

**APPENDIX E**

**UNDERGROUND STORAGE TANK  
CLOSURE REPORT**

UST # 531 949  
Seattle Fire Station 6  
ORIGINAL

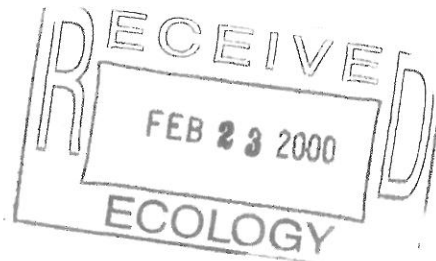
Fire Station #6  
UST Site Assessment Report

Seattle UST - Final Group

NW

UST # 7909  
party # U. 8348

DEPARTMENT OF ECOLOGY NWRO/TCP TANKS UNIT	
INTERIM CLEANUP REPORT	<input type="checkbox"/>
SITE CHARACTERIZATION	<input checked="" type="checkbox"/>
FINAL CLEANUP REPORT	<input checked="" type="checkbox"/>
OTHER _____	<input type="checkbox"/>
AFFECTED MEDIA: SOIL	<input checked="" type="checkbox"/>
OTHER _____ GW	<input type="checkbox"/>
INSPECTOR (INIT.) <u>SB</u> DATE <u>1/12/00</u>	<input type="checkbox"/>



Prepared for:

The City of Seattle - Executive Services Department

RECEIVED

FEB 28 2000

DEPT. OF ECOLOGY

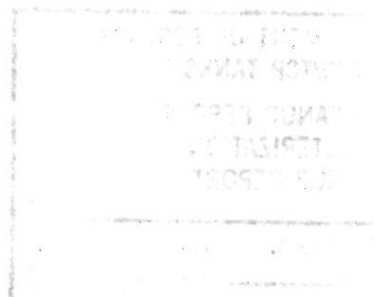
February 9, 2000



Prepared by

GARRY STRUTHERS ASSOCIATES, INC.

♦ Construction Management ♦ Environmental Sciences ♦ Project Management ♦ Engineering



LUST CLEANUP REPORT REVIEW	
LUST #	UST # 7909 Site Name Station 6
Change in Status of Release & Date (Awaiting Cleanup) (Cleanup Started) (Monitoring) (Reported Cleaned Up) (No Further Action) (Unknown) Date 4/12/00	
Cause of Release (Overfill) (Piping Failure) (Spill)(Tank Failure) (Unknown) Remediation Technologies Used	
Report Title	UST Site Assessment Report Date 2/9/00
Report Type (Interim) (Monitoring) (Final) (Site Characterization) (Unknown)	
Date Received	2/28/00 Contractor Gary Struthers Assoc.
Comments 2600 ppm TPH-D remains @ 1' bgs and is capped w/ 9" concrete slab (this area <del>below</del> beneath former dispenser). 500 gal diesel UST removed. Clean closure, though sidewall sampler were composited.	
Fund Source (LUST Trust Fund) (PLIA) (Responsible Party) (State Fund)	
VCP/IRAP Status (Requested) (Not Requested) (Complete) Reviewed by Broner Date 4/12/00	

## **Executive Summary**

On behalf of the City of Seattle, Garry Struthers Associates, Inc. provided site assessment guidance during the decommissioning of the former 500-gallon diesel underground storage tank (UST) at the City's Fire Station #6 site. This site is located at 101 - 23<sup>rd</sup> Avenue South in Seattle, Washington. This site was registered with the Washington State Department of Ecology with a UST Site ID Number of 7909. The UST is registered with tank ID of F6-1.

The data for this site indicate that a release did occur in the area of the former dispenser. Based upon the analytical data, the extent of this release is minimal. A clean sample was found at approximately the 3.5-foot depth at this location. Interim TPH calculations conducted upon the sample collected from the two-foot depth at this location, indicate that there is threat or potential threat to human health and the environment for the groundwater pathway. This calculation is made using a worse case estimated cPAH value. Interim TPH calculations indicate that there is no threat or potential threat to human health and the environment for the consumption pathway. The area is covered with a portion of the structural concrete apparatus ramp slab, which is approximately nine-inches thick. This slab is of structural importance to the facility due to its role in carrying out the lifesaving mission of the facility. There was also no evidence that the leakage extended into the UST backfill material, which would likely be the preferential pathway for any contaminant movement.

The UST was permanently closed and removed from the site on December 9, 1999.

## Introduction

On behalf of the City of Seattle, Garry Struthers Associates, Inc. provided site assessment guidance during the decommissioning of the former 500-gallon diesel underground storage tank (UST) at the City's Fire Station #6 site. This site is located at 101 - 23<sup>rd</sup> Avenue South in Seattle, Washington. This site was registered with the Washington State Department of Ecology with a UST Site ID Number of 7909. The UST is registered with tank ID of F6-1.

## Site Background

Fire Station #6 is located southeast of downtown in the Central District. The site is within the city limits of Seattle, Washington and is located in the NW 1/4 of the NW 1/4 of Section 4 of Township 24 North Range 4 East. The site occupies lot 5 and part of lot 6 of block 31 of the H.L. Yesler's First Addition with tax ID #982670-1650. Tax assessor records for this property are included in Appendix A of this report. According to the tax archive records the current building was built in 1931. The tax archive records indicate that a 550-gallon gas tank was installed in 1964 at the site. Surrounding properties are mixed commercial and residential. A site vicinity map is provided in Figure 1.

There are two apparatus back-in bays, each with its own door. The tank and dispenser are located in the front (eastside) of the Fire Station. The existing underground diesel tank has a 500-gallon capacity. A site map is provided in Figure 2.

The dispenser is located at grade. There is a concrete walkway in front of the dispenser that extends to the tank's fill port. This walkway and pad are relatively flat, but does drain towards the east into the landscaping. The tank vent is located on the east wall of the Fire Station, south of the apparatus bay doors, next to the dispenser.

The area above the tank is covered with concrete, reducing the potential that fuel has impacted the soil during filling and fueling operations. The fill connection is above-grade and is located in the concrete slab. Petroleum stains were observed on the concrete pad around the tank fill. The pad drains towards the landscaping. There is some indication that petroleum has washed off the pad during rainstorms onto adjacent landscaping. There is evidence of some dead and wilted groundcover adjacent to the edge of the pad and near the tank fill.

This station does not keep spill records. The City records do not indicate discrepancies between fuel delivery and usage. Therefore, it was not believed that the tank was leaking. The UST was sitting on a bed of brown sand. Underneath the sand layer was a clay soil typical of area.

## **Decommissioning and Site Assessment Activities**

Decommissioning activities for this UST began on December 9, 1999. Mr. Jared Stevenson of SAYBR Contractors, Inc. (SAYBR) conducted the decommissioning activities. The Ecology 'Closure and Site Assessment Notice' is included in Appendix B of this report.

The top of the UST was located approximately two feet, ten inches below grade. A small water line directly above the tank (at approximately two feet below grade) was discovered. Water was shut off and the pipe cut to facilitate removal of the tank. The surface area of the excavation created by the UST removal was approximately 8 feet by 10 feet.

Three soil samples were collected from the UST excavation with the aid of the backhoe. One sample collected from the bottom of the excavation was identified as sample number FS06BO7. This sample was collected from approximately seven feet below grade. One composite sample collected from the eastern and southern sidewall was identified as sample number FS06SG5.5. This sample location was at approximately five and a half feet below grade. One composite sample collected from the western and northern sidewall was identified as sample number FS06BR5.5. This sample location was at approximately five and a half feet below grade.

On December 9, 1999, three samples were collected from the stockpile (FS06SPNE, FS06SPNW, and FS06SPS) and one sample, FS06DISP1, was collected under the dispenser area approximately one foot below grade.

On December 22, 1999, three additional samples were collected under the dispenser. Samples FS06DISP3.5A, FS06DISP3.5B, and FS06DISP2.0 were collected at three and a half feet, three and a half feet, and two feet below grade respectively.

The excavation area was backfilled with the material from the stockpile to the level of the water line. A repair crew from the city repaired the water line.

Water was not encountered during the decommissioning and site assessment activities at this site.

The site assessment sampling locations are shown in Figure 3.

The Ecology 'Site Check/Site Assessment Checklist' is included in Appendix B of this report.

## **Analytical Results**

All of the soil samples were submitted to OnSite Environmental, Inc. of Redmond, Washington<sup>1</sup> for laboratory analysis. Table 1 shows the samples and what they were analyzed for.

### *Methods*

The NWTPH-HCID Method provides a qualitative analysis of the presence or absence of gasoline, diesel, and heavy oil range petroleum hydrocarbons. The gasoline-range consists of petroleum hydrocarbons containing 6 to 12 carbon atoms. The diesel-range consists of petroleum hydrocarbons containing 12 to 24 carbon atoms. The oil-range consists of petroleum hydrocarbons containing 25 to 34 carbon atoms.

The NWTPH G/BTEX method provides quantified concentrations for gasoline-range petroleum hydrocarbons. This method also provides quantified concentrations for benzene, toluene, ethylbenzene, and total xylenes.

The NWTPH-Dx method provides quantified concentrations for both diesel-range and oil-range petroleum hydrocarbons.

Method EPH provides quantified concentrations for selected target extractable petroleum hydrocarbons.

### *Results*

Summary laboratory results are presented in Table 1. Laboratory analytical data is included as Appendix C of this report. Confirmation samples following overexcavation indicate that the contaminated soil was removed. Washington State Department of Ecology Interim TPH Policy Calculations were performed using the analytical results from these samples. Interim TPH Policy Calculations are included as Appendix D of this report.

### *Discussion*

The data for this site indicate that a release did occur in the area of the former dispenser. Based upon the analytical data, the extent of this release is minimal. A clean sample was found at approximately the 3.5-foot depth at this location. Interim TPH calculations conducted upon the sample collected from the two-foot depth at this location, indicate that there is threat or potential threat to human health and the environment for the groundwater pathway. This calculation is made using a worse case estimated cPAH value. Interim TPH calculations indicate that there is no threat or potential threat to human health and the environment for the consumption pathway. The area is covered with a portion of the structural concrete apparatus ramp slab, which is approximately nine inches thick. This slab is of structural importance to the facility due to its role in caring out the lifesaving mission of the facility. There was also no evidence that the leakage extended into the UST backfill material, which would likely be the preferential pathway for any contaminant movement.

GSA recommends that the City plan upon the removal of this area of impacted soil when the structural life of the apparatus ramp has passed and the facility undergoes ramp replacement.

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<sup>1</sup> OnSite Environmental Inc. - 14648 NE 95th, Redmond, WA 98052

TABLE 1: Laboratory Analytical Results

			Results									
			NWTPH-HCID			NWTPH-G/BTEX					NWTPH-Dx	
Sample ID	Date Sampled	Sample Depth (ft below grade)	Gasoline (mg/kg)	Diesel (mg/kg)	Heavy Oil (mg/kg)	Gasoline (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Diesel (mg/kg)	Heavy Oil (mg/kg)
MTCA A			100	200	200	100	0.5	40	20	20	200	200
FS06DISP1	12/9/99	1	ND (<27)	Diesel Fuel #2	ND (<110)	NA	NA	NA	NA	NA	2600	ND (<55)
FS06BO7	12/9/99	7	ND (<29)	ND (<57)	ND (<110)	NA	NA	NA	NA	NA	NA	NA
FS06BR5.5	12/9/99	5.5	ND (<29)	ND (<58)	ND (<120)	NA	NA	NA	NA	NA	NA	NA
FS06SG5.5	12/9/99	5.5	ND (<30)	ND (<60)	ND (<120)	NA	NA	NA	NA	NA	NA	NA
FS06SPNE	12/9/99	stockpile	ND (<29)	Diesel Fuel #2	ND (<120)	NA	NA	NA	NA	NA	39	ND (<58)
FS06SPNW	12/9/99	stockpile	ND (<30)	ND (<60)	ND (<120)	NA	NA	NA	NA	NA	NA	NA
FS06SPS	12/9/99	stockpile	ND (<29)	ND (<59)	ND (<120)	NA	NA	NA	NA	NA	NA	NA
FS06DISP3.5A	12/22/99	3.5	NA	NA	NA	NA	NA	NA	NA	NA	180	ND (<58)
FS06DISP3.5B	12/22/99	3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FS06DISP2.0	12/22/99	2	NA	NA	NA	ND (<5.7)	ND (<0.057)	ND (<0.057)	ND (<0.057)	ND (<0.114)	690	ND (<57)

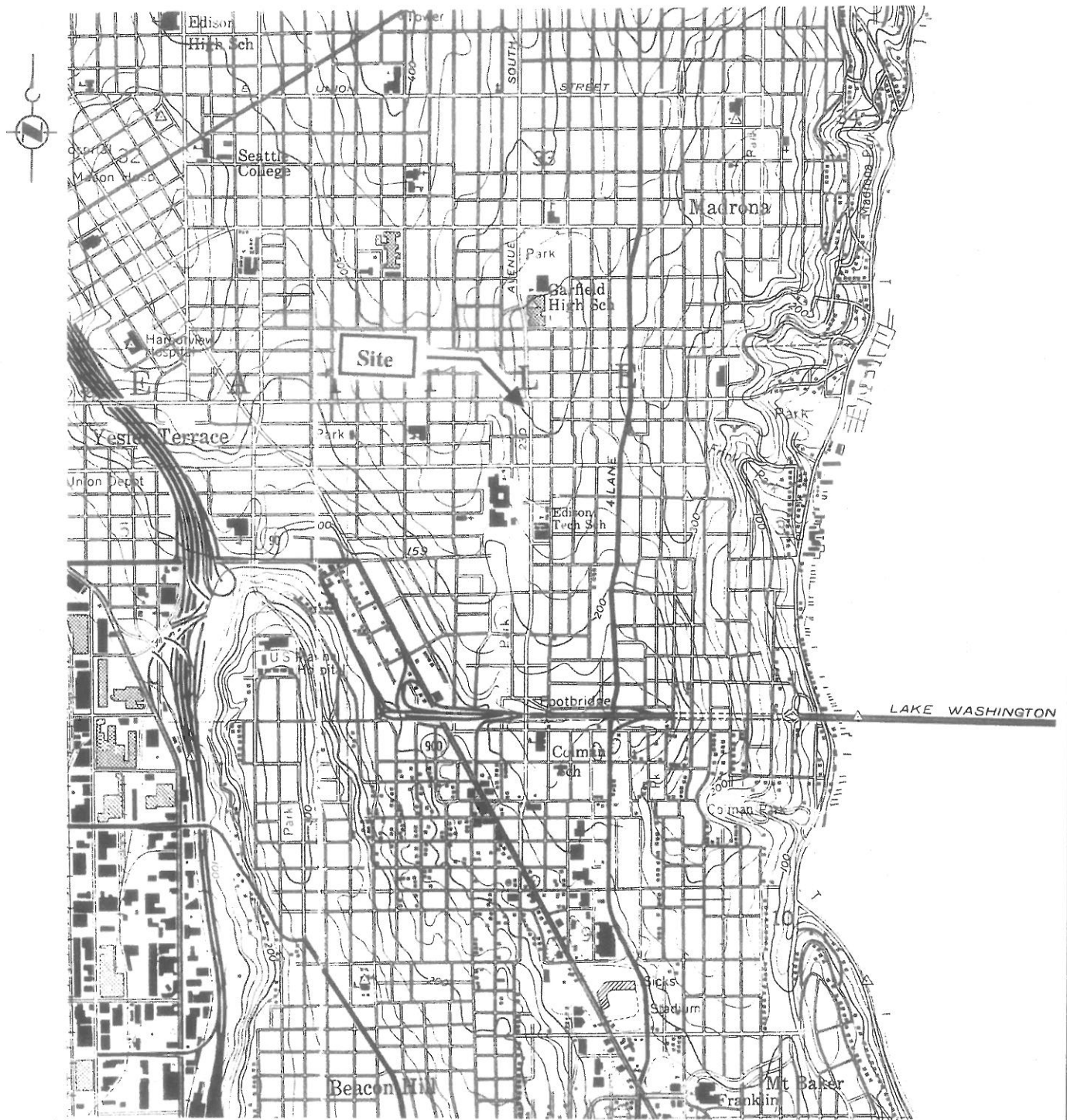
			Volatile Petroleum Hydrocarbons											
			Aliphatic						Aromatic					
Sample ID	Date Sampled	Sample Depth (ft below grade)	C10-C12 (mg/kg)	C12-C16 (mg/kg)	C16-C18 (mg/kg)	C18-C21 (mg/kg)	C21-C28 (mg/kg)	C28-C36 (mg/kg)	C10-C12 (mg/kg)	C12-C16 (mg/kg)	C16-C18 (mg/kg)	C18-C21 (mg/kg)	C21-C28 (mg/kg)	C28-C36 (mg/kg)
FS06DISP2.0	12/22/99	2	ND (<5.7)	37	72	130	90	12	ND (<5.7)	ND (<5.7)	ND (<5.7)	71	28	ND (<5.7)

ND (<XX) – The analyte was not detected at the associated (xx) practical quantitation limit  
NA – This sample was not analyzed for this analyte

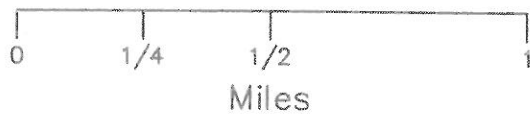
## Summary

Based upon site assessment observations and associated analytical results, there is indication of leakage from the dispenser area of former UST facility at this site. The former UST has been decommissioned with permanent removal. Soil remaining in place indicates possible threat or potential threat to human health and the environment for the groundwater pathway. There is indication that there is no threat or potential threat to human health and the environment for the consumption pathway. Based upon site-specific data any threat that the remaining diesel compounds pose is considered minimal.

No warranty is expressly stated or implied in this report with regard to the condition of the substrate and groundwater below the surface of this property with the exception of the sampling and analysis of substrate assessed by GSA. This report is not intended to, nor does it purport to encompass every record, report or document available on the site and the surrounding properties. This report reflects our observations of the condition of the property during the time of field activities, and does not cover any other conditions found on the property that were not visible during these field activities.



Scale 1"=2000'

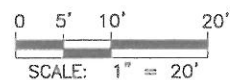


Reproduced from:  
USGS Seattle South  
Quadrangle - 1973  
Date: Feb. 1, 2000

Vicinity Map of  
Fire Station #6  
101 23rd Avenue South  
Seattle, Washington


Figure

1



REV	DATE	DESCRIPTION	BY	APRD
		DRAWING REVISION RECORD		

ONE INCH ON  
ORIGINAL DRAWING

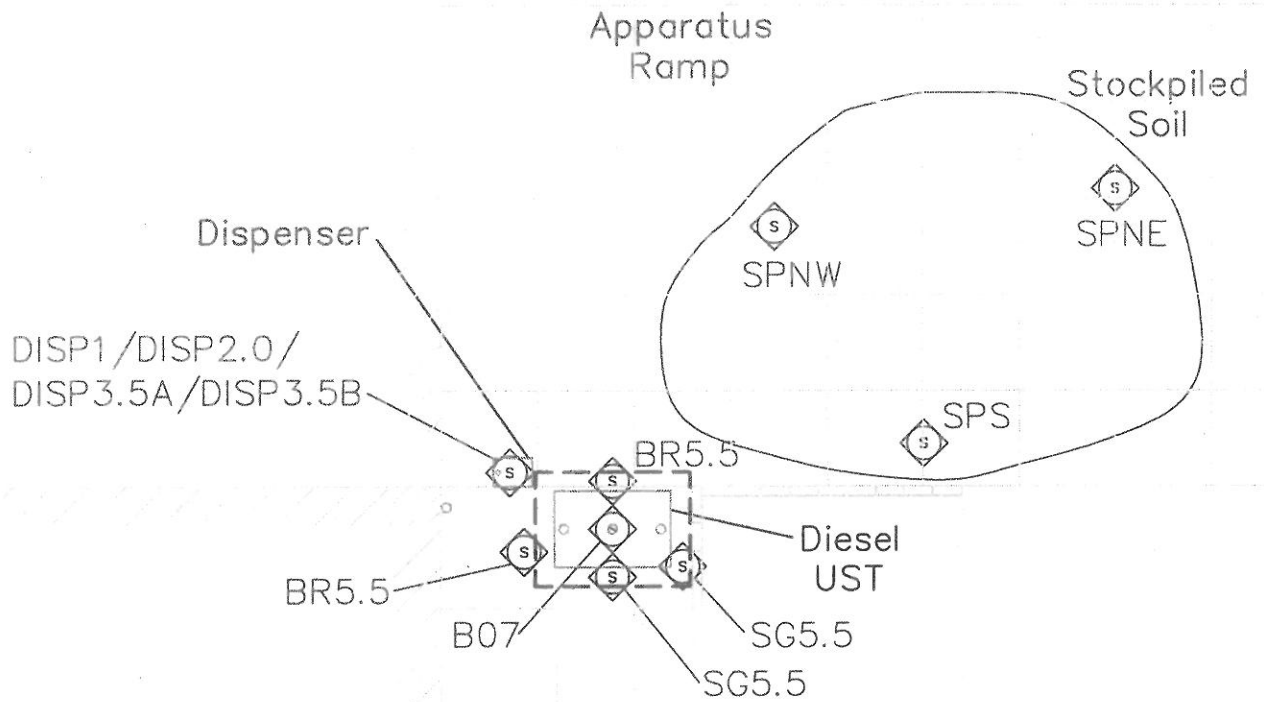


IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

REMOVAL AND REPLACEMENT OF  
UNDERGROUND STORAGE TANK SYSTEMS

FIRE STATION NO. 6  
SITE PLAN

FIGURE  
2



### Legend

Sampling  
Locations:  
Soil



Scale 1"=10'



Note: All sample labels are  
preceded by "FS06".

Site Assessment Sampling  
Locations for Fire Station #6

Figure  
3

## **APPENDIX A**

Archived Tax Assessor Records





## **APPENDIX B**

Closure and Site Assessment Notice

and

Site Check/Site Assessment Checklist



# UNDERGROUND STORAGE TANK Closure and Site Assessment Notice

See back of form for instructions

NW

FOR OFFICE USE ONLY	
Site ID #	7909
Owner ID #	U-8348

Please ☒ the appropriate box(es)

☐ Temporary Tank Closure ☐ Change-In-Service ☒ Permanent Tank Closure ☒ Site Check/Site Assessment

## Site Information

Site ID Number 7909  
(Available from Ecology if the tanks are registered)  
Site/Business Name SEATTLE FIRE STATION #6  
Street  
Site Address 101 - 23<sup>rd</sup> AVE SOUTH  
City/State SEATTLE, WA  
Zip Code 98144-2301 Telephone (206) 336-1406  
Owners Signature Paul Berry

## Owner Information

(This form will be returned to this address)

UST Owner/Operator CITY OF SEATTLE - ESD - Attn: Paul Berry  
Mailing Address 618 SECOND AVENUE  
Street  
14<sup>th</sup> FLOOR  
P.O. Box  
City/State SEATTLE WA  
Zip Code 98104 Telephone (206) 684-0422

## Tank Closure/Change-In-Service Company

Service Company Sayhr Contractors  
Certified Supervisor James Stevenson Decommissioning Certification No. 1057122-26  
Supervisor's Signature James Stevenson Date \_\_\_\_\_  
Address 1623 8 42<sup>nd</sup> Avenue S.  
Street  
Seattle WA 98148  
City State Zip Code Telephone (206) 330-6235

## Site Check/Site Assessor

Certified Site Assessor FREDERICK N. LUK  
Address 3150 RICHMOND ROAD SUITE 100  
Street  
BELLEVUE WA 98005  
City State Zip Code Telephone (206) 425 519-0300

## Tank Information

Tank ID	Closure Date	Closure Method	Tank Capacity	Substance Stored
<u>F6-1</u>	<u>12/9/99</u>	<u>REMOVAL</u>	<u>500 GAL</u>	<u>DIESEL</u>

## Contamination Present at the Time of Closure

☒ Yes ☐ No ☐ Unknown  
Check unknown if no obvious contamination was observed and sample results have not yet been received from analytical lab.

☒ Yes ☐ No  
If contamination is present, has the release been reported to the appropriate regional office?

To receive this document in an alternative format, contact the TOXICS CLEANUP PROGRAM at 1-800-826-7716 (VOICE) OR (360) 407-6006 (TDD).



## UNDERGROUND STORAGE TANK Site Check/Site Assessment Checklist

NW

FOR OFFICE USE ONLY

Site #: 7909  
Owner #: U-8348

### INSTRUCTIONS

When a release has not been confirmed and reported, this Site Check/Site Assessment Checklist must be completed and signed by a person certified by IFCI or a Washington registered professional engineer who is competent, by means of examination, experience, or education, to perform site assessments. **The results of the site check or site assessment must be included with this checklist.** This form must be submitted to Ecology at the address shown below within 30 days after completion of the site check/site assessment.

**SITE INFORMATION:** Include the Ecology site ID number if the tanks are registered with Ecology. This number may be found on the tank owner's invoice or tank permit.

**TANK INFORMATION:** Please list all tanks for which the site check or site assessment is being conducted. Use the owner's tank ID numbers if available, and indicate tank capacity and substance stored.

**REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT:** Please check the appropriate item.

**CHECKLIST:** Please initial each item in the appropriate box.

**SITE ASSESSOR INFORMATION:** This information must be signed by the registered site assessor who is responsible for conducting the site check/site assessment.

Underground Storage Tank Section  
Department of Ecology  
PO Box 47655  
Olympia WA 98504-7655

### SITE INFORMATION

Site ID Number (Available from Ecology if the tanks are registered): 7909  
Site/Business Name: SEATTLE FIRE STATION #6  
Site Address: 101 - 23<sup>RD</sup> AVENUE SOUTH Telephone: (206) 336-1406  
City State Zip Code

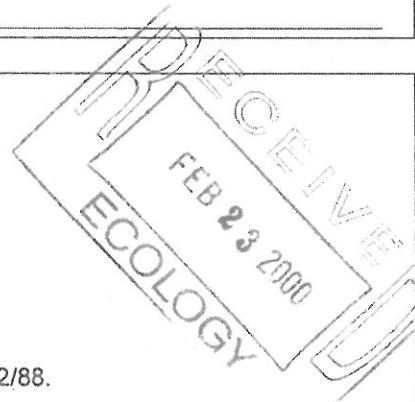
### TANK INFORMATION

Tank ID No.	Tank Capacity	Substance Stored
<u>F6-1</u>	<u>500-GAL</u>	<u>DIESEL FUEL</u>

### REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT

Check one:

- ☐ Investigate suspected release due to on-site environmental contamination.
- ☐ Investigate suspected release due to off-site environmental contamination.
- ☐ Extend temporary closure of UST system for more than 12 months.
- ☐ UST system undergoing change-in-service.
- ☒ UST system permanently closed with tank removed.
- ☐ Abandoned tank containing product.
- ☐ Required by Ecology or delegated agency for UST system closed before 12/22/88.
- ☐ Other (describe): \_\_\_\_\_



# CHECKLIST

Each item of the following checklist shall be initialed by the person registered with the Department of Ecology whose signature appears below.

	YES	NO
1. The location of the UST site is shown on a vicinity map.	FI	
2. A brief summary of information obtained during the site inspection is provided. (see Section 3.2 in site assessment guidance)	FI	
3. A summary of UST system data is provided. (see Section 3.1.)	FI	
4. The soils characteristics at the UST site are described. (see Section 5.2)	FI	
5. Is there any apparent groundwater in the tank excavation?		FI
6. A brief description of the surrounding land use is provided. (see Section 3.1)	FI	
7. Information has been provided indicating the number and types of samples collected, methods used to collect and analyze the samples, and the name and address of the laboratory used to perform the analyses.	FI	
8. A sketch or sketches showing the following items is provided:		
- location and ID number for all field samples collected	FI	
- groundwater samples distinguished from soil samples (if applicable)	NA	
- samples collected from stockpiled excavated soil	FI	
- tank and piping locations and limits of excavation pit	FI	
- adjacent structures and streets	FI	
- approximate locations of any on-site and nearby utilities	FI	
9. If sampling procedures different from those specified in the guidance were used, has justification for using these alternative sampling procedures been provided? (see Section 3.4)	FI	
10. A table is provided showing laboratory results for each sample collected including; sample ID number, constituents analyzed for and corresponding concentration, analytical method and detection limit for that method.	FI	
11. Any factors that may have compromised the quality of the data or validity of the results are described.	FI	
12. The results of this site check/site assessment indicate that a confirmed release of a regulated substance has occurred.	FI	

## SITE ASSESSOR INFORMATION

FREDERICK N. LUCK CAMP SOUTHWEST ASSOCIATES, INC  
 Person registered with Ecology Firm Affiliated with  
 Business Address: 3150 RICHMOND ROAD SUITE 100 Telephone: (425) 519-0300  
Bellevue WA 98038  
 City State Zip Code

I hereby certify that I have been in responsible charge of performing the site check/site assessment described above. Persons submitting false information are subject to penalties under Chapter 173.360 WAC.

2/9/00 [Signature]  
 Date Signature of Person Registered with Ecology

## **APPENDIX C**

### Laboratory Analytical Data



## GARRY STRUTHERS ASSOCIATES, INC.

3150 Richards Road, Suite 100  
Bellevue, WA 98005-4446  
(425) 519-0300 (phone)  
(425) 519-0309 (fax)

### Memorandum

Date: December 21, 1999

Project Name: Seattle UST-Final Group

To: Fred Luck  
Engineer

Project No.: 95-044 P: 5 T: 12

From: Mike Webb *mw*  
Chemist

Subject: Chemical Data QC Report  
OnSite Environmental Report #9912-058

#### Analytical Methods:

- NWTPH-HCID for identification of gasoline, diesel, and heavy oil range hydrocarbons.
- NWTPH-Dx for quantitation of diesel and heavy oil range hydrocarbons.

#### Data Use Intended:

- To provide information for site assessment.

#### Discussion:

Samples FS06 DISP1 and FS06 SPNE indicate diesel #2.

The laboratory quality control and analytical data show acceptable accuracy and precision. No data were rejected due to quality control problems.

#### Overall Conclusions:

These data are usable for the intended purpose.



**OnSite  
Environmental Inc.**

Analytical Testing and Mobile Laboratory Services

December 16, 1999



Fred Luck  
Garry Struthers Associates, Inc.  
3150 Richards Road, Suite 100  
Bellevue, WA 98005-4446

Re: Analytical Data for Project 95-044 Phase 5 Task 12  
Laboratory Reference No. 9912-058

Dear Fred:

Enclosed are the analytical results and associated quality control data for samples submitted on December 9, 1999.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister  
Project Manager

Enclosures

Date of Report: December 16, 1999  
Samples Submitted: December 9, 1999  
Lab Traveler: 12-058  
Project: 95-044 Phase 5 Task 12

**NWTPH-HCID**

Date Extracted: 12-9-99  
Date Analyzed: 12-9-99

Matrix: Soil  
Units: mg/Kg (ppm)

Client ID:	FS06 DISP1	FS06 B07	FSO6 BR5.5
Lab ID:	12-058-01	12-058-02	12-058-03
Gasoline:	ND	ND	ND
PQL:	27	29	29
Diesel Fuel:	Diesel Fuel #2	ND	ND
PQL:	55	57	58
Heavy Oil:	ND	ND	ND
PQL:	110	110	120
Surrogate Recovery:			
o-Terphenyl	---	97%	90%
Flags:	F		

Date of Report: December 16, 1999  
Samples Submitted: December 9, 1999  
Lab Traveler: 12-058  
Project: 95-044 Phase 5 Task 12

**NWTPH-HCID**

Date Extracted: 12-9-99  
Date Analyzed: 12-9-99

Matrix: Soil  
Units: mg/Kg (ppm)

Client ID:	FS06 SG5.5	FS06 SPNE	FS06 SPNW
Lab ID:	12-058-04	12-058-05	12-058-06

Gasoline:	ND	ND	ND
PQL:	30	29	30

Diesel Fuel:	ND	Diesel Fuel #2	ND
PQL:	60	58	60

Heavy Oil:	ND	ND	ND
PQL:	120	120	120

Surrogate Recovery:			
o-Terphenyl	92%	98%	111%

Flags:

Date of Report: December 16, 1999  
Samples Submitted: December 9, 1999  
Lab Traveler: 12-058  
Project: 95-044 Phase 5 Task 12

**NWTPH-HCID**

Date Extracted: 12-9-99  
Date Analyzed: 12-9-99

Matrix: Soil  
Units: mg/Kg (ppm)

Client ID: FS06 SPS  
Lab ID: 12-058-07

Gasoline: ND  
PQL: 29

Diesel Fuel: ND  
PQL: 59

Heavy Oil: ND  
PQL: 120

Surrogate Recovery:  
o-Terphenyl 102%

Flags:

Date of Report: December 16, 1999  
Samples Submitted: December 9, 1999  
Lab Traveler: 12-058  
Project: 95-044 Phase 5 Task 12

**NWTPH-HCID  
METHOD BLANK QUALITY CONTROL**

Date Extracted: 12-9-99  
Date Analyzed: 12-9-99

Matrix: Soil  
Units: mg/Kg (ppm)

Lab ID: MB1209S1

Gasoline: ND  
PQL: 25

Diesel Fuel: ND  
PQL: 50

Heavy Oil: ND  
PQL: 100

Surrogate Recovery:  
o-Terphenyl 93%

Flags

Date of Report: December 16, 1999  
Samples Submitted: December 9, 1999  
Lab Traveler: 12-058  
Project: 95-044 Phase 5 Task 12

**NWTPH-Dx**

Date Extracted: 12-10-99  
Date Analyzed: 12-10-99

Matrix: Soil  
Units: mg/Kg (ppm)

Client ID:	FS06 DISP1	FS06 SPNE
Lab ID:	12-058-01	12-058-05

Diesel Fuel:	2600	39
PQL:	28	29

Heavy Oil:	ND	ND
PQL:	55	58

Surrogate Recovery:		
o-Terphenyl	---	103%

Flags: F,X

Date of Report: December 16, 1999  
Samples Submitted: December 9, 1999  
Lab Traveler: 12-058  
Project: 95-044 Phase 5 Task 12

**NWTPH-Dx**  
**METHOD BLANK QUALITY CONTROL**

Date Extracted: 12-10-99  
Date Analyzed: 12-13-99

Matrix: Soil  
Units: mg/Kg (ppm)

Lab ID: MB1210S1

Diesel Fuel: ND  
PQL: 25

Heavy Oil: ND  
PQL: 50

Surrogate Recovery:  
o-Terphenyl 128%

Flags:

Date of Report: December 16, 1999  
Samples Submitted: December 9, 1999  
Lab Traveler: 12-058  
Project: 95-044 Phase 5 Task 12

**NWTPH-Dx**  
**METHOD BLANK QUALITY CONTROL**

Date Extracted: 12-10-99  
Date Analyzed: 12-13-99

Matrix: Soil  
Units: mg/Kg (ppm)

Lab ID: MB1210S1

Diesel Fuel: ND  
PQL: 25

Heavy Oil: ND  
PQL: 50

Surrogate Recovery:  
o-Terphenyl 144%

Flags: X

Date of Report: December 16, 1999  
Samples Submitted: December 9, 1999  
Lab Traveler: 12-058  
Project: 95-044 Phase 5 Task 12

**NWTPH-Dx**  
**DUPLICATE QUALITY CONTROL**

Date Extracted: 12-10-99  
Date Analyzed: 12-10-99

Matrix: Soil  
Units: mg/Kg (ppm)

Lab ID: 12-054-01 12-054-01 DUP

Diesel Fuel: ND ND  
PQL: 25 25

RPD: N/A

Surrogate Recovery:  
o-Terphenyl 97% 102%

Flags:

Date of Report: December 16, 1999  
Samples Submitted: December 9, 1999  
Lab Traveler: 12-058  
Project: 95-044 Phase 5 Task 12

**NWTPH-Dx**  
**SPIKE BLANK QUALITY CONTROL**

Date Extracted: 12-10-99  
Date Analyzed: 12-10-99

Matrix: Soil  
Units: mg/Kg (ppm)

Spike Level: 100 ppm

Lab ID: SB1210S1

Diesel Fuel: 111

PQL: 25

Percent Recovery: 111

Surrogate Recovery:  
o-Terphenyl 129%

Flags:

Date of Report: December 16, 1999  
Samples Submitted: December 9, 1999  
Lab Traveler: 12-058  
Project: 95-044 Phase 5 Task 12

Date Analyzed: 12-9-99

**% MOISTURE**

Client ID	Lab ID	% Moisture
FS06 DISP1	12-058-01	9.0
FS06 BO7	12-058-02	13
FS06 BR5.5	12-058-03	14
FS06 SG5.5	12-058-04	17
FS06 SPNE	12-058-05	14
FS06 SPNW	12-058-06	16
FS06 SPS	12-058-07	15



#### DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:\_\_\_\_ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical \_\_\_\_\_.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected

MRL - Method Reporting Limit

PQL - Practical Quantitation Limit

RPD - Relative Percent Difference