement (ARAR).

*** = State and Federal groundwater Maxiumum Contaminant Level (MCL).

- = Not available/not analyzed.

Table 10. Catch Basin Sample Results Summary[1]

PARAMETERS	Units	Catch Basin No. / Sample Depth (ft)[2]: / Date Sampled: / RL	CB-01 0.5 8/12/09		CB-02 0.5 8/12/09		CB-03 0.5 8/12/09		CB-04 3 8/12/09	
TOTAL PETROLEUM HYDROCARBONS										
Diesel Range Organics	mg/kg	2000	30	U	65	U	29	U	75	
Lube Oil Range Organics	mg/kg	2000	60	U	880		77		130	
Gasoline Range Organics	mg/kg	100	7.1	U	5.4	U	5.4	U	11.0	U
METALS										
Chromium	mg/kg	2000	14		17		14		16	
Copper	mg/kg	390	10		18		13		17	
Lead	mg/kg	250	6	U	13		5.9	U	5.5	U
Nickel	mg/kg	38	13		24		15		20	
Zinc	mg/kg	410	21		54		24		80	
VOLATILE ORGANIC COMPOUNDS										
Acetone	mg/kg	-	0.047		0.004	U	0.035		0.038	
Carbon Disulfide	mg/kg	-	0.015		0.0008	U	0.0021		0.00084	U
2-Butanone	mg/kg	-	0.0075		0.004	U	0.0048	U	0.0042	U
1,2,4-Trimethylbenzene	mg/kg	-	0.0012	U	0.0008	U	0.00097	U	0.014	
sec-Butylbenzene	mg/kg	-	0.0012	U	0.0008	U	0.00097	U	0.0010	
p-Isopropyltoluene	mg/kg	-	0.0012	U	0.0008	U	0.00097	U	0.0065	
SEMI-VOLATILE ORGANIC COMPOUNDS										
Phenanthrene	mg/kg	-	0.0079	U	0.014		0.0078	U	0.21	
Fluoranthene	mg/kg	-	0.014		0.017		0.0078	U	0.0073	U
Pyrene	mg/kg	-	0.0095		0.016		0.0078	U	0.0073	U
1-Methylnaphthalene	mg/kg	5	0.0079	U	0.0078	U	0.0078	U	0.16	
2-Methylnaphthalene	mg/kg	5	0.0079	U	0.0078	U	0.0078	U	0.11	
Acenaphthylene	mg/kg	-	0.0079	U	0.0078	U	0.0078	U	0.016	
Acenaphthene	mg/kg	-	0.0079	U	0.0078	U	0.0078	U	0.015	
Fluorene	mg/kg	-	0.0079	U	0.0078	U	0.0078	U	0.08	
CARCINOGENIC POLYNUCLEAR AROMATIC HYDROCARBONS										
Benzo(a)anthracene	mg/kg	-	0.0079	U	0.0078	U	0.0078	U	0.0073	U
Chrysene	mg/kg	-	0.0079	U	0.0130		0.0078	U	0.0073	U
Benzo(b)fluoranthene	mg/kg	-	0.0079	U	0.0091		0.0078	U	0.0073	U
Benzo(k)fluoranthene	mg/kg	-	0.0079	U	0.0078	U	0.0078	U	0.0073	U
Benzo(a)pyrene	mg/kg	0.1	0.0079	U	0.0110		0.0078	U	0.0073	U
Indeno(1,2,3-cd)pyrene	mg/kg	-	0.0079	U	0.0078	U	0.0078	U	0.0073	U
Dibenzo(a,h)anthracene	mg/kg	-	0.0079	U	0.0078	U	0.0078	U	0.0073	U
Total cPAHs as Benzo(a)pyrene[3]	mg/kg	0.1	0.0060	U	0.0136		0.0546	U	0.0055	U

CB-04

Notes:

- No comparative value established.
[1] Only detected analytes are reported for metals and volatile/semi-volatile organic compounds.
[2] Sample depth was recorded from surface of soil under the catch basin.
[3] Total of individual cPAHs multipled by benzo(a)pyrene toxcity equivalency factor - half the practical quantitation limit was used for non-detect values.
cPAHs Carcinogenic Polynuclear Aromatic Hydrocarbons.
ft Feet.
mg/kg Milligrams per kilogram.
RL Remedial level established in the RI/FS Work Plan.
U Analyte not detected above given practical quantitation limit.