LDWSF 12.3.298.1v.1
11/26/08

EHS-International, Inc.

Transmittal

November 26, 2008

To:	**Mr. Ron Smith**
Company:	**US General Services Administration**
Address:	**400 15th Street SW Auburn, Washington 98001**
Phone Number:	**(253) 931-7696**
Email:	**ron.smith@gsa.gov**

☐ Faxed ☐ Mailed ☒ Email	
From:	**Miguel A. Ortega, L.G.**
Company:	**EHS International, Inc.**
Fax:	**(425) 646-7247**
Telephone:	**(425) 455-2959**
Reference:	**Submittal of Federal Center South Groundwater Monitoring Activities Final Report**

Dear Mr. Smith:

Enclosed please find a copy of the U.S. General Services Administration Groundwater Monitoring Activities Federal Center South Former Motor Pool Final Report.

If you have comments concerning the report, please feel free to call me at any time.

On behalf of EHSI, I would like to thank you for the opportunity to provide environmental services.

Sincerely,

Miguel A. Ortega, L.G.
Principal, Geologist

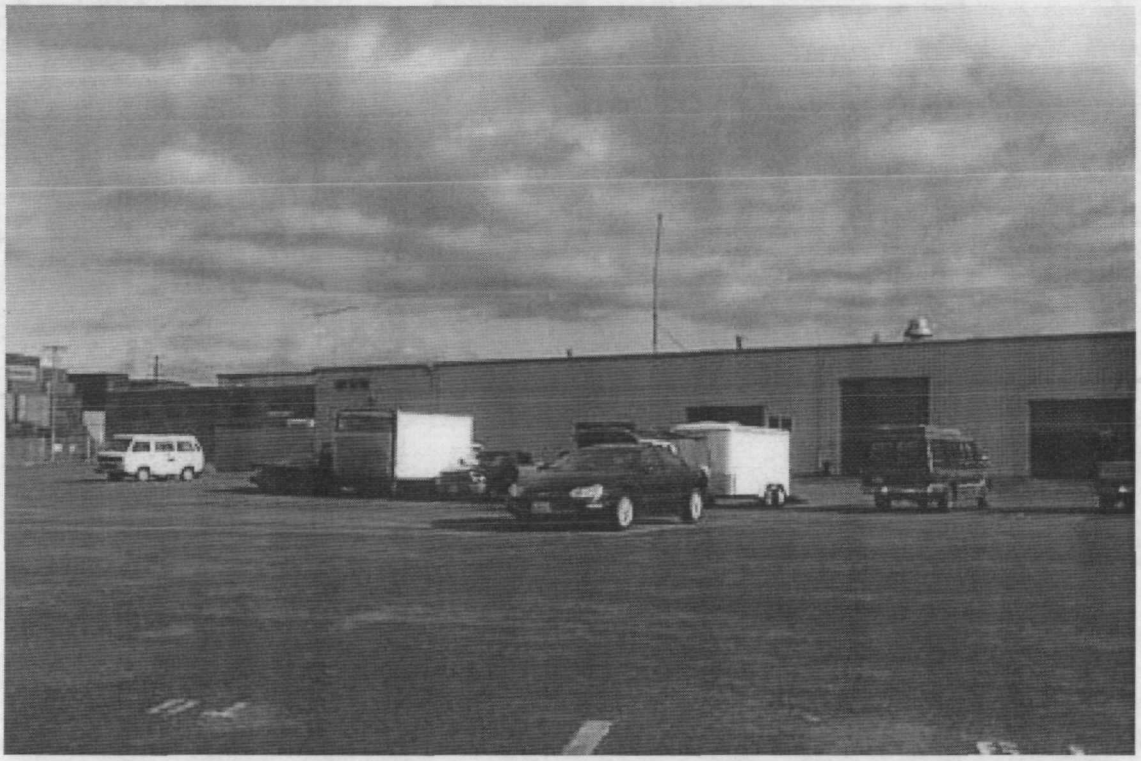
Enclosure

13228 NE 20TH STREET • SUITE 100 • BELLEVUE, WA 98005
PHONE: (425) 455-2959 • FAX: (425) 646-7247

USEPA SF
1337352

EHS–International, Inc.

U.S. GENERAL SERVICES ADMINISTRATION GROUNDWATER MONITORING ACTIVITIES FEDERAL CENTER SOUTH FORMER MOTOR POOL FINAL REPORT



4735 East Marginal Way
Seattle, Washington 98134

Prepared for:
U.S. General Services Administration, Inc.
400 15th Street SW
Auburn, Washington 98001-6599

Prepared by:
EHS – International, Inc.
13228 NE 20th Street, Suite 100
Bellevue, Washington 98005

November 13, 2008

U.S. GENERAL SERVICES ADMINISTRATION
GROUNDWATER MONITORING ACTIVITIES
FEDERAL CENTER SOUTH
FORMER MOTOR POOL
FINAL REPORT

Prepared for:
U.S. General Services Administration
400 15th Street SW
Auburn, Washington 98001-6599

Prepared by
EHS - International, Inc.
13228 NE 20th Street, Suite 100
Bellevue, Washington 98005

November 13, 2008

TABLE OF CONTENTS

SUMMARY OF FINDINGS I
1 INTRODUCTION 1
1.1 PROJECT PURPOSE 1
1.2 PROJECT OBJECTIVES 1
1.3 REPORT ORGANIZATION 1
2 PROJECT BACKGROUND 1
3 SCOPE OF FIELD SERVICES 3
3.1 GENERAL DOCUMENTATION 3
3.2 GROUNDWATER SAMPLING 3
3.3 SAMPLE DOCUMENTATION 3
3.4 DECONTAMINATION PROCEDURES 4
3.5 SAMPLE HANDLING AND SHIPPING 4
4 ANALYTICAL PROTOCOL 4
5 GROUNDWATER MONITORING ACTIVITIES RESULTS 5
5.1 GROUNDWATER ELEVATION 5
6 ANALYTICAL RESULTS 5
7 REGULATORY REVIEW 5
8 GROUNDWATER MONITORING ACTIVITIES CONCLUSIONS 5
9 GROUNDWATER MONITORING RECOMMENDATIONS 5
10 SIGNATURE 6
11 REFERENCES 6
12 PROJECT LIMITATIONS 7

LIST OF FIGURES

FIGURE 1: SITE LOCATION MAP
FIGURE 2: SITE PLOT PLAN

LIST OF TABLES

TABLE 1: SUMMARY OF GROUNDWATER LEVEL DATA FEDERAL CENTER SOUTH FORMER MOTOR POOL
TABLE 2: SUMMARY OF GROUNDWATER ANALYTICAL RESULTS FEDERAL CENTER SOUTH FORMER MOTOR POOL
TABLE 3: SUMMARY OF GROUNDWATER PAHs ANALYTICAL RESULTS FORMER MOTOR POOL

APPENDICES

APPENDIX A: COPY OF ANALYTICAL REPORT

SUMMARY OF FINDINGS

This report documents Groundwater Monitoring Activities within the Former Motor Pool area of the Federal Center South facility. The Federal Center South is located at 4735 East Marginal Way in Seattle, Washington 98134. EHSI conducted groundwater monitoring on behalf of U.S. General Services Administration (GSA), who operates and maintains the Federal Center South property. The Groundwater Monitoring Activities consisted of water level measurements and groundwater sampling of a groundwater monitoring well field located in the northwest portion of the facility; this area of the site is referred to as the Former Motor Pool area. Mr. Ron Smith of GSA gave EHSI authorization to proceed with the project on August 18, 2008. EHSI conducted the field investigation portion of the Groundwater Monitoring Activities on September 5 and 19, 2008.

The Federal Center South Former Motor Pool site ranges 5 to 10 feet above mean sea level, consisting of a relatively level concrete/asphalt parking lot and several multi-story office and warehouse buildings. The GSA motor pool formerly occupied Building 12.03; the building is currently leased by the U.S. Federal Bureau of Investigation for servicing vehicles. No soil is exposed to the surface at any place onsite, with the exception of a small area at the northwest corner of the property.

There have been several site characterization and cleanup projects west of Building 12.03, at the Federal Center South Former Motor Pool area since underground storage tanks (USTs) were removed in May 1998. A summary of past site activities is provided the following sections.

In May 1998, tanks removed west of Building 12.03 included a 12,000-gallon gasoline tank used to provide fuel for motor pool vehicles and a 1,000-gallon waste oil tank used for storage of fluids resulting from motor pool vehicle maintenance. Limited exploration during the tank removal process indicated a gasoline release beneath a former fuel dispenser unit, extending approximately 30 feet to the south and west. Approximately 100 feet south of the gasoline tank, a waste oil tank also was found to have released diesel and heavy oil to soil immediately surrounding the tank. Initial contaminant characterization indicated that polychlorinated biphenyls (PCBs), halogenated volatile organics, polycyclic aromatic hydrocarbons (PAHs), and metals were not of concern and have not been further analyzed (Herrera 2005).

On July 23, 2003, GSA entered the Federal Center South Former Motor Pool site into the State of Washington Department of Ecology (Ecology) Voluntary Cleanup Program (VCP) with the goal to attain an No Further Action (NFA) determination for the site groundwater. GSA submitted a complete VCP application and site environmental data to the Ecology VCP. There was no further interaction with the Ecology VCP and Ecology dropped the Federal Center South Former Motor Pool site from the VCP program on April 30, 2006.

EHSI initially sampled the Federal Center South Former Motor Pool on September 5, 2008. EHSI field personnel collected a series of groundwater samples from the site well field. However, GSA requested project analytical protocol modification. In order to meet the project modification, it became necessary to carry out a second well field sampling. On September 19, 2008, EHSI field personnel measured well water levels and collected groundwater samples from monitoring wells FC2, FC3, FC4, FC5, FC6, FC7, FC8, and FC9.

EHSI personnel submitted eight groundwater samples to ESN Northwest for analysis. The analytical protocols were designed to meet the State of Washington Model Toxics Control Act (MTCA) Required Testing for Gasoline Range Organics (GRO) Petroleum Releases (MTCA Table 830-1). The project analytical protocols were as follows: GRO using analytical Test Method NWTPH-Gx; Volatile Organic Compounds (VOCs) including benzene, toluene, ethylbenzene, and xylenes (BTEX) using analytical EPA Test Method 8260; 1,2-Dibromoethane (EDB) using EPA Test Method 8011; and total lead using EPA Test Method 6020. Well field samples collected on September 5, 2008 were analyzed for Diesel Range Organics (DRO) using analytical Test Method NWTPH-Dx.

EHSI developed a water level contour map utilizing groundwater levels measured on September 19, 2008. The recorded low groundwater elevation was 0.60 feet above mean sea level (MSL) in well FC9. The recorded high groundwater elevation was 1.45 feet above MSL in well FC6. The on-site groundwater gradient is 0.006 and exhibits a west flow direction, toward the Duwamish Waterway.

Analytical results indicated that there were no detectable concentrations of GRO, DRO, BTEX, EDB, 1,2-Dichlorethane (EDC), Methyl-t-butyl ether (MTBE), or lead in the groundwater samples from the Federal Center South Former Motor Pool well field.

No analyzed groundwater sample from the Federal Center South well field exceeded MTCA Method A Groundwater Cleanup Levels (MTCA Cleanup Levels) for GRO, DRO, BTEX, EDB, EDC, MTBE, or lead.

The results of the Groundwater Monitoring Activities indicated that Federal Center South Former Motor Pool groundwater gradient is 0.006 and exhibits a west flow direction, toward the Duwamish Waterway (Figure 2). Analytical results indicated that there were no detectable concentrations of GRO, DRO, BTEX, EDB, EDC, MTBE, or lead in the groundwater samples from the Federal Center South well field. No analyzed groundwater sample from the Federal Center South Former Motor Pool well field exceeded MTCA Method A Cleanup Level for GRO, DRO, BTEX, EDB, EDC, or lead (Table 2).

EHSI recommends that GSA re-enter the Federal Center South Former Motor Pool site into Ecology VCP and seek an NFA determination for the site groundwater.

1 INTRODUCTION

This report documents Groundwater Monitoring Activities within the Former Motor Pool area of the Federal Center South facility. The Federal Center South is located at 4735 East Marginal Way inSeattle, Washington 98134 (Figure 1). EHSI conducted groundwater monitoring on behalf of GSA, who operates and maintains the Federal Center South property. The Groundwater Monitoring Activities consisted of water level measurements and groundwater sampling of a groundwater monitoring well field located in the northwest portion of the facility; this area of the site is referred to as the Former Motor Pool area (Figure 2). Mr. Ron Smith of GSA gave EHSI authorization to proceed with the project on August 18, 2008. EHSI conducted the field investigation portion of the Groundwater Monitoring Activities on September 5 and 19, 2008.

1.1 PROJECT PURPOSE

The purpose of this project was to determine groundwater flow gradient and document the water quality within the Federal Center South Former Motor Pool area. In addition, groundwater quality data was compared to the Washington State Model Toxics Control Act (MTCA) Method A Groundwater Cleanup Levels (MTCA Cleanup Levels) to determine if the site groundwater is contaminated.

1.2 PROJECT OBJECTIVES

The objectives of the Groundwater Monitoring Activities project were to complete the following:

- Measure well field depth to groundwater and document groundwater flow direction for the Federal Center South Former Motor Pool area;
- Collect groundwater samples from the Federal Center South Former Motor Pool area well field;
- Test the Federal Center South Former Motor Pool area groundwater for the presence of GRO, DRO, BTEX, and total lead; and
- Compare groundwater analytical results to State of Alaska 18 AAC 75.345 (Groundwater Cleanup Levels) to determine if groundwater quality meets the State of Alaska Groundwater Cleanup Standards.

1.3 REPORT ORGANIZATION

This report begins with the included sections: a summary of findings; project background; statement of project objectives and purpose; and a general property overview. A discussion of project area conditions and field observations follow the initial sections. Subsequent sections present the elements of EHSI's site observations, laboratory analyses, and analytical results, as well as regulatory review, project conclusions, and recommendations. Two figures, two tables, and a supporting appendix follow the main text. Figure 1 shows the site location and Figure 2 is a plot plan for the site. Table 1 is a summary of groundwater elevation data. Table 2 presents a summary of analytical results for the Federal Center South Former Motor Pool area well field. Appendix A provides a copy of the analytical report.

2 PROJECT BACKGROUND

The Federal Center South Former Motor Pool site ranges 5 to 10 feet above mean sea level,

consisting of a relatively level concrete/asphalt parking lot and several multi-story office and warehouse buildings. The GSA motor pool formerly occupied Building 12.03; the building is currently leased by the U.S. Federal Bureau of Investigation for servicing vehicles. No soil is exposed to the surface at any place onsite, with the exception of a small area at the northwest corner of the property. The locations of historic underground storage tanks and existing monitoring wells are provided in Figure 2.

There have been several site characterization and cleanup projects west of Building 12.03, at the Federal Center South Former Motor Pool area since USTs were removed in May 1998. A summary of past site activities is provided in the following sections.

In May 1998, tanks removed west of Building 12.03 included a 12,000-gallon gasoline tank used to provide fuel for motor pool vehicles and a 1,000-gallon waste oil tank used for storage of fluids resulting from motor pool vehicle maintenance. Limited exploration during the tank removal process indicated a gasoline release beneath a former fuel dispenser unit, extending approximately 30 feet to the south and west. Approximately 100 feet south of the gasoline tank, a waste oil tank also was found to have released diesel and heavy oil to soil immediately surrounding the tank. Initial contaminant characterization indicated that PCBs, halogenated volatile organics, PAHs, and metals were not of concern and have not been further analyzed (Herrera 2005).

Results of ground water monitoring during 12 sampling events following tank removal and cleanup activities between July 1999 and April 2002 indicated the following site conditions (Herrera 2005):

- No benzene contamination was detected in samples collected from downgradient wells PC1, FC4, and FC9, indicating that contaminants had not migrated offsite;
- No benzene contamination was detected above the practical quantification limit (1 μg/L) in samples collected in crossgradient wells FC5 and FC7, indicating that the contaminant plume had not expanded laterally;
- Soil removal and natural attenuation have resulted in improved ground water quality downgradient of the former gasoline and diesel fuel underground storage tanks;
- Benzene concentrations were below the MTCA Method A Cleanup Levels for four sampling events in monitoring well FC2 and three sampling events in FC3, both wells positioned downgradient of the original source area with respect to inferred ground water flow direction (west and southwest); and
- Statistical analysis (Mann-Kendall) indicated a decreasing trend in benzene concentrations in well FC2 and a stable level in FC3 (Herrera 2005).

On July 23, 2003, GSA entered the Federal Center South Former Motor Pool site into the Ecology VCP with the goal to attain a NFA determination for the site groundwater. GSA submitted a complete VCP Application and site environmental data to Ecology VCP. There was no further interaction with Ecology VCP and Ecology dropped the Federal Center South Former Motor Pool site from the VCP program on April 30, 2006.

3 SCOPE OF FIELD SERVICES

The scope of field services consisted of a water level survey and water quality sampling of seven groundwater monitoring wells within the Federal Center South Former Motor Pool area.

3.1 GENERAL DOCUMENTATION

The EHSI field geologist documented daily field activities in a bound serialized field book. The recorded information pertained to personnel on-site, weather, general activities planned and performed, and any problems experienced on-site.

3.2 GROUNDWATER SAMPLING

EHSI initially sampled the Federal Center South Former Motor Pool on September 5, 2008. EHSI field personnel collected a series of groundwater samples from the site well field. However, GSA requested project analytical protocol modification. In order to meet the project modification, it became necessary to carry out a second well field sampling. On September 19, 2008, EHSI field personnel measured well water levels and collected groundwater samples from monitoring wells FC2, FC3, FC4, FC5, FC6, FC7, FC8, and FC9 (Figure 2).

General procedures for collecting groundwater samples from the site wells were as follows:

- Remove the well monument cover and inspect the condition of the well and surrounding area. Note observations in the field book.
- Unlock and remove the well casing plug.
- Using an electronic water level meter measure the depth to groundwater to the nearest 0.01-foot and sound the total depth of well.
- Use the surveyed reference mark at the top of the PVC well casing to determine water level and total well depth.
- Record field measurements in the project field book.
- Calculate standing water volume in well.
- Purge three standing water volumes from the monitoring well with a submersible pump.
- Measure and record pH, water temperature, and specific conductivity of discharge water during well purging.
- Once water quality parameters stabilize, collect individual samples using a dedicated disposable bailer.
- Decontaminate purge pump and replace polyethylene tubing.

3.3 SAMPLE DOCUMENTATION

EHSI documented all field activities associated with Groundwater Monitoring Activities. Documentation included a comprehensive discussion of field observations, field parameter measurements, and any problems encountered. All sample containers were labeled with the following information:

- EHSI project identification number;

- Sample date;
- Sampler's name; and
- Sample identification number.

Each groundwater sample collected was given a unique identification number pertaining to the source location, the sampled well (6) and the number of samples collected from the well. For example, sample FC6-15 was the groundwater sample collected from the Federal Center South property (FC), groundwater monitoring well 6, and it was the 15th sample collected from this well.

Field personnel completed all sample chain-of-custody forms with EHSI project identification number, the sampler's name, date, and sample identification codes, number of containers, and date and time the sample was collected. The chain-of-custody form was included with samples transported to the analytical laboratory.

3.4 DECONTAMINATION PROCEDURES

All non-disposable sampling equipment was decontaminated prior to and after each sampling operation. The specific steps used for decontamination of the equipment are:

- Rinse and pre-clean equipment in potable water;
- Wash and scrub equipment with non-phosphate based detergent and potable water;
- Rinse with potable water;
- Rinse in deionized water;
- Replace pump discharge tube between well samplings; and
- Air-dry and store in clean plastic bags (or visqueen sheet) between samplings.

3.5 SAMPLE HANDLING AND SHIPPING

EHSI field personnel checked all sample containers for completeness and cap tightness. The sealed sample containers were then placed upright in a cooler and chilled with Blue Ice. The sample cooler was then placed in a field vehicle to await transportation to the analytical laboratory. Select samples collected were shipped, under chain-of-custody, to the ESN Northwest Bellevue, Washington laboratory for analysis.

4 ANALYTICAL PROTOCOL

EHSI personnel submitted eight groundwater samples to ESN Northwest for analysis. The analytical protocols were designed to meet the MTCA Required Testing for GRO Petroleum Releases (MTCA Table 830-1). The project analytical protocols were as follows:

- GRO using analytical Test Method NWTPH-Gx;
- VOCs, including BTEX using analytical EPA Test Method 8260;
- 1,2-Dibromoethane (EDB) using EPA Test Method 8011; and
- Total lead using EPA Test Method 6020.

Well field samples collected on September 5, 2008 were analyzed for DRO using analytical Test Method NWTPH-Dx.

5 GROUNDWATER MONITORING ACTIVITIES RESULTS

Results of the Groundwater Monitoring Activities are presented below.

5.1 GROUNDWATER ELEVATION

EHSI developed a water level contour map utilizing groundwater levels measured on September 19, 2008 (Figure 2). Table 1 provides a summary of the water level elevation data. The recorded low groundwater elevation was 0.60 feet above MSL in well FC9. The recorded high groundwater elevation was 1.45 feet above MSL in well FC6. The on-site groundwater gradient is 0.006 and exhibits a west flow direction, toward the Duwamish Waterway (Figure 2).

6 ANALYTICAL RESULTS

Analytical results indicated that there were no detectable concentrations of GRO, DRO, BTEX, EDB, EDC, MTBE, or lead in the groundwater samples from the Federal Center South Former Motor Pool well field.

7 REGULATORY REVIEW

EHSI compared the groundwater sample analytical results to the MTCA Cleanup Levels. State regulators and environmental professionals use MTCA Cleanup Levels to compare levels of contamination in groundwater. The MTCA Cleanup Levels are the concentrations standards where, if exceeded, the State of Washington regulators judge a soil or groundwater sample to be contaminated.

The MTCA Method A Cleanup Level concentrations for GRO are 800 parts per billon (ppb), DRO (500 ppb), benzene (5 ppb), ethylbenzene (700 ppb), toluene (1,000 ppb), and total xylenes (1,000 ppb), EDB (0.01 ppb), EDC (5 ppb), MTBE (20 PPB), and total lead (15 ppb) in groundwater. No analyzed groundwater sample from the Federal Center South well field exceeded MTCA Method A Cleanup Level for GRO, DRO, BTEX, EDB, EDC, MTBE, or lead (Table 2).

8 GROUNDWATER MONITORING ACTIVITIES CONCLUSIONS

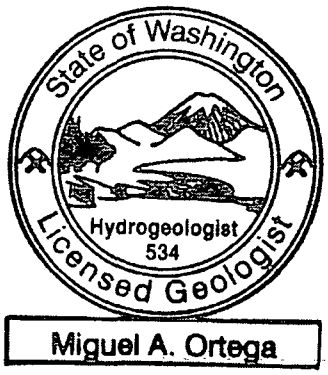
The results of the Groundwater Monitoring Activities indicated that Federal Center South Former Motor Pool groundwater gradient is 0.006 and exhibits a west flow direction, toward the Duwamish Waterway (Figure 2). Analytical results indicated that there were no detectable concentrations of GRO, DRO, BTEX, EDB, EDC, MTBE, or lead in the groundwater samples from the Federal Center South well field. No analyzed groundwater sample from the Federal Center South Former Motor Pool well field exceeded MTCA Method A Cleanup Level for GRO, DRO, BTEX, EDB, EDC, or lead (Table 2).

9 GROUNDWATER MONITORING RECOMMENDATIONS

EHSI recommends that GSA re-enter the Federal Center South Former Motor Pool site into Ecology VCP and seek an NFA determination for the site groundwater.

10 SIGNATURE

This Groundwater Monitoring Activities Final Report was prepared by the undersigned.



13 November 2008

Miguel A. Ortega — Date

Washington Licensed Geologist (Hydrogeology Specialty)

11 REFERENCES

Herrera Environmental Consultants; *Supplemental Site Characterization Federal Center South 4735 East Marginal Way South Seattle, Washington*; April 7, 2005.

12 PROJECT LIMITATIONS

The conclusions presented in report are professional opinions based upon our visual observations and physical testing. This report is intended exclusively for the purpose outlined herein, at the site location and project indicated. This report is for the sole use of our client, U.S. General Services Administration. Opinions and conclusions presented herein apply to site conditions existing at the time of execution of our Groundwater Monitoring Activities and do not necessarily apply to future changes or other prior conditions at the site of which EHSI is not aware and has not had the opportunity to evaluate. The scope of services performed in execution of this Groundwater Monitoring Activities may not be appropriate to satisfy the needs of other users, and any use or re-use of the document, its findings, conclusions, or recommendations presented are at the sole risk of the said user.

EHSI's objective is to perform our work with care, exercising the customary thoroughness and competence of environmental consulting professionals in the relevant disciplines. Furthermore, we carried out our services in accordance with the standard for professional services by a consulting firm at the time those services were rendered. It is important to recognize that even the most comprehensive scope of services may fail to detect environmental liability on a particular site. Therefore, EHSI cannot act as insurers and cannot "certify or underwrite" that a site is totally free of environmental liability. In addition, no expressed or implied representation or warranty is included or intended in our report except that our work was performed within the limits prescribed by our client, and with the customary thoroughness and competence of our profession.

FIGURES

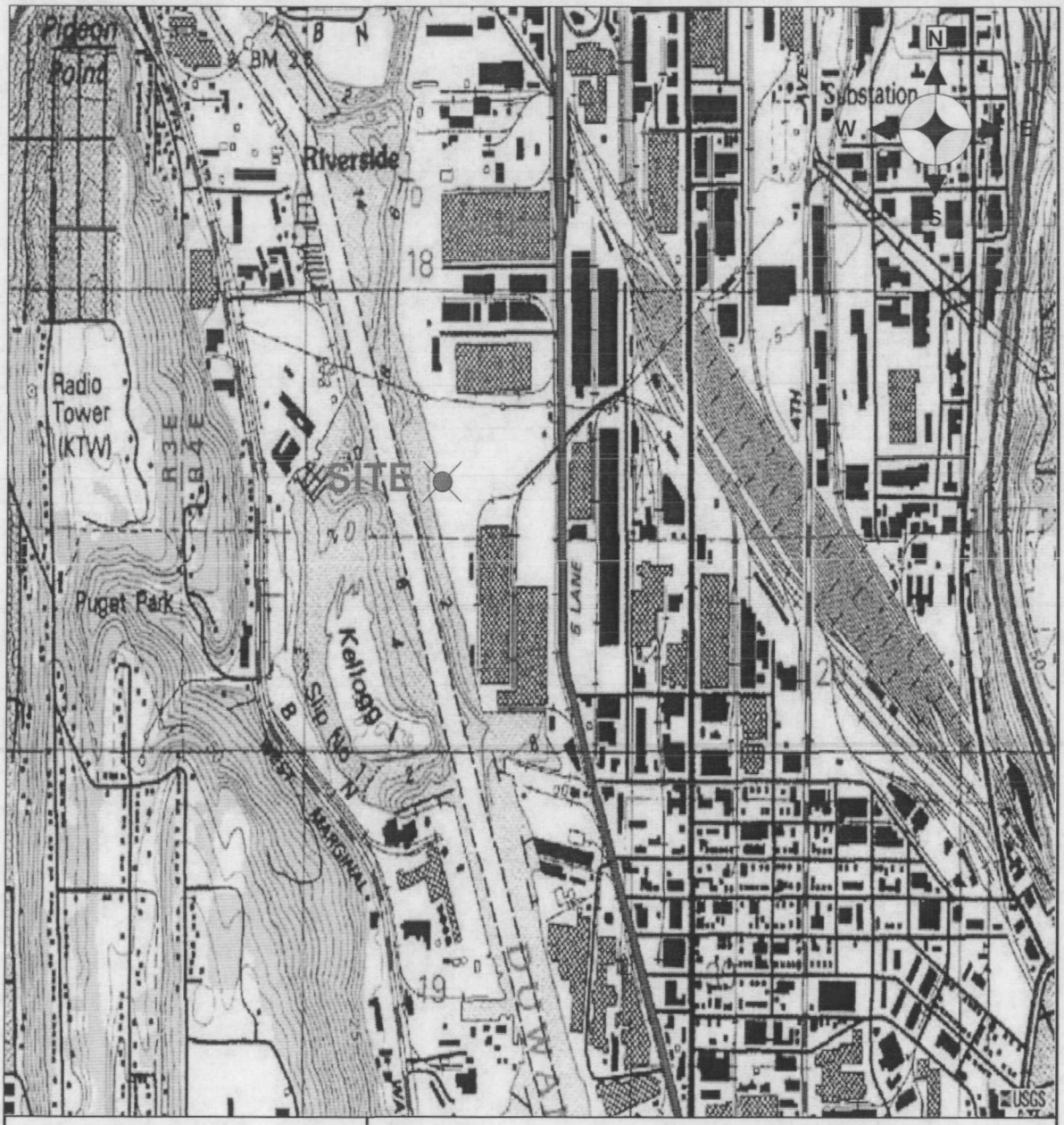
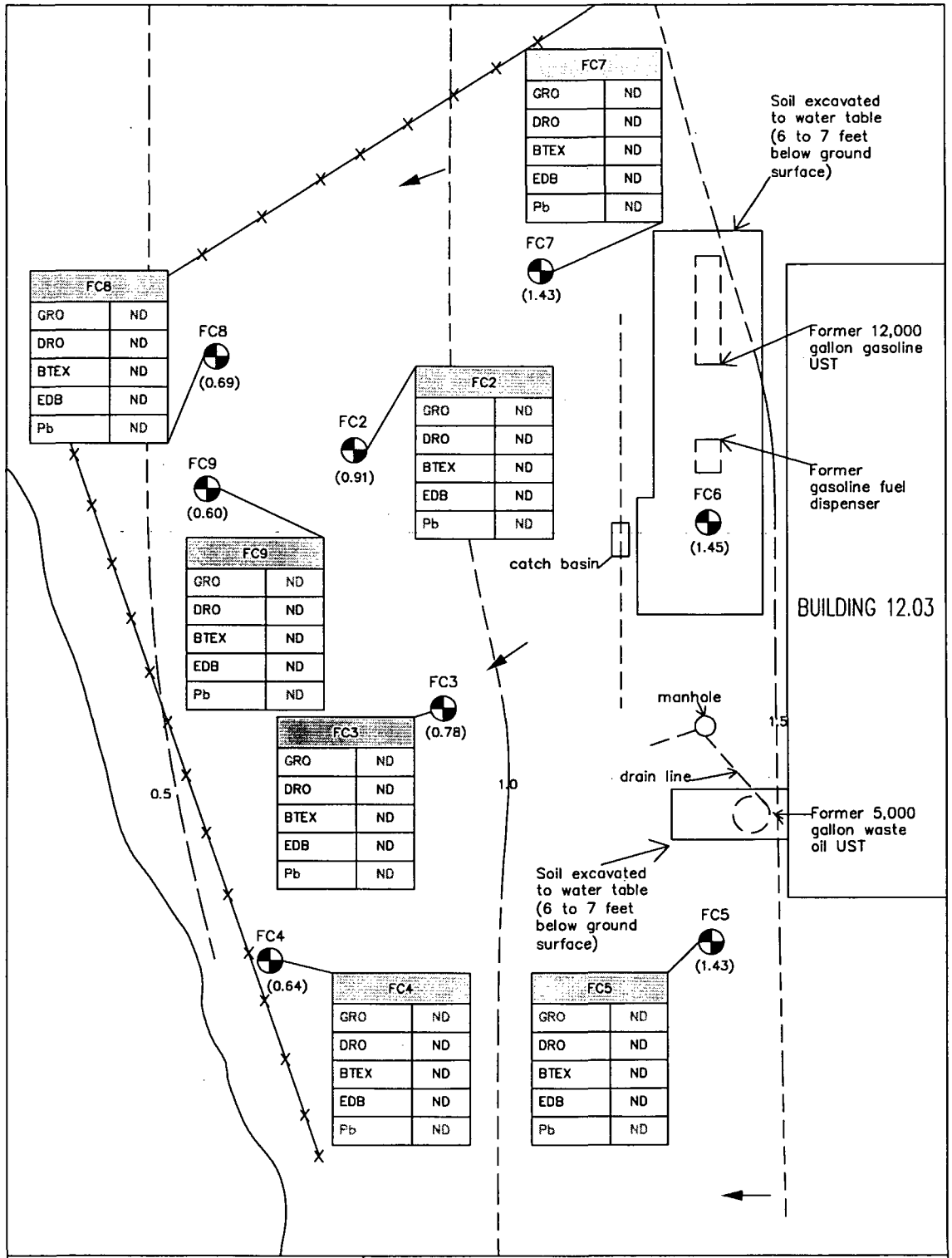


FIGURE 1

US GENERAL SERVICES ADMINISTRATION
GROUNDWATER MONITORING
FEDERAL CENTER SOUTH
FORMER MOTOR POOL
4735 EAST MARGINAL WAY
SEATTLE, WASHINGTON 98134
SITE LOCATION MAP

Reference: US Geological Survey
Seattle South, Washington
7.5 Minute Quadrangle
Photo revised 1983

EHS International, Inc.	**November 2008**



EXPLANATION

FC5 — MONITORING WELL

(1.43) — location, designation and groundwater elevation on 9-30-06

(1.43) — Groundwater elecation contour based on 9-30-06 data

Estimated direction of groundwater flow

FIGURE 2

US GENERAL SERVICES ADMINISTRATION
GROUNDWATER MONITORING
FORMER MOTOR POOL
4735 EAST MARGINAL WAY
SEATTLE, WASHINGTON 98134

SITE PLOT PLAN

EHS International, Inc. | **November 2008**

TABLES

TABLE 1: SUMMARY OF GROUNDWATER LEVEL DATA FEDERAL CENTER SOUTH FORMER MOTOR POOL

Monitoring Well Identification	Measurement Date	Reference Point[1] Elevation in (feet)	Depth to Water[2] (feet)	Water Level[3] Elevation (feet)
FC2	09/19/08	7.12	6.21	0.91
FC3	09/19/08	7.03	6.25	0.78
FC4	09/19/08	6.59	5.95	0.64
FC5	09/19/08	7.23	5.8	1.43
FC6	09/19/08	7.05	5.60	1.45
FC7	09/19/08	6.93	5.50	1.43
FC8	09/19/08	7.02	6.33	0.69
FC9	09/19/08	6.95	6.35	0.60

EXPLANATION:

[1]Elevations of reference points (top of well casing) are based on a handheld global position unit (Garmin GPMAP76) calibrated to World Geodetic System of 1984, WGS84 – world datum, based on satellite observations;

[2]Depth to water measurements were taken from reference point marks on top of PVC well casing; and

[3]Relative to top of casing reference points.

TABLE 2: SUMMARY OF GROUNDWATER ANALYTICAL RESULTS FEDERAL CENTER SOUTH FORMER MOTOR POOL

Location	Date	GRO[1] (µg/L)	DRO[2] (µg/L)	Benzene[3] (µg/L)	Toluene[3] (µg/L)	Ethylbenzene[3] (µg/L)	Total Xylenes (µg/L)[3]	Naphthalene[3]/ Hexane (µg/L)	EDC[3]/ EDB[4] (µg/L)	MTBE[3] (µg/L)	Total Lead[5] (µg/L)
MTCA Cleanup Level (µg/L)	---	800	500	5	1,000	700	10,000	160/NR[9]	5/0.01	20	15
Test Method Detection Limit (µg/L)		100	Variable[7]	1.0	1.0	1.0	1.0	1.0/1.0	1.0/0.10	1.0	2.0
FC2	09/24/08	[6]ND	ND[8]	ND	ND	ND	ND	ND/ ND	ND/ ND	ND	ND
FC3	09/24/08	ND	ND	ND	ND	ND	ND	ND/ ND	ND/ ND	ND	ND
FC4	09/24/08	ND	ND	ND	ND	ND	ND	ND/ ND	ND/ ND	ND	ND
FC5	09/24/08	ND	ND	ND	ND	ND	ND	ND/ ND	ND/ ND	ND	ND
FC6	09/24/08	ND	ND	ND	ND	ND	ND	ND/ ND	ND/ ND	ND	ND
FC7	09/24/08	ND	ND	ND	ND	ND	ND	ND/ ND	ND/ ND	ND	ND
FC8	09/24/08	ND	ND	ND	ND	ND	ND	ND/ ND	ND/ ND	ND	ND
FC9	09/24/08	ND	ND	ND	ND	ND	ND	ND/ ND	ND/ ND	ND	ND

EXPLANATION:

[1]GRO – Gasoline-range Organics by Test Method NWTPH-Gx;
[2]DRO – Diesel-range Organics by Test Method NWTPH-Dx, Sample Analyzed on 09/09/08;
[3]VOCs: Volatile Organic Compounds by EPA Test Method 8260;
[4]EDB – 1,2-Dibromoethane by EPA Test Method 8011;
[5]Total Lead by EPA Test Method 6020;
[6]ND - Not Detected, below test method detection limit;
[7]Variable Test Method Detection Limits – Diesel (200 µg/L), Oil (400 µg/L), and Mineral Oil (200 µg/L);
[8]DRO samples collected on 09/05/2008 and analyzed on 09/09 and 10/2008; and
[9]NR - Not a regulated substance under MTCA Method A, Groundwater Cleanup Levels calculated under MTCA Methods B or C;
EDC – 1,2-Dichloroethane and MTBE – Methyl-t-butyl ether.

APPENDIX A: COPY OF ANALYTICAL REPORT

ESN NORTHWEST | Environmental Services Network

September 26, 2008

Miguel Ortega
EHS International
13228 NE 20th Street, Suite 100
Bellevue, WA 98005-2049

Dear Mr. Ortega:

Please find enclosed the analytical data report for the GSA 4 Site Project in Washington. Water samples were analyzed for the GRO on September 24 & 25, 2008.

The results of the analyses are summarized in the attached table. Applicable detection limits and QA/QC data are included. The invoice for this analytical work is also enclosed.

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

Sincerely,

Michael A. Korosec

Michael A. Korosec
President

RECEIVED
SEP 30 2008
EHS-International, Inc

1210 Eastside Street SE, Suite 200 ▪ Olympia, Washington 98501 ▪ 360.459.4670 ▪ FAX 360.459.3432
Web Site: *www.esnnw.com* E-Mail: *info@esnnw.com*

ESN NORTHWEST CHEMISTRY LABORATORY

EHS-International
GSA 4 SITES PROJECT
Client Project #9585-04
Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analyses of Gasoline (NWTPH-Gx) in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (ug/L)
Method Blank	9/24/2008	98	nd
LCS	9/24/2008	93	66%
FC2-15	9/24/2008	87	nd
FC3-15	9/24/2008	83	nd
FC3-15A	9/24/2008	92	nd
FC4-15	9/24/2008	90	nd
FC5-15	9/24/2008	89	nd
FC6-15	9/24/2008	91	nd
FC7-15	9/24/2008	91	nd
FC8-15	9/24/2008	92	nd
FC9-15	9/24/2008	92	nd
Method Detection Limits			100

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

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

ESN NORTHWEST CHEMISTRY LABORATORY

EHS-International
GSA 4 SITES PROJECT
Client Project #9585-01
Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

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

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (ug/L)	Oil (ug/L)	Mineral Oil (ug/L)
Method Blank	9/9/2008	108	nd	nd	nd
FC2-14	9/9/2008	103	nd	nd	nd
FC3-14	9/10/2008	102	nd	nd	nd
FC3A-14	9/10/2008	99	nd	nd	nd
FC4-14	9/10/2008	79	nd	nd	nd
FC5-14	9/9/2008	97	nd	nd	nd
FC6-14	9/9/2008	118	nd	nd	nd
FC7-14	9/9/2008	113	nd	nd	nd
FC8-14	9/10/2008	91	nd	nd	nd
FC9-14	9/10/2008	92	nd	nd	nd
FC9-14 Dup.	9/10/2008	102	nd	nd	nd
Method Detection Limits			200	400	400

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ESN NORTHWEST CHEMISTRY LABORATORY

EHS-International
GSA 4 SITES PROJECT
Client Project #9585-04
Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analytical Results

8260, µg/L		MTH BLK	LCS	FC2-15	FC3-15	FC3-15A
Matrix	Water	Water	Water	Water	Water	Water
Date analyzed	Reporting Limits	09/24/08	09/24/08	09/24/08	09/24/08	09/24/08
Hexane	1.0	nd		nd	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd		nd	nd	nd
1,2-Dibromoethane (EDB)	0.10	nd		nd	nd	nd
Methyl-t-butyl ether (MTBE)	1.0	nd		nd	nd	nd
Benzene	1.0	nd	114%	nd	nd	nd
Toluene	1.0	nd	122%	nd	nd	nd
Ethylbenzene	1.0	nd		nd	nd	nd
Xylenes	1.0	nd		nd	nd	nd
Naphthalene	1.0	nd		nd	nd	nd

Surrogate recoveries:

Dibromofluoromethane	106%	100%	85%	85%	84%
Toluene-d8	95%	96%	102%	99%	99%
4-Bromofluorobenzene	93%	98%	84%	81%	89%

Data Qualifiers and Analytical Comments

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

ESN NORTHWEST CHEMISTRY LAB

EHS-International
GSA 4 SITES PROJECT
Client Project #9585-04
Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analytical Results

8260, µg/L	FC4-15	FC5-15	FC6-15	FC7-15	FC8-15	FC9-15
Matrix	Water	Water	Water	Water	Water	Water
Date analyzed	09/24/08	09/24/08	09/24/08	09/24/08	09/24/08	09/24/08
Hexane	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB)	nd	nd	nd	nd	nd	nd
Methyl-t-butyl ether (MTBE)	nd	nd	nd	nd	nd	nd
Benzene	nd	nd	nd	nd	nd	nd
Toluene	nd	nd	nd	nd	nd	nd
Ethylbenzene	nd	nd	nd	nd	nd	nd
Xylenes	nd	nd	nd	nd	nd	nd
Naphthalene	nd	nd	nd	nd	nd	nd
Surrogate recoveries:						
Dibromofluoromethane	87%	89%	89%	87%	78%	86%
Toluene-d8	95%	98%	98%	96%	105%	101%
4-Bromofluorobenzene	87%	86%	87%	87%	88%	89%

Data Qualifiers and Analytical Comments

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

ESN NORTHWEST CHEMISTRY LAE

EHS-International
GSA 4 SITES PROJECT
Client Project #9585-04
Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analytical Results

8260, µg/L	MS	MSD	RPD
Matrix	Water	Water	
Date analyzed	09/24/08	09/24/08	
Hexane			
1,2-Dichloroethane (EDC)			
1,2-Dibromoethane (EDB)			
Methyl-t-butyl ether (MTBE)			
Benzene	139%	160%	14%
Toluene	123%	121%	2%
Ethylbenzene			
Xylenes			
Naphthalene			

Surrogate recoveries:		
Dibromofluoromethane	111%	113%
Toluene-d8	85%	84%
4-Bromofluorobenzene	95%	92%

Data Qualifiers and Analytical Comments

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

ESN NORTHWEST CHEMISTRY LABORATORY

EHS-International
GSA 4 SITES PROJECT
Client Project #9585-04
Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analyses of 1,2-Dibromoethane in Water by EPA Method 8011

Sample Number	Date Analyzed	1,2-Dibromoethane (ug/kg)
Method Blank	9/24/2008	nd
FC2-15	9/24/2008	nd
FC3-15	9/24/2008	nd
FC3-15A	9/24/2008	nd
FC4-15	9/24/2008	nd
FC5-15	9/24/2008	nd
FC6-15	9/24/2008	nd
FC7-15	9/24/2008	nd
FC8-15	9/24/2008	nd
FC9-15	9/24/2008	nd
FC9-15 Dup.	9/24/2008	nd
Method Detection Limits		0.01

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ESN NORTHWEST CHEMISTRY LABORATORY

EHS-International
GSA 4 SITES PROJECT
Client Project #9585-04
Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Total Metals in Water by EPA-6000 Series

Sample Number	Date Analyzed	Lead (Pb) 6020 (ug/L)
Method Blank	9/25/2008	nd
FC2-15	9/25/2008	nd
FC3-15	9/25/2008	nd
FC3-15A	9/25/2008	nd
FC4-15	9/25/2008	nd
FC5-15	9/25/2008	nd
FC6-15	9/25/2008	nd
FC7-15	9/25/2008	nd
FC8-15	9/25/2008	nd
FC9-15	9/25/2008	nd
		2.0

"nd" Indicates not detected at listed detection limits.

ESN NORTHWEST CHEMISTRY LABORATORY

EHS-International
GSA 4 SITES PROJECT
Client Project #9585-04
Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

QA/QC Data - Total Metals EPA-6020

Sample Number: FC-3-15A

	Duplicate		
	Sample Conc. (mg/L)	Duplicate Conc. (mg/L)	RPD (%)
Lead	nd	nd	na

Sample Number: RE-10

	Matrix Spike		
	Spiked Conc. (mg/L)	Measured Conc. (mg/L)	Spike Recovery (%)
Lead	200	230	115

	Laboratory Control Sample		
	Spiked Conc. (mg/L)	Measured Conc. (mg/L)	Spike Recovery (%)
Lead	100	124	124

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

ESN NORTHWEST | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: [illegible]

ADDRESS: [illegible] Suite 100

PHONE: (425) 885-[illegible] FAX: (425) 646-[illegible]

CLIENT PROJECT #: [illegible]-04 PROJECT MANAGER: [illegible]

DATE: 7/1/08 PAGE 1 OF 1

PROJECT NAME: [illegible]

LOCATION: [illegible]

COLLECTOR: [illegible] DATE OF COLLECTION [illegible]

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PAH 8270	PCBs 8082	Pesticides 8081	ASBESTOS-PLM	RCRA 8	MTCA 5	Pb	[illegible]				NOTES	Total Number of Containers	Laboratory Note Number
1. [illegible]		[illegible]	[illegible]	[illegible]																X	X						
2. [illegible]		9:14	[illegible]	[illegible]																							
3. [illegible]		9:14	[illegible]	[illegible]																							
4. [illegible]		[illegible]	[illegible]	[illegible]																							
5. [illegible]		[illegible]	[illegible]	[illegible]																							
6. [illegible]		[illegible]	[illegible]	[illegible]																							
7. [illegible]		[illegible]	[illegible]	[illegible]																							
8. [illegible]		7:17	[illegible]	[illegible]																							
9. [illegible]		[illegible]	[illegible]	[illegible]																							
10.																											
11.																											
12.																											
13.																											
14.																											
15.																											
16.																											
17.																											
18.																											

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[illegible]	7/1/08 11:30am	[illegible]	7/1/08 11:30
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

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

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY