USPS - Gen Mail Facility
SIT 3.6.7

SUPPLEMENTAL SOIL AND GROUNDWATER SAMPLING

GENERAL MAIL FACILITY
UNITED STATES POSTAL SERVICE
2445 THIRD AVENUE SOUTH
SEATTLE, WA

Prepared for

United States Postal Service
Denver Facilities Service Office
8055 East Tufts Avenue, Suite 400
Denver, Colorado 80237-2861

ICF KAISER

Contract No. 072976-98-B-1245
Work Order No. 004.01
Project No. E13109

October 5, 1998

ICF KAISER

LETTER OF TRANSMITTAL

1191 Second Avenue, Suite 1200
Seattle, Washington 98101
(206) 521-5900
Fax (206) 521-5911

TO: Maura O'Brien
Dept. of Ecology
NW Region - Bellevue, WA

DATE: Oct. 7, 1998
SUBJECT: USPS General Mail Facility
ICF JOB NO.: Seattle WA.

RECEIVED
OCT 08 1998
DEPT. OF ECOLOGY

We are sending you: [ ] Attached [X] Under Separate Cover

via: [ ] Mail [ ] Overnight [X] Courier

the following items:

[ ] Draft Report [X] Final Report [ ] Samples/Results

[ ] Drawings [ ] Technical Info. [ ] Other

Copies	Date	Description
1	10-6-98	Report For the Supplemental Groundwater and Soil Sampling

These are transmitted as checked below:

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Remarks:

Please contact me at 206 521-5962 with any questions you may have regarding the Report.
Thank You,

Copies to:

ICF Kaiser Engineers, Inc.

By: Robert Taffe

If attachments are not as noted, kindly notify us at once.

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TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
Ecology	Washington State Department of Ecology
GMF	general mail facility
ICF Kaiser	ICF Kaiser Engineers, Inc.
mg/kg	milligrams per kilogram
MS/MSD	matrix spike/ matrix spike duplicate
MTCA	Model Toxics Control Act
NWTPH-Dx	Northwest Total Petroleum Hydrocarbon - Diesel extended
PCBs	polychlorinated biphenyls
QA	quality assurance
RPD	relative percent difference
TEG	Transglobal Environmental Geosciences, Inc.
TPH	total petroleum hydrocarbons
µg/L	micrograms per liter
USDOT	United States Department of Transportation
USPS	United States Postal Service
UST	underground storage tank
VMF	vehicle maintenance facility

EXECUTIVE SUMMARY

ICF Kaiser Engineers, Inc. (ICF Kaiser) conducted a supplemental environmental sampling event at the former General Mail Facility (GMF) at 2445 Third Avenue South, in Seattle, Washington. The property is being characterized by the United States Postal Service (USPS) to complete closure activities at the GMF. The sampling event was conducted on September 9, 1998, and consisted of collecting soil and groundwater samples from eight separate Strataprobe direct-push boreholes in two areas of concern. Two soil samples were collected between 5 and 10 feet below ground surface (bgs), and one groundwater sample was collected at approximately 8 feet bgs from each borehole.

Another environmental consultant previously conducted extensive sampling at the GMF in June 1998. The ICF Kaiser Scope of Work for the supplemental sampling addressed two areas of concern, borehole B-8 and the vehicle hoist pit area. Soil and groundwater samples were collected near borehole B-8 to confirm previous sampling results and additional samples were analyzed from the hoist pit area to further characterize subsurface conditions.

Samples collected from the first area, near borehole B-8, were intended to confirm the concentrations of total petroleum hydrocarbons (TPH) previously detected in groundwater. Samples collected from the second area of concern, near the hydraulic hoist pits in the vehicle maintenance facility (VMF) building, were intended to fill in data gaps that existed in previous site reports. The intent of the supplemental sampling is to present the Washington State Department of Ecology (Ecology) additional site information. Soil and groundwater samples collected were analyzed for TPH and polychlorinated biphenyls (PCBs).

In the vicinity of borehole B-8, there appears to be minor TPH contamination in the soil. The highest concentration of TPH was 270 milligrams per kilogram (mg/kg). The highest concentration of TPH in groundwater was 4,500 micrograms per liter (µg/L). These more recent groundwater results do not confirm the higher TPH results reported by Dames & Moore (June 1998) at borehole B-8.

Measurable levels of TPH were detected in soil and groundwater adjacent to the hoist pits. In the six boreholes completed at the VMF, levels of TPH in the heavy oil range were found in all but two soil samples above Model Toxics Control Act (MTCA) Method A cleanup standard of 200 mg/kg. Levels of TPH in groundwater at the VMF were also above the MTCA Method A cleanup standard of 1,000 µg/L in four of the six boreholes sampled. The highest concentration of TPH detected in the hoist pit area was 28,000 mg/kg in soil and 183,000 µg/L in groundwater at SP3. The lateral distribution of hydrocarbons in soil and especially groundwater suggests that the highest levels of contamination are present under the VMF building, south of the hoist pits.

1.0 INTRODUCTION

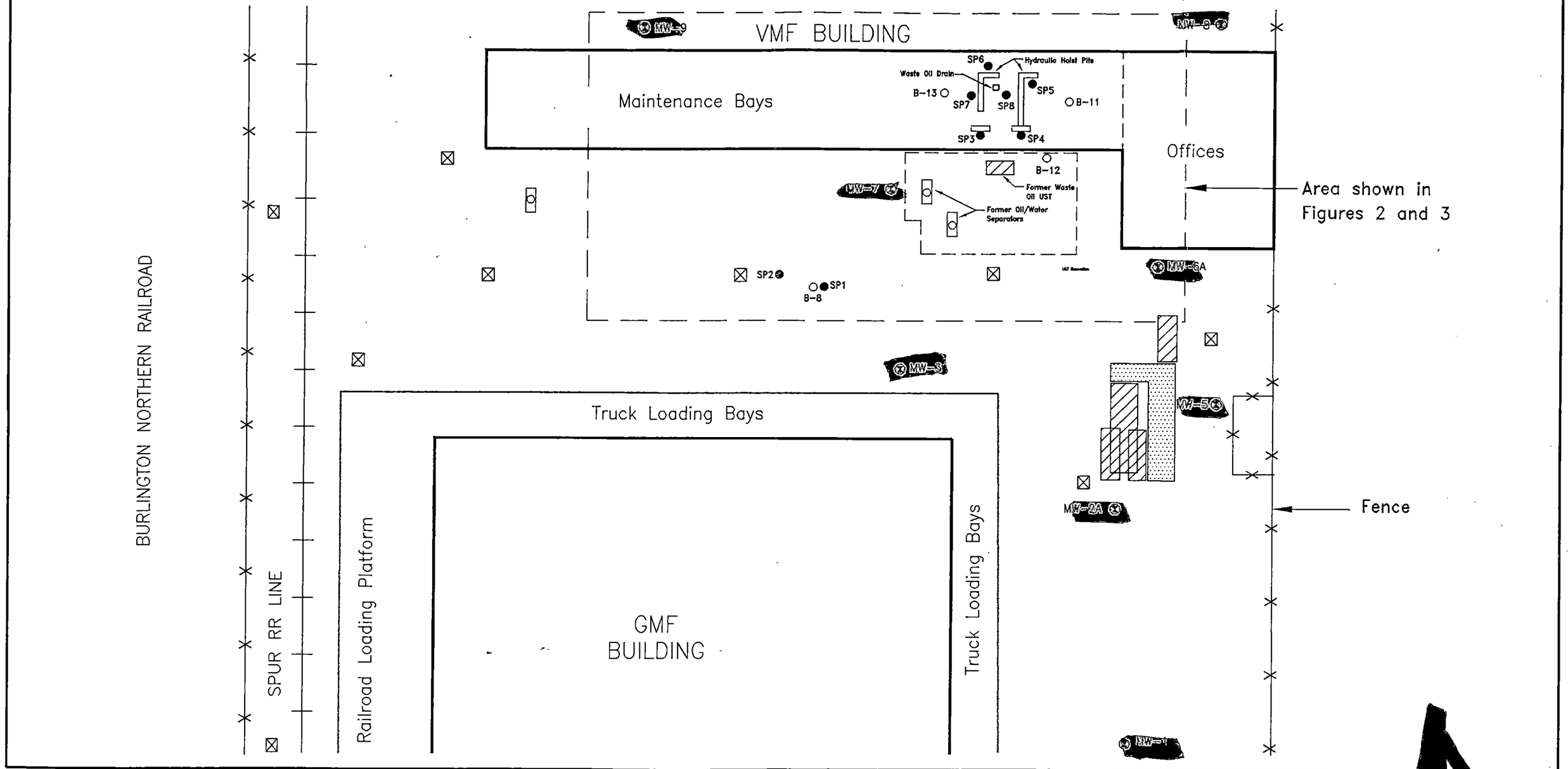
ICF Kaiser Engineers, Inc. (ICF Kaiser), under a work order with the United States Postal Service (USPS), conducted a supplemental environmental sampling event at the former General Mail Facility (GMF) at 2445 Third Avenue South, in Seattle, Washington. The USPS currently owns the property. The sampling event was conducted on September 9, 1998, and consisted of collecting soil and groundwater samples from eight separate Strataprobe direct-push boreholes in two distinct areas of concern. This report presents the results of the sampling and analysis, and observations of the field sampling activity.

2.0 BACKGROUND

The vacant USPS site is the former Seattle GMF. The site also contains a vehicle maintenance facility (VMF) (see Site Plan, Figure 1). Several underground storage tanks (USTs) have been removed from the site. These environmental concerns and remedial activities were documented by Dames & Moore in a 1997 report and in a Phase I Site Evaluation completed by ICF Kaiser in 1997.

The USPS is interested in completing closure activities at the site. In June 1998, Dames & Moore, at the request of a potential buyer, completed a soil and groundwater investigation at the facility (Dames & Moore, 1998).

In order to confirm and supplement the sampling investigation conducted by Dames & Moore, ICF Kaiser was tasked by the USPS to collect additional soil and groundwater samples in two areas of concern. Samples collected from the first area, near Dames & Moore borehole B-8, were intended to confirm the levels of TPH previously detected in groundwater. Samples collected from the second area, near the hydraulic hoist pits in the VMF building, were intended to provide additional data for the previous sampling activity documented in the Dames & Moore report. With the additional sample data, the Washington State Department of Ecology (Ecology) will have a more complete characterization of the site.



LEGEND

- MW-2A — EXISTING MONITORING WELL
- STORM WATER DRAIN
- SP7 — ICF KAISER BORING
- B-11 — DAMES & MOORE BORING
- FORMER GROUNDWATER COLLECTION TRENCH
- CURRENT AND FORMER OIL/WATER SEPARATORS
- FORMER UST

ICF KAISER 1191 Second Ave. Seattle, WA 98101

FIGURE 1: SITE PLAN – NORTH END OF SITE

Client:	Location:	Project:	Date:
USPS	GMF SEATTLE, WA	81302-004-001	09/24/98

0 25 50 75 100

SCALE IN FEET

GMF2-FIG1.DWG

3.0 SITE INVESTIGATION ACTIVITIES

Sampling activities were conducted on September 9, 1998. Prior to the beginning of subsurface drilling, a utility check was completed to clear the proposed drilling locations of utilities and other underground impediments. An ICF Kaiser geologist, working with a Stratoprobe crew from Transglobal Environmental Geosciences, Inc. (TEG), collected two soil samples and a groundwater sample from each of eight separate boreholes. Two of the boreholes (SP1 and SP2) were located adjacent to borehole B-8, a previous sampling location completed by Dames & Moore in June 1998. The other six boreholes (SP3 through SP8) were located around the hydraulic hoist pits in the east end of the VMF building. Site photographs taken during the sampling activity are presented in Appendix A. The location of each of the boreholes is shown in Figure 2.

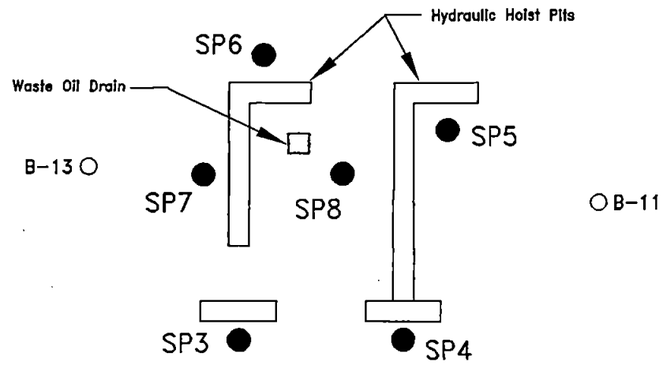
Soil samples were collected with a 3-foot long stainless steel split spoon from two to three separate intervals in each borehole. The lithology of the boreholes was documented using continuous split-spoon samples collected in each borehole beginning at 2 feet below ground surface (bgs). A lithologic log of each borehole may be found in Appendix B. A soil sample was collected from each of the two 3-foot intervals in each borehole. The subsurface conditions consist of fill material observed to varied depths of 8 to 10 feet bgs. Impermeable materials were noted below the fill material interval. Samples were collected for analysis from any soil core that were visibly stained with hydrocarbons or had a strong hydrocarbon odor. Groundwater samples were collected using a 3-foot long stainless steel screen within a sealed retractable casing. The groundwater samples collected represent contaminant concentrations across this 3-foot interval. In several of the boreholes, a clayey layer at depth impeded initial attempts to collect a water sample, and the sampling device had to be driven several feet farther. A length of polyethylene tubing was placed to the bottom of the screen and a peristaltic pump was used to pump water to the surface. The water was purged until it reached low levels of turbidity (this occurred fairly quickly), after which a sample was collected.

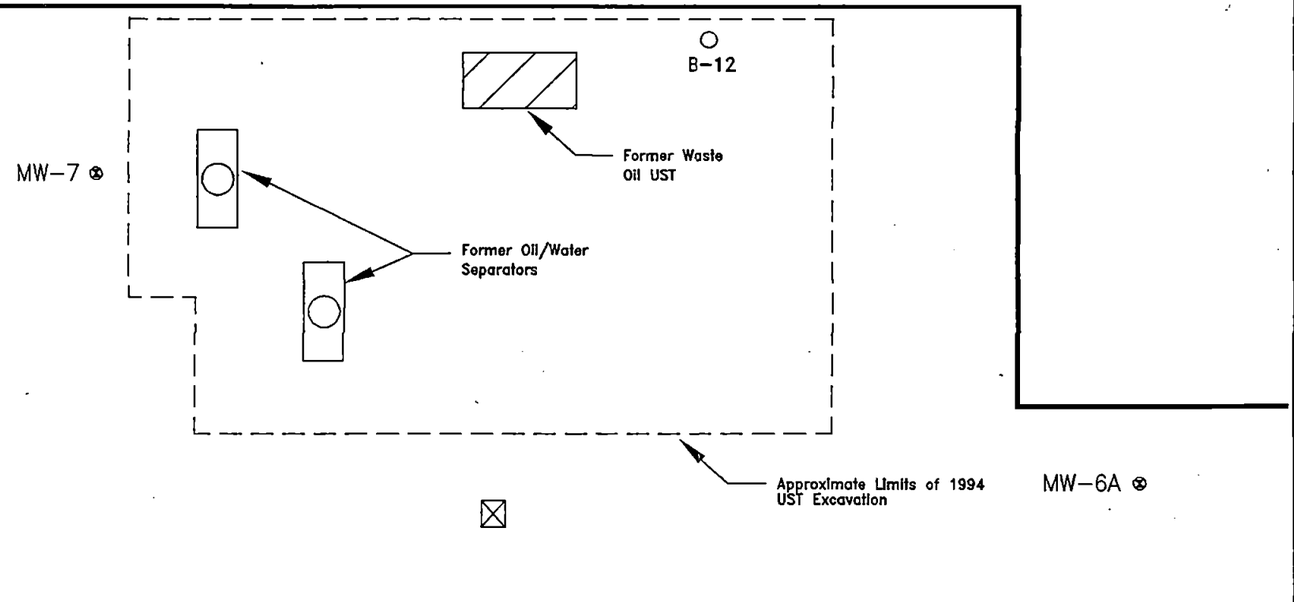
Soil samples were collected using clean stainless-steel spoons and placed into 4-ounce wide-mouth glass jars. Groundwater samples were collected in two 1-liter amber glass jars. After collection, the samples were immediately placed on ice and hand-delivered to OnSite Environmental laboratories for analysis. The samples collected near borehole B-8 were analyzed for total petroleum hydrocarbons (TPH) using the Northwest Total Petroleum Hydrocarbon-Diesel extended (NWTPH-Dx) method. The samples collected from the hoist pit area were analyzed for hydrocarbons and polychlorinated biphenyls (PCBs) using method NWTPH-Dx and EPA method 8080/608, respectively. A list of samples collected during the investigation is given in Table 1.

Field sampling equipment was decontaminated between sample locations using an alconox scrub, double tap water rinse, and a final distilled water rinse. In addition, new latex gloves were worn for the collection of each sample.

VMF BUILDING

Maintenance Bays





LEGEND

- MW-2A — EXISTING MONITORING WELL
- STORM WATER DRAIN
- B-8 — DAMES & MOORE BORING
- SP2 — ICF KAISER BORING
- FORMER OIL/WATER SEPARATOR
- FORMER UST

ICF KAISER 1191 Second Ave. Seattle, WA 98101

FIGURE 2: SAMPLE LOCATIONS

Client:	Location:	Project:	Date:
USPS	GMF SEATTLE, WA	81302-004-01	09/24/98

0 10 20 30 40

SCALE IN FEET

N

GMF2-FIG2.DWG

Table 1: GMF Site Investigation Samples

Borehole	Sample ID	Depth (feet bgs)	Matrix	Time	Analyses		QA Samples
					NWTPH-Dx	PCBs (8080/608)	
Samples near B-8							
SP1	SP1-3.5	3.5	Soil	1010	X		
	SP1-6.5	6.5	Soil	1015	X		Duplicate collected
	SP1-9.5	6.5	Soil	1020	X		Duplicate of SP1-6.5
	SP1W-6.5	6.5	Water	1030	X		
SP2	SP2-3.5	3.5	Soil	1040	X		
	SP2-6.5	6.5	Soil	1055	X		
	SP2W-8.5	8.5	Water	1115	X		
Samples near Hydraulic Hoist Pits							
SP3	SP3-3.5	3.5	Soil	1130	X	X	
	SP3-7.5	7.5	Soil	1150	X	X	
	SP3W-8.5	8.5	Water	1205	X	X	
SP4	SP4-6	6	Soil	1530	X	X	
	SP4-9	9	Soil	1535	X	X	
	SP4W-9.5	9.5	Water	1550	X	X	
SP5	SP5-5.5	5.5	Soil	1455	X	X	
	SP5-8.5	8.5	Soil	1500	X	X	
	SP5W-9.5	9.5	Water	1510	X	X	
SP6	SP6-6	6	Soil	1320	X	X	
	SP6-9	9	Soil	1330	X	X	
	SP6W-9.5	9.5	Water	1335	X	X	
SP7	SP7-7.5	7.5	Soil	1230	X	X	
	SP7-9	9	Soil	1235	X	X	
	SP7W-9	9	Water	1245	X	X	
SP8	SP8-6	6	Soil	1405	X	X	
	SP8-9.5	9.5	Soil	1410	X	X	
	SP8W-9.5	9.5	Water	1420	X	X	Duplicate collected
	SP9W-9.5	9.5	Water	1430	X	X	Duplicate of SP8W-9.5
QA	9/9/98-RB	NA	Water	1300	X	X	Rinsate blank-screen

Note: All samples were collected at the Seattle GMF facility on September 9, 1998.

X = Analysis performed

bgs	below ground surface
GMF	General Mail Facility
NWTPH-Dx	Washington state analytical method for diesel range total petroleum hydrocarbons.
PBCs	polychlorinated biphenyls
QA	quality assurance

Several quality assurance (QA) samples were collected to document the accuracy and precision of the laboratory procedures. One duplicate soil sample was collected from borehole SP1, and analyzed for TPH. A duplicate water sample was collected from borehole SP8, and analyzed for TPH and PCBs. To ensure that decontamination of field sampling equipment was adequate, a rinsate blank sample was collected for analysis. The rinsate blank was collected by pouring distilled water over the stainless-steel sampler screen and sent to the laboratory for TPH and PCB analysis.

After samples were collected from each borehole, the borehole was backfilled with bentonite chips in accordance with Washington State Drilling Regulations. The surface areas were patched with the appropriate surfacing material. No soil cuttings were generated by the investigative methods. Approximately 10 gallons of purge water and decontamination water were collected in a United States Department of Transportation (USDOT)-approved 55-gallon drum. The purge water will be tested and disposed in accordance with state and municipal regulations.

4.0 RESULTS

Fill materials were the predominant material found in each borehole from ground surface to depths of 8 to 10 feet. The fill is primarily made up of fine-to-medium sands, silts, plywood, gravel, and brick shards. The fill materials were loose and of low density. Some staining was observed in these materials, along with a hydrocarbon odor at sample locations SP3 (8 feet bgs), SP4 (8 feet bgs), SP6 (8 feet bgs), and SP8 (10 feet bgs). An oily sheen was noted on the water purged from SP3.

Groundwater was encountered at each borehole at depths ranging from 6 to 8 feet bgs. Several of the boreholes had little water yield at the 6- to 8-foot interval, likely due to the presence of a silty/clayey soil layer. Just below this interval, at 8 to 10 feet bgs, water yield increased. This may be an indication that an impermeable layer exists at approximately 6 to 8 feet that would inhibit water movement and contaminant migration in some areas of the property. At SP2, there was an 8-inch layer of silty clay at 7 to 8 feet bgs that appeared to be natural material.

Soil samples collected near the Dames & Moore borehole B-8 contained heavy oil range hydrocarbons at concentrations ranging from 120 to 270 milligrams per kilogram (mg/kg). The duplicate soil sample results were within 4 percent of each other. Sample identifications and analytical results for all samples collected are presented in Table 2.

No diesel range hydrocarbons were detected near the Dames & Moore borehole B-8. The two groundwater samples collected had heavy oil range hydrocarbons at concentrations of 4,500 and 1,000 micrograms per liter (µg/L). The groundwater sample collected at SP-2 had a diesel range hydrocarbon concentration of 890 µg/L. These results do not confirm the higher TPH concentrations found by Dames & Moore during a previous sampling activity in June 1998.

Soil samples collected near the hydraulic hoist pits contained heavy oil hydrocarbons at concentrations ranging from 70 to 28,000 mg/kg. No diesel range hydrocarbons were detected in the soil samples collected from the hoist pit area. The highest hydrocarbon concentration in soil was found for heavy oil in borehole SP3 at 7.5 feet bgs. The sample results indicate that there are no consistent trends in the variation of concentration or distribution of contaminants with depth.

Groundwater samples collected in the hoist pit area had elevated concentrations of heavy oil hydrocarbons, ranging from non-detect at SP7 to 183,000 µg/L at SP3. Diesel range hydrocarbons were detected at three of the six borehole locations near the hoist pits. Diesel concentrations were below the Model Toxics Control Act (MTCA) Method A cleanup standard. The diesel constituents in groundwater may not be attributed to the hoist pit area. Soil above these same locations did not contain diesel constituents.

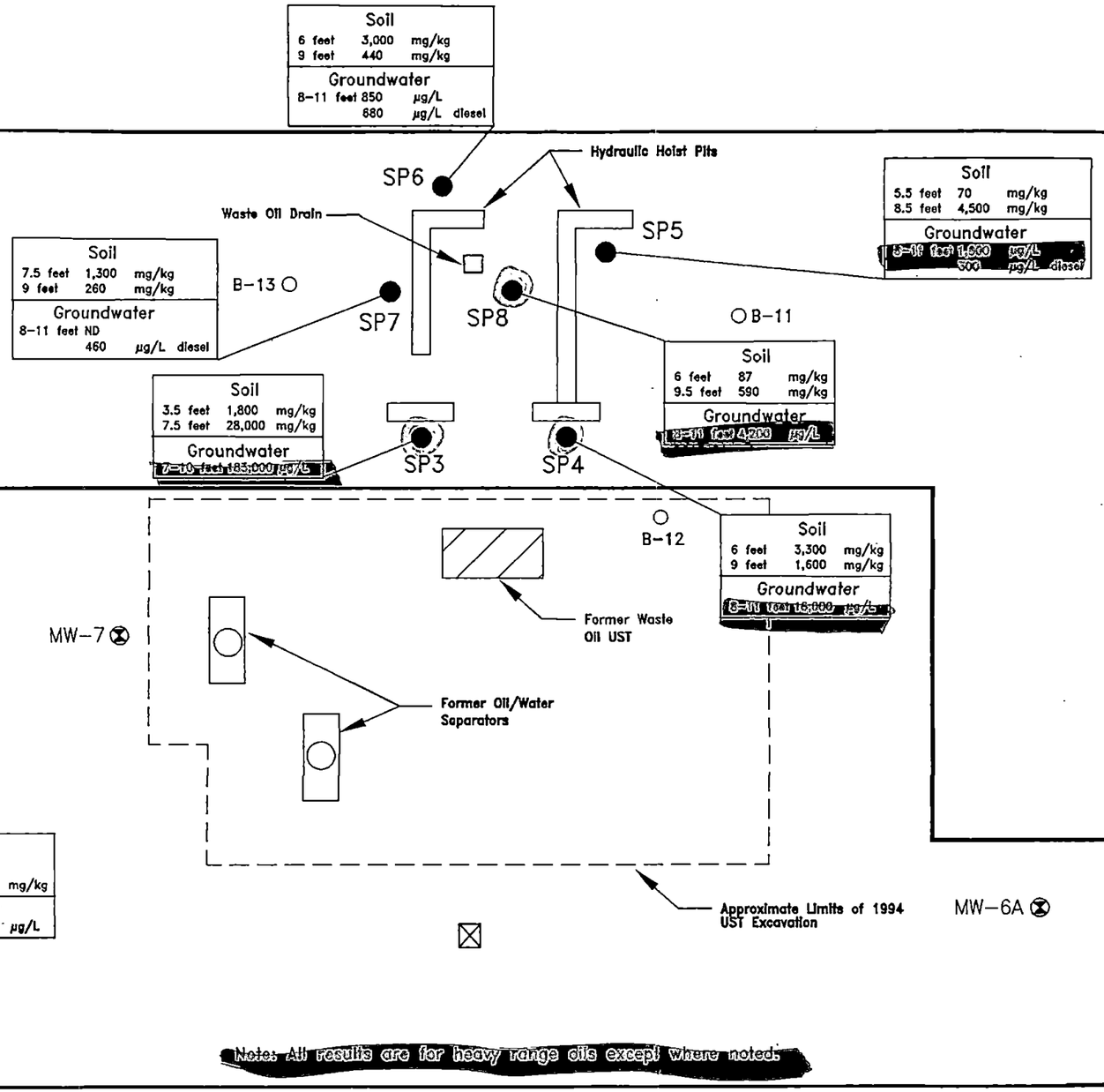
In general, the highest concentrations of hydrocarbons were found along the south end of the hoist pits, with concentrations decreasing in samples to the northwest. PCB compounds were detected at SP3, but were below MTCA Method A cleanup standards. A summary of sample locations and corresponding results are presented in Figure 3. The complete laboratory analytical data report is presented in Appendix C.

QA samples were collected to determine the accuracy and precision of laboratory analysis and the cleanliness of field procedures. The rinsate blank had non-detect results for both TPH and PCB compounds. Results indicate that there was no cross-contamination of samples during field activities. Relative percent difference (RPD) for duplicate groundwater sample analyses ranged from 0 to 40 percent for TPH. The high RPD for TPH in the groundwater sample may be the result of higher concentrations of TPH being withdrawn for the first sample. Groundwater collected for the duplicate sample was drawn from an area deeper within the borehole. Laboratory internal QA sample results for surrogate recovery, duplicates, matrix spike/matrix spike duplicate (MS/MSD) and matrix spike samples all had acceptable results.

Ecology MTCA Method A cleanup standards for petroleum hydrocarbons have been provided in Table 2 for comparative purposes. These standards are established at set concentrations, and are conservative estimates of required cleanup standards. Technically, the site would fall under MTCA Method B cleanup standards because groundwater has been impacted by the petroleum contamination. While Method B cleanup standards would tend to be less stringent than Method A cleanup standards, they are not established at set concentrations. Instead, Method B cleanup standards for TPH are developed using risk-based judgements and are determined through Ecology formulae that use certain specific compounds as representative of the ranges of hydrocarbons reported for sample analyses. Cleanup standards are then calculated based on the risk associated with the specific compound. Since the site is located in an industrial area, Ecology may provide the USPS alternative cleanup levels using site-specific risk-based cleanup levels.

VMF BUILDING

Maintenance Bays



Note: All results are for heavy range oils except where noted.

LEGEND

- MW–2A ⊗ EXISTING MONITORING WELL
- ⊠ STORM WATER DRAIN
- B–8 ○ DAMES & MOORE BORING
- SP2 ● ICF KAISER BORING
- FORMER OIL/WATER SEPARATOR
- FORMER UST

ICF KAISER 1191 Second Ave. Seattle, WA 98101

FIGURE 3: TPH ANALYTICAL RESULTS

Client:	Location:	Project:	Date:
USPS	GMF SEATTLE, WA	81302–004–01	09/24/98

0 10 20 30 40

SCALE IN FEET

N

GMF2–FIG3.DWG

Table 2: Analytical Sample Results

Borehole	Sample ID	Depth (feet bgs)	Matrix	Analysis Results (mg/kg soil; µg/L water)								
				NWTPH-Dx		PCBs						
				Diesel Range	Heavy Oil Range	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260
B-8 Samples												
SP1	SP1-3.5	3.5	Soil	ND	ND	NA	NA	NA	NA	NA	NA	NA
	SP1-6.5	6.5	Soil	ND	170	NA	NA	NA	NA	NA	NA	NA
	SP1-9.5 (Duplicate)	6.5	Soil	ND	**270**	NA	NA	NA	NA	NA	NA	NA
	SP1W-6.5	6.5	Water	ND	**4,500**	NA	NA	NA	NA	NA	NA	NA
SP2	SP2-3.5	3.5	Soil	ND	120	NA	NA	NA	NA	NA	NA	NA
	SP2-6.5	6.5	Soil	ND	150	NA	NA	NA	NA	NA	NA	NA
	SP2W-8.5	8.5	Water	890	**1,000**	NA	NA	NA	NA	NA	NA	NA
Hydraulic Hoist Pits Samples												
SP3	SP3-3.5	3.5	Soil	ND	**1,800**	0.064	ND	ND	ND	ND	ND	ND
	SP3-7.5	7.5	Soil	ND	**28,000**	ND	ND	ND	ND	ND	ND	ND
	SP3W-8.5	8.5	Water	ND	**183,000**	ND	ND	ND	ND	ND	ND	ND
SP4	SP4-6	6	Soil	ND	**3,300**	ND	ND	ND	ND	ND	ND	ND
	SP4-9	9	Soil	ND	**1,600**	ND	ND	ND	ND	ND	ND	ND
	SP4W-9.5	9.5	Water	ND	**16,000**	ND	ND	ND	ND	ND	ND	ND
SP5	SP5-5.5	5.5	Soil	ND	70	ND	ND	ND	ND	ND	ND	ND
	SP5-8.5	8.5	Soil	ND	**4,500**	ND	ND	ND	ND	ND	ND	ND
	SP5W-9.5	9.5	Water	300	**1,800**	ND	ND	ND	ND	ND	ND	ND
SP6	SP6-6	6	Soil	ND	**3,000**	ND	ND	ND	ND	ND	ND	ND
	SP6-9	9	Soil	ND	**440**	ND	ND	ND	ND	ND	ND	ND
	SP6W-9.5	9.5	Water	680	850	ND	ND	ND	ND	ND	ND	ND
SP7	SP7-7.5	7.5	Soil	ND	**1,300**	ND	ND	ND	ND	ND	ND	ND
	SP7-9	9	Soil	ND	**260**	ND	ND	ND	ND	ND	ND	ND
	SP7W-9	9	Water	460	ND	ND	ND	ND	ND	ND	ND	ND
SP8	SP8-6	6	Soil	ND	87	ND	ND	ND	ND	ND	ND	ND
	SP8-9.5	9.5	Soil	ND	**590**	ND	ND	ND	ND	ND	ND	ND
	SP8W-9.5	9.5	Water	ND	**4,200**	ND	ND	ND	ND	ND	ND	ND
	SP9W-9.5 (Duplicate)	9.5	Water	ND	**1,800**	ND	ND	ND	ND	ND	ND	ND
QA	9/9/98-RB	NA	Water	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTCA Method A Standard			Soil	200	200	1.0(1)	1.0(1)	1.0(1)	1.0(1)	1.0(1)	1.0(1)	1.0(1)
MTCA Method A Standard			Water	1,000	1,000	0.1(1)	0.1(1)	0.1(1)	0.1(1)	0.1(1)	0.1(1)	0.1(1)

(1) MTCA Method A cleanup standard for PCBs applies to the sum of all PCB compounds.

Note: Practical Quantitation Limit for each analysis given in the laboratory data report in Appendix C.
Samples exceeding the MTCA Method A cleanup standard are shaded.

bgs below ground surface
mg/kg milligrams per kilogram
MTCA Model Toxics Control Act
NA Sample not analyzed for this compound.
ND Compound not detected at or above the Practical Quantitation Limit (see Lab data report)
NWTHP-Dx Washington state analytical method for diesel range total petroleum hydrocarbons.
PCBs polychlorinated biphenyls

5.0 OBSERVATIONS

In the vicinity of borehole B-8, there appears to be little TPH contamination in the soil. Sample analysis failed to confirm the 18,000 µg/L concentrations of TPH in groundwater previously found at boring B-8 by Dames & Moore in June 1998. The predominant hydrocarbons detected in soil and groundwater at this location are in the heavy oil range, suggesting that the lighter hydrocarbons have either attenuated or may not have been released to the subsurface.

Higher concentrations of TPH were detected in soil and groundwater at the hoist pits area. In the six boreholes completed in this area, the predominant constituent of TPH was heavy oil. The highest levels of TPH detected in both soil and groundwater were at SP3. The results for hydrocarbons in soil and groundwater suggest that the highest levels of contamination are south of the hoist pits. The residual contamination may have resulted from a waste oil UST that was previously located in the area. The waste oil UST and contaminated soil were removed in 1994. The waste oil UST was located adjacent to the VMF building, south of the hoist pits.

Overall, there is no consistent distribution of contamination with depth in the hoist pit area. In some boreholes the highest concentrations of contaminants were at the greatest depths sampled, in other locations the highest concentration was at the shallower depth sampled. With the close spacing of boreholes, it appears that contaminant concentrations are widely varying, and that areas of high contamination in both soil and groundwater tend to be localized.

6.0 REFERENCES

Dames & Moore. 1997. *Documents Review for CB Commercial.* United States Postal Service, Former Mail Distribution Facility, 2445 Third Avenue South, Seattle, Washington. May 7, 1997.

Dames & Moore. 1998. *Report: Soil and Groundwater Investigation.* USPS General Mail Facility, Seattle, Washington. June 22, 1998.

ICF Kaiser Engineers. 1997. *Phase I Environmental Site Assessment.* USPS former General Mail Facility. October 15, 1997.

APPENDIX A

Investigation Photographs

Photo 1: Drilling at sample location SP1

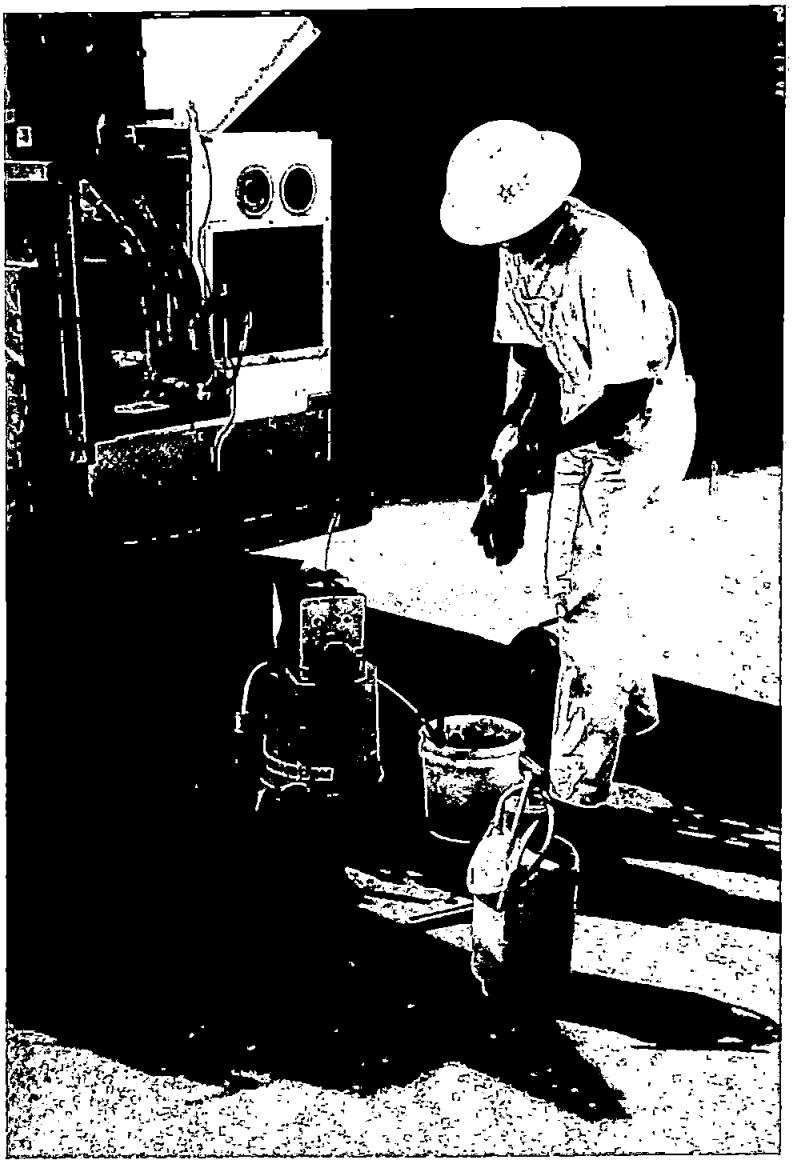


Photo 2: Crew collecting a groundwater sample using a peristaltic pump

Photo 3: View of hydraulic hoist pits looking northeast. Note newly drilled boreholes.

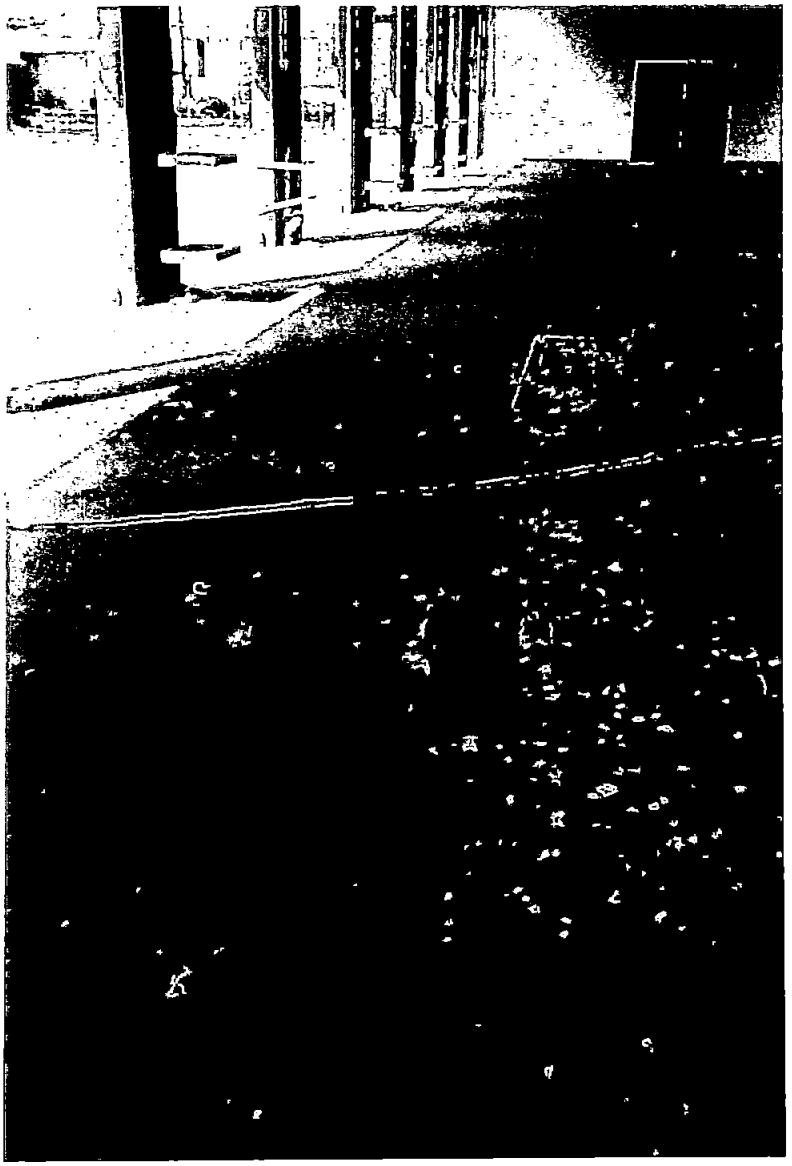


Photo 4: South end of hoist pits looking west. Note southern wall of VMF building

APPENDIX B

Geoprobe Bore Logs

WELL DRILLING LOG

SP1

PROJECT	USPS GMF	WELL ID. SP1	PAGE 1 OF 1
JOB NUMBER	81302-004-01	RIG TYPE	STRATAPROBE DIRECT-PUSH
DATE(S) DRILLED	9/8/98	LOCATION	FORMER GENERAL MAIL FACILITY, SEATTLE, WA
GEOLOGIST/ENGINEER	D. WHITE	WATER LEVEL	~5.8 FEET BGS
DRILLING SUBCONTRACTOR	TEG, Inc.	TOTAL DEPTH OF BORING	8 FEET

DEPTH (ft)	RECOVERY (%)	Sample ID	STATIC WATER LEVEL	SAMPLES	GENERAL LITHOLOGY	MATERIALS DESCRIPTION (USCS CLASSIFICATION)
2'						
4'	80	SP1-3.5				Top 10": Gray FILL; Rest: Medium-dark gray fine SAND (SP) grading to very fine to fine SAND and SILT (SM); no odor, medium dense, moist at bottom.
6'			~5.8 ft bgs			Top 4": Medium gray very fine to fine SAND (SP) 4"-18": Light-medium gray SILT (ML), trace clay, medium loose 18"-28": Dark gray-black (with multi-colored mottles) GRAVEL and fine to medium SAND, little silt (GW) (FILL)
8'	80	SP1-6.5 SP1W-6.5 (water)				Total Depth of Boring
10'						
12'						
14'						
16'						
18'						
20'						
22'						
24'						
26'						
28'						

DRAWING FILE: SP1.DWG

WELL DRILLING LOG

SP2

PROJECT	USPS GMF	WELL ID. SP2	PAGE 1 OF 1
JOB NUMBER	81302-004-01	RIG TYPE	STRATAPROBE DIRECT-PUSH
DATE(S) DRILLED	9/9/98	LOCATION	FORMER GENERAL MAIL FACILITY, SEATTLE, WA
GEOLOGIST/ENGINEER	D. WHITE	WATER LEVEL	~6 FEET BGS
DRILLING SUBCONTRACTOR	TEG, Inc.	TOTAL DEPTH OF BORING	10 FEET

DEPTH (ft)	RECOVERY (%)	Sample ID	STATIC WATER LEVEL	SAMPLES	GENERAL LITHOLOGY	MATERIALS DESCRIPTION (USCS CLASSIFICATION)
2'						
4'	80	SP2-3.5				Medium gray very fine to fine SAND (SP) grading to SILT and very fine to fine SAND (SM) at bottom, chunk of wood near bottom
6'	75	SP1-6.5	~6 ft bgs			Top 8": Medium gray very fine to fine SAND (SP); 8"-14": Medium gray SILT, trace clay (ML), medium loose; 14"-20": Black-gray mottled fine to medium SAND and GRAVEL, some debris (FILL); 20"-27": Light gray CLAY, trace silt (CL)
8'		SP1W-8.5 (water)				No water yield 5-8 feet bgs, more 8-10 feet bgs
10'						Total Depth of Boring
12'						
14'						
16'						
18'						
20'						
22'						
24'						
26'						
28'						

DRAWING FILE: SP2.DWG

WELL DRILLING LOG

SP3

PROJECT	USPS GMF	WELL ID. SP3	PAGE 1 OF 1
JOB NUMBER	81302-004-01	RIG TYPE	STRATAPROBE DIRECT-PUSH
DATE(S) DRILLED	9/8/98	LOCATION	FORMER GENERAL MAIL FACILITY, SEATTLE, WA
GEOLOGIST/ENGINEER	D. WHITE	WATER LEVEL	~7 FEET BGS
DRILLING SUBCONTRACTOR	TEG, Inc.	TOTAL DEPTH OF BORING	10 FEET

DEPTH (ft)	RECOVERY (%)	Sample ID	STATIC WATER LEVEL	SAMPLES	GENERAL LITHOLOGY	MATERIALS DESCRIPTION (USCS CLASSIFICATION)
2'						
	70	SP3-3.5				Medium reddish brown fine SAND (SP), dry, no odor
4'						
6'						Top 8": Same as above 8"-20": Dark gray fine SAND (SP), 1" band of SILT in center, saturated, strong hydrocarbon odor in bottom 4", oily sheen on purge water
	60		▽			
		SP3-7.5	~7 ft bgs			
8'		SP3W-8.5 (water)				Water yield slow 5-8 feet bgs, picks up 8-10 feet bgs
10'						Total Depth of Boring
12'						
14'						
16'						
18'						
20'						
22'						
24'						
26'						
28'						

DRAWING FILE: SP3.DWG

WELL DRILLING LOG

SP4

PROJECT	USPS GMF	WELL ID. SP4	PAGE 1 OF 1
JOB NUMBER	81302-004-01	RIG TYPE	STRATAPROBE DIRECT-PUSH
DATE(S) DRILLED	9/9/98	LOCATION	FORMER GENERAL MAIL FACILITY, SEATTLE, WA
GEOLOGIST/ENGINEER	D. WHITE	WATER LEVEL	~7 FEET BGS
DRILLING SUBCONTRACTOR	TEG, Inc.	TOTAL DEPTH OF BORING	11 FEET

DEPTH (ft)	RECOVERY (%)	Sample ID	STATIC WATER LEVEL	SAMPLES	GENERAL LITHOLOGY	MATERIALS DESCRIPTION (USCS CLASSIFICATION)
2'						
4'	25					Medium brown medium to coarse SAND (SP); loose, moist, no hydrocarbon odor
6'		SP4-6				Top 7": Same as above; 7"-9": Medium gray with red streaks very fine SAND and SILT (SM); moist, firm, slight hydrocarbon odor
8'	25		~7 ft bgs			
10'	30	SP4-9 SP4W-9.5 (water)				Top 4": Wood 4"-10": Medium-dark gray GRAVEL in SILT and very fine to fine SAND matrix (GM/SM); saturated, loose, no hydrocarbon odor
12'						Total Depth of Boring
14'						
16'						
18'						
20'						
22'						
24'						
26'						
28'						

DRAWING FILE: SP4.DWG

WELL DRILLING LOG

SP5

PROJECT	USPS GMF	WELL ID. SP5	PAGE 1 OF 1
JOB NUMBER	81302-004-01	RIG TYPE	STRATAPROBE DIRECT-PUSH
DATE(S) DRILLED	9/9/98	LOCATION	FORMER GENERAL MAIL FACILITY, SEATTLE, WA
GEOLOGIST/ENGINEER	D. WHITE	WATER LEVEL	~7 FEET BGS
DRILLING SUBCONTRACTOR	TEG, Inc.	TOTAL DEPTH OF BORING	11 FEET

DEPTH (ft)	RECOVERY (%)	Sample ID	STATIC WATER LEVEL	SAMPLES	GENERAL LITHOLOGY	MATERIALS DESCRIPTION (USCS CLASSIFICATION)
2'						
4'	50					Medium brown very fine to fine SAND, a few pebbles (1–2 cm) (SP/GP); moist
6'		SP5-5.5				
	50		~7 ft bgs			Top 12": Same as above, no hydrocarbon odor; 12"–18": White/gray and purple GRAVEL and rock shards (GP); no odor, moist
8'		SP5-8.5				
10'	40	SP5W-9.5 (water)				Medium–dark gray GRAVEL (to 3") and very fine to coarse SAND (SW/GW); saturated, no odor, loose
12'						Total Depth of Boring
14'						
16'						
18'						
20'						
22'						
24'						
26'						
28'						

DRAWING FILE: SP5.DWG

WELL DRILLING LOG

SP6

PROJECT	USPS GMF	WELL ID. SP6	PAGE 1 OF 1
JOB NUMBER	81302-004-01	RIG TYPE	STRATAPROBE DIRECT-PUSH
DATE(S) DRILLED	9/9/98	LOCATION	FORMER GENERAL MAIL FACILITY, SEATTLE, WA
GEOLOGIST/ENGINEER	D. WHITE	WATER LEVEL	~7 FEET BGS
DRILLING SUBCONTRACTOR	TEG, Inc.	TOTAL DEPTH OF BORING	11 FEET

DEPTH (ft)	RECOVERY (%)	Sample ID	STATIC WATER LEVEL	SAMPLES	GENERAL LITHOLOGY	MATERIALS DESCRIPTION (USCS CLASSIFICATION)
2'	40					Medium brown very fine to medium SAND (SW); slightly moist, loose no hydrocarbon odor
4'						
6'	60	SP6-6	~7 ft bgs			Top 12": Medium brown fine SAND with layers of white-gray GRAVEL (SP); 12"-24": White-gray GRAVEL in very fine to fine SAND matrix (SP/GP); dry, no odor, black stained soil at bottom
8'						
10'	30	SP6-9 SP6W-9.5 (water)				Wood at top, then gray fine SAND with gravel and red brick shards (SP/GP); saturated, no hydrocarbon odor
12'						Total Depth of Boring
14'						
16'						
18'						
20'						
22'						
24'						
26'						
28'						

DRAWING FILE: SP6.DWG

WELL DRILLING LOG

SP7

PROJECT	USPS GMF	WELL ID. SP7	PAGE 1 OF 1
JOB NUMBER	81302-004-01	RIG TYPE	STRATAPROBE DIRECT-PUSH
DATE(S) DRILLED	9/9/88	LOCATION	FORMER GENERAL MAIL FACILITY, SEATTLE, WA
GEOLOGIST/ENGINEER	D. WHITE	WATER LEVEL	~8 FEET BGS
DRILLING SUBCONTRACTOR	TEG, Inc.	TOTAL DEPTH OF BORING	11 FEET

DEPTH (ft)	RECOVERY (%)	Sample ID	STATIC WATER LEVEL	SAMPLES	GENERAL LITHOLOGY	MATERIALS DESCRIPTION (USCS CLASSIFICATION)
2'						
4'	50					Medium reddish brown fine SAND (SP), several chunks of gravel in top, chunks of wood in middle and bottom; dry
6'	50					Top 10": Same as above; 10"-18": Medium gray fine SAND, several chunks of gravel (SP/GP); saturated, no hydrocarbon odor
8'		SP7-7.5	~8 ft bgs			
10'	60	SP7-9 SP7W-9 (water)				Medium gray very fine to fine SAND (SP), 2" layer of light gray GRAVEL in center, GRAVEL and reddish brick at bottom (GP); saturated, no hydrocarbon odor
12'						Total Depth of Boring
14'						
16'						
18'						
20'						
22'						
24'						
26'						
28'						

DRAWING FILE: SP7.DWG

WELL DRILLING LOG

SP8

PROJECT	USPS GMF	WELL ID. SP8	PAGE 1 OF 1
JOB NUMBER	81302-004-01	RIG TYPE	STRATAPROBE DIRECT-PUSH
DATE(S) DRILLED	9/9/98	LOCATION	FORMER GENERAL MAIL FACILITY, SEATTLE, WA
GEOLOGIST/ENGINEER	D. WHITE	WATER LEVEL	~7 FEET BGS
DRILLING SUBCONTRACTOR	TEG, Inc.	TOTAL DEPTH OF BORING	11 FEET

DEPTH (ft)	RECOVERY (%)	Sample ID	STATIC WATER LEVEL	SAMPLES	GENERAL LITHOLOGY	MATERIALS DESCRIPTION (USCS CLASSIFICATION)
2'						
4'	50					Top 5": White-gray GRAVEL and very fine to fine SAND (SP/GP); 5"-10": Medium brown very fine to fine SAND, a few pebbles (SP/GP); 10"-14": Red brick shards (FILL); 14"-18": Same as 5"-10"; dry to slightly moist, no hydrocarbon odor, fairly loose.
6'		SP4-6				
8'	50		~7 ft bgs			Top 6": Medium brown very fine to fine SAND with multi-colored GRAVEL and brick shards (SP/GP); 6"-18": Medium brown fine to medium SAND (SP); 3" wood at bottom; moist, no hydrocarbon odor
10'	60	SP4-9.5 SP4W-9.5 (water)				Very heterogeneous mix of gray very fine to fine SAND, little silt, brick shards, and GRAVEL (to 3") (SW/GW); a few small zones of black discoloration have strong hydrocarbon odor
12'						Total Depth of Boring
14'						
16'						
18'						
20'						
22'						
24'						
26'						
28'						

DRAWING FILE: SP8.DWG

APPENDIX C

Laboratory Analytical Data Report

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

ICF/RECEIVED
SEP 21 1998
PROJECT#

September 17, 1998

Robert Taffe
ICF Kaiser Engineers
Second & Seneca Building
1191 Second Avenue, Suite 1200
Seattle, WA 98101-2933

Re: Analytical Data for Project 81302-004-01
Laboratory Reference No. 9809-052

Dear Robert:

Enclosed are the analytical results and associated quality control data for samples submitted on September 10, 1998.

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,

Andy Bay
Project Chemist

Enclosures

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx

Date Extracted:	9-11-98
Date Analyzed:	9-11-98
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	SP1-3.5	SP1-6.5	SP2-3.5
Lab ID:	09-052-01	09-052-02	09-052-04
Diesel Fuel:	ND	ND	ND
PQL:	27	32	32
Heavy Oil:	ND	170	120
PQL:	55	65	64
Surrogate Recovery:			
o-Terphenyl	88%	84%	85%

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx

Date Extracted:	9-11-98
Date Analyzed:	9-11-98
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	SP2-6.5	SP3-3.5	SP3-7.5
Lab ID:	09-052-05	09-052-07	09-052-08
Diesel Fuel:	ND	ND	ND
PQL:	29	28	150
Heavy Oil:	150	1800	28000
PQL:	58	56	120
Surrogate Recovery:			
o-Terphenyl	77%	63%	---
Flags:		X	S

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx

Date Extracted: 9-11-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Client ID:	SP7-7.5	SP7-9	SP6-6
Lab ID:	09-052-11	09-052-12	09-052-14
Diesel Fuel:	ND	ND	ND
PQL:	31	32	28
Heavy Oil:	1300	260	3000
PQL:	63	65	56
Surrogate Recovery:			
o-Terphenyl	143%	82%	81%
Flags:			X

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx

Date Extracted: 9-11-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Client ID:	SP6-9	SP8-6	SP8-9.5
Lab ID:	09-052-15	09-052-17	09-052-18
Diesel Fuel:	ND	ND	ND
PQL:	31	27	30
Heavy Oil:	440	87	590
PQL:	63	55	60
Surrogate Recovery:			
o-Terphenyl	102%	75%	104%
Flags:	X		X

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx

Date Extracted: 9-11-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Client ID:	SP5-5.5	SP5-8.5	SP4-6
Lab ID:	09-052-21	09-052-22	09-052-24
Diesel Fuel:	ND	ND	ND
PQL:	28	29	30
Heavy Oil:	70	4500	3300
PQL:	56	57	60
Surrogate Recovery:			
o-Terphenyl	85%	---	77%
Flags:		F,X	X

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx

Date Extracted:	9-11-98
Date Analyzed:	9-11-98
Matrix:	Soil
Units:	mg/Kg (ppm)

Client ID:	SP4-9	SP1-9.5
Lab ID:	09-052-25	09-052-27
Diesel Fuel:	ND	ND
PQL:	28	33
Heavy Oil:	1600	270
PQL:	57	67
Surrogate Recovery:		
o-Terphenyl	89%	111%
Flags:	X	

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-11-98
Date Analyzed:	9-11-98
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0911S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	91%

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-11-98
Date Analyzed:	9-11-98
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	MB0911S1
Diesel Fuel:	ND
PQL:	25
Heavy Oil:	ND
PQL:	50
Surrogate Recovery:	
o-Terphenyl	95%
Flags:	X

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	9-11-98
Date Analyzed:	9-11-98
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	09-052-01	09-052-01 DUP
Diesel Fuel:	ND	ND
PQL:	25	25
RPD:	N/A	
Surrogate Recovery:		
o-Terphenyl	88%	81%

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	9-11-98
Date Analyzed:	9-11-98
Matrix:	Soil
Units:	mg/Kg (ppm)

Lab ID:	09-052-02	09-052-02 DUP
Diesel Fuel:	ND	ND
PQL:	25	25
RPD:	N/A	
Surrogate Recovery:		
o-Terphenyl	84%	94%

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx
SB/SBD QUALITY CONTROL

Date Extracted:	9-11-98
Date Analyzed:	9-11-98
Matrix:	Soil
Units:	mg/Kg (ppm)
Spike Level:	100 ppm

Lab ID:	SB0911S1	SB0911S1 DUP
Diesel Fuel:	91.9	94.7
PQL:	25	25
Percent Recovery:	92	95
RPD:	3.0	
Surrogate Recovery:		
o-Terphenyl	99%	103%

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx

Date Extracted: 9-10-98
Date Analyzed: 9-11&14-98

Matrix: Water
Units: mg/L (ppm)

Client ID:	SP1W-6.5	SP2W-8.5	SP3W-8.5
Lab ID:	09-052-03	09-052-06	09-052-09
Diesel Fuel:	ND	.89	ND
PQL:	0.25	0.25	5.0
Heavy Oil:	4.5	1.0	183
PQL:	0.50	0.50	4.0
Surrogate Recovery:			
o-Terphenyl	83%	84%	---
Flags:			S

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx

Date Extracted: 9-10-98
Date Analyzed: 9-11&14-98

Matrix: Water
Units: mg/L (ppm)

Client ID:	9/9/98-RB	SP7W-9	SP6W-9.5
Lab ID:	09-052-10	09-052-13	09-052-16
Diesel Fuel:	ND	0.46	0.68
PQL:	0.25	0.25	0.25
Heavy Oil:	ND	ND	0.85
PQL:	0.50	0.50	0.50
Surrogate Recovery:			
o-Terphenyl	87%	100%	112%
Flags:			Z

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx

Date Extracted:	9-10-98
Date Analyzed:	9-11&14-98
Matrix:	Water
Units:	mg/L (ppm)

Client ID:	SP8W-9.5	SP9W-9.5	SP5W-9.5
Lab ID:	09-052-19	09-052-20	09-052-23
Diesel Fuel:	ND	ND	0.30
PQL:	0.25	0.25	0.25
Heavy Oil:	4.2	1.8	1.8
PQL:	0.50	0.50	0.50
Surrogate Recovery:			
o-Terphenyl	99%	127%	106%
Flags:			X,Z

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx

Date Extracted:	9-10-98
Date Analyzed:	9-11&14-98
Matrix:	Water
Units:	mg/L (ppm)
Client ID:	SP4W-9.5
Lab ID:	09-052-26
Diesel Fuel:	ND
PQL:	0.25
Heavy Oil:	16
PQL:	0.50
Surrogate Recovery:	
o-Terphenyl	91%

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-10-98
Date Analyzed:	9-10-98
Matrix:	Water
Units:	mg/L (ppm)
Lab ID:	MB0910W1
Diesel Fuel:	ND
PQL:	0.25
Heavy Oil:	ND
PQL:	0.50
Surrogate Recovery:	
o-Terphenyl	94%
Flags:	G

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

NWTPH-Dx
SB/SBD QUALITY CONTROL

Date Extracted:	9-03-98	
Date Analyzed:	9-04-98	
Matrix:	Water	
Units:	mg/L (ppm)	
Spike Level:	1.00 ppm	
Lab ID:	SB0903W1	SB0903W1 DUP
Diesel Fuel:	1.03	1.09
PQL:	0.25	0.25
Percent Recovery:	103	109
RPD:	5.7	
Surrogate Recovery:		
o-Terphenyl	74%	82%

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-10-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-052-07
Client ID: **SP3-3.5**

	Result	**PQL**
Aroclor 1016:	**ND**	0.056
Aroclor 1221:	**ND**	0.056
Aroclor 1232:	**ND**	0.056
Aroclor 1242:	**ND**	0.056
Aroclor 1248:	**ND**	0.056
Aroclor 1254:	**ND**	0.056
Aroclor 1260:	**0.064**	0.056

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	77	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-10-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-052-08
Client ID: **SP3-7.5**

	Result	PQL
Aroclor 1016:	**ND**	0.060
Aroclor 1221:	**ND**	0.060
Aroclor 1232:	**ND**	0.060
Aroclor 1242:	**ND**	0.060
Aroclor 1248:	**ND**	0.060
Aroclor 1254:	**ND**	0.060
Aroclor 1260:	**ND**	0.060

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	65	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-10-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-052-11
Client ID: **SP7-7.5**

	Result	PQL
Aroclor 1016:	**ND**	0.063
Aroclor 1221:	**ND**	0.063
Aroclor 1232:	**ND**	0.063
Aroclor 1242:	**ND**	0.063
Aroclor 1248:	**ND**	0.063
Aroclor 1254:	**ND**	0.063
Aroclor 1260:	**ND**	0.063

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	80	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-10-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-052-12
Client ID: **SP7-9**

	Result	PQL
Aroclor 1016:	**ND**	0.065
Aroclor 1221:	**ND**	0.065
Aroclor 1232:	**ND**	0.065
Aroclor 1242:	**ND**	0.065
Aroclor 1248:	**ND**	0.065
Aroclor 1254:	**ND**	0.065
Aroclor 1260:	**ND**	0.065

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	83	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-10-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-052-14
Client ID: **SP6-6**

	Result	PQL
Aroclor 1016:	**ND**	0.056
Aroclor 1221:	**ND**	0.056
Aroclor 1232:	**ND**	0.056
Aroclor 1242:	**ND**	0.056
Aroclor 1248:	**ND**	0.056
Aroclor 1254:	**ND**	0.056
Aroclor 1260:	**ND**	0.056

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	72	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-10-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-052-15
Client ID: **SP6-9**

	Result	PQL
Aroclor 1016:	**ND**	0.063
Aroclor 1221:	**ND**	0.063
Aroclor 1232:	**ND**	0.063
Aroclor 1242:	**ND**	0.063
Aroclor 1248:	**ND**	0.063
Aroclor 1254:	**ND**	0.063
Aroclor 1260:	**ND**	0.063

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	78	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-10-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-052-17
Client ID: **SP8-6**

	Result	**PQL**
Aroclor 1016:	**ND**	0.055
Aroclor 1221:	**ND**	0.055
Aroclor 1232:	**ND**	0.055
Aroclor 1242:	**ND**	0.055
Aroclor 1248:	**ND**	0.055
Aroclor 1254:	**ND**	0.055
Aroclor 1260:	**ND**	0.055

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	86	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-10-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-052-18
Client ID: **SP8-9.5**

	Result	PQL
Aroclor 1016:	**ND**	0.060
Aroclor 1221:	**ND**	0.060
Aroclor 1232:	**ND**	0.060
Aroclor 1242:	**ND**	0.060
Aroclor 1248:	**ND**	0.060
Aroclor 1254:	**ND**	0.060
Aroclor 1260:	**ND**	0.060

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	86	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-10-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-052-21
Client ID: **SP5-5.5**

	Result	PQL
Aroclor 1016:	**ND**	0.056
Aroclor 1221:	**ND**	0.056
Aroclor 1232:	**ND**	0.056
Aroclor 1242:	**ND**	0.056
Aroclor 1248:	**ND**	0.056
Aroclor 1254:	**ND**	0.056
Aroclor 1260:	**ND**	0.056

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	96	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-10-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-052-22
Client ID: **SP5-8.5**

	Result	PQL
Aroclor 1016:	**ND**	0.057
Aroclor 1221:	**ND**	0.057
Aroclor 1232:	**ND**	0.057
Aroclor 1242:	**ND**	0.057
Aroclor 1248:	**ND**	0.057
Aroclor 1254:	**ND**	0.057
Aroclor 1260:	**ND**	0.057

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	80	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-10-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: 09-052-24
Client ID: **SP4-6**

	Result	PQL
Aroclor 1016:	**ND**	0.060
Aroclor 1221:	**ND**	0.060
Aroclor 1232:	**ND**	0.060
Aroclor 1242:	**ND**	0.060
Aroclor 1248:	**ND**	0.060
Aroclor 1254:	**ND**	0.060
Aroclor 1260:	**ND**	0.060

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	74	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted:	9-10-98
Date Analyzed:	9-11-98
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	09-052-25
Client ID:	**SP4-9**

	Result	**PQL**
Aroclor 1016:	**ND**	0.057
Aroclor 1221:	**ND**	0.057
Aroclor 1232:	**ND**	0.057
Aroclor 1242:	**ND**	0.057
Aroclor 1248:	**ND**	0.057
Aroclor 1254:	**ND**	0.057
Aroclor 1260:	**ND**	0.057

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	74	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082
METHOD BLANK QUALITY CONTROL

Date Extracted: 9-10-98
Date Analyzed: 9-11-98

Matrix: Soil
Units: mg/Kg (ppm)

Lab ID: MB0910S1

	Result	PQL
Aroclor 1016:	ND	0.050
Aroclor 1221:	ND	0.050
Aroclor 1232:	ND	0.050
Aroclor 1242:	ND	0.050
Aroclor 1248:	ND	0.050
Aroclor 1254:	ND	0.050
Aroclor 1260:	ND	0.050

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	104	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082
MS/MSD QUALITY CONTROL

Date Extracted:	8-31-98
Date Analyzed:	8-31-98
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	08-160-01
Spike Level:	0.50

	MS Result	Percent Recovery	MSD Result	Percent Recovery	RPD
Aroclor 1260:	0.505	101	0.516	103	2.2
PQL	0.050		0.050		

Surrogate	**Percent Recovery**	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	111	112	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082
SPIKE BLANK QUALITY CONTROL

Date Extracted:	8-31-98
Date Analyzed:	8-31-98
Matrix:	Soil
Units:	mg/Kg (ppm)
Lab ID:	SB0831S1
Spike Level:	0.50

	Result	Percent Recovery
Aroclor 1260:	0.494	99

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	107	48 - 148

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-11-98
Date Analyzed: 9-14-98

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-052-09
Client ID: **SP3W-8.5**

	Result	PQL
Aroclor 1016:	**ND**	0.10
Aroclor 1221:	**ND**	0.10
Aroclor 1232:	**ND**	0.10
Aroclor 1242:	**ND**	0.10
Aroclor 1248:	**ND**	0.10
Aroclor 1254:	**ND**	0.10
Aroclor 1260:	**ND**	0.10

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	44	40 - 140

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-11-98
Date Analyzed: 9-14-98

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-052-10
Client ID: **9/9/98-RB**

	Result	PQL
Aroclor 1016:	**ND**	0.050
Aroclor 1221:	**ND**	0.050
Aroclor 1232:	**ND**	0.050
Aroclor 1242:	**ND**	0.050
Aroclor 1248:	**ND**	0.050
Aroclor 1254:	**ND**	0.050
Aroclor 1260:	**ND**	0.050

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	43	40 - 140

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-11-98
Date Analyzed: 9-14-98

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-052-13
Client ID: **SP7W-9**

	Result	PQL
Aroclor 1016:	**ND**	0.050
Aroclor 1221:	**ND**	0.050
Aroclor 1232:	**ND**	0.050
Aroclor 1242:	**ND**	0.050
Aroclor 1248:	**ND**	0.050
Aroclor 1254:	**ND**	0.050
Aroclor 1260:	**ND**	0.050

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	47	40 - 140

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-11-98
Date Analyzed: 9-14-98

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-052-16
Client ID: **SP6W-9.5**

	Result	PQL
Aroclor 1016:	**ND**	0.050
Aroclor 1221:	**ND**	0.050
Aroclor 1232:	**ND**	0.050
Aroclor 1242:	**ND**	0.050
Aroclor 1248:	**ND**	0.050
Aroclor 1254:	**ND**	0.050
Aroclor 1260:	**ND**	0.050

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	48	40 - 140

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-11-98
Date Analyzed: 9-14-98

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-052-19
Client ID: **SP8W-9.5**

	Result	PQL
Aroclor 1016:	**ND**	0.050
Aroclor 1221:	**ND**	0.050
Aroclor 1232:	**ND**	0.050
Aroclor 1242:	**ND**	0.050
Aroclor 1248:	**ND**	0.050
Aroclor 1254:	**ND**	0.050
Aroclor 1260:	**ND**	0.050

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	55	40 - 140

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-11-98
Date Analyzed: 9-14-98

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-052-20
Client ID: **SP9W-9.5**

	Result	PQL
Aroclor 1016:	ND	0.050
Aroclor 1221:	ND	0.050
Aroclor 1232:	ND	0.050
Aroclor 1242:	ND	0.050
Aroclor 1248:	ND	0.050
Aroclor 1254:	ND	0.050
Aroclor 1260:	ND	0.050

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	48	40 - 140

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted: 9-11-98
Date Analyzed: 9-14-98

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-052-23
Client ID: **SP5W-9.5**

	Result	PQL
Aroclor 1016:	**ND**	0.050
Aroclor 1221:	**ND**	0.050
Aroclor 1232:	**ND**	0.050
Aroclor 1242:	**ND**	0.050
Aroclor 1248:	**ND**	0.050
Aroclor 1254:	**ND**	0.050
Aroclor 1260:	**ND**	0.050

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	60	40 - 140

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082

Date Extracted:	9-11-98
Date Analyzed:	9-15-98
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	09-052-26
Client ID:	**SP4W-9.5**

	Result	PQL
Aroclor 1016:	**ND**	0.50
Aroclor 1221:	**ND**	0.50
Aroclor 1232:	**ND**	0.50
Aroclor 1242:	**ND**	0.50
Aroclor 1248:	**ND**	0.50
Aroclor 1254:	**ND**	0.50
Aroclor 1260:	**ND**	0.50

Surrogate	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	---	40 - 140

Flags: Z,S

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082
METHOD BLANK QUALITY CONTROL

Date Extracted: 9-11-98
Date Analyzed: 9-14-98

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0911W1

	Result	PQL
Aroclor 1016:	ND	0.050
Aroclor 1221:	ND	0.050
Aroclor 1232:	ND	0.050
Aroclor 1242:	ND	0.050
Aroclor 1248:	ND	0.050
Aroclor 1254:	ND	0.050
Aroclor 1260:	ND	0.050

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	60	40 - 140

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

PCB's by EPA 8082
SB/SBD QUALITY CONTROL

Date Extracted: 9-11-98
Date Analyzed: 9-15-98

Matrix: Water
Units: ug/L (ppb)

Lab ID: SB0911W1

Spike Level: 1.0

	SB Result	Percent Recovery	SBD Result	Percent Recovery	RPD
Aroclor 1260:	0.604	60	0.523	52	14
PQL	0.050		0.050		

Surrogate	**Percent Recovery**	**Percent Recovery**	**Control Limits**
Decachlorobiphenyl	68	57	40 - 140

Flags:

Date of Report: September 17, 1998
Samples Submitted: September 10, 1998
Lab Traveler: 09-052
Project: 81302-004-01

Date Analyzed: 9-10-98

% MOISTURE

Client ID	Lab ID	% Moisture
SP1-3.5	09-052-01	9.0
SP1-6.5	09-052-02	23
SP2-3.5	09-052-04	22
SP2-6.5	09-052-05	14
SP3-3.5	09-052-07	10
SP3-7.5	09-052-08	17
SP7-7.5	09-052-11	20
SP7-9	09-052-12	23
SP6-6	09-052-14	10
SP6-9	09-052-15	20
SP8-6	09-052-17	9.0
SP8-9.5	09-052-18	16
SP5-5.5	09-052-21	11
SP5-8.5	09-052-22	13
SP4-6	09-052-24	16
SP4-9	09-052-25	12
SP1-9.5	09-052-27	25

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to 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.

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 inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

M - Predominantly _____ range hydrocarbons present in the sample.

N - Hydrocarbons in the gasoline range (C7-toluene) are present in the sample which are elevating the diesel result.

O - Hydrocarbons in the heavy oil range (>C24) are present in the sample which are elevating the diesel result.

P - Hydrocarbons in the diesel range (C12-C24) are present in the sample which are elevating the oil result.

Q - The RPD of the results between the two columns is greater than 25.

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

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

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

X - Sample underwent silica gel cleanup procedures.

Y - Sample underwent acid cleanup procedures.

Z - No pattern match available for diesel range hydrocarbons.
ND - Not Detected
MRL - Method Reporting Limit
PQL - Practical Quantitation

Chain Of Custody

OnSite Environmental Inc.
14924 NE 31st Circle • Redmond, WA 98052
Fax: (206) 885-4603 • **Phone: (206) 883-3881**

Company: ICF Kaiser
Project No: 81302-004-01
Project Name: USPS - GMF
Project Manager: Robert Taller (206) 521-5962

Turn Around Requested (Check One)
- ☐ Same Day
- ☐ 24 Hours
- ☐ 48 Hours
- ☐ Standard
- ☒ ~~5 day~~ (other)

Project Chemist: AAB

Laboratory No.

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	WTPH-HCID	WTPH-G/BTEX	WTPH-DX	WTPH-418.1	Volatiles by 8240/624	Volatiles by 8260	Chlorinated Volatiles by 8240/8260/624	Semivolatiles by 8270/625	PAHs by 8270/625	PCB's by 8080/608	Total RCRA Metals (8)	TCLP Metals	% Moisture
1	SP1-3.5	9/9/98	1010	Soil	1 ✓			X							###			X
2	SP1-6.5		1015	Soil	1 ✓													X
3	SP1W-6.5		1030	Water	1 ✓													
4	SP2-3.5		1040	Soil	1 ✓													X
5	SP2-6.5		1055	Soil	1 ✓													X
10	SP2W-8.5		1115	Water	1 ✓													
7	SP3-3.5		1130	Soil	1 ✓										X			X
8	SP3-7.5		1150	Soil	1 ✓													X
9	SP3W-8.5 *		1205	Water	1 ✓													
10	9/9/98-RB		1300	Water	2 ✓													
11	SP7-7.5		1230	Soil	1 ✓													X
12	SP7-9		1235	Soil	1 ✓													X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
Daniel P. White	9/10/98	M. Dooley	9-10-98
FIRM: ICF Kaiser	TIME: 1600	FIRM: OSE	TIME: 10:00
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:
* only 1 1-L Jar included. Run both TPH and PCBs if volume permits.

D UTIO ND: OnS Ye eport Pink Copy

Chain of Custody

OnSite Environmental Inc.
14924 NE 31st Circle • Redmond, WA 98052
Fax: (425) 885-4603 • Phone: (425) 883-3881

Company: ICF Kaiser
Project No.: 81302-004-01
Project Name: USPS - GMF
Project Manager: Robert Tatte (206) 521-5962

Turn Around Requested (Check One)
- ☐ Same Day
- ☐ 24 Hours
- ☐ 48 Hours
- ☐ Standard
- ☒ 5-day (other)

Project Chemist: AAB

Laboratory No.

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8240/624/8260	Halogenated Volatiles by 8260	Semivolatiles by 8270/625	PAHs by 8270/625	PCB's by 8081/608	Total RCRA Metals (8)	TCLP Metals	VPH	EPH	% Moisture
13	SP7W-9	9/9/98	1245	Water	2 ✓			X					X					
14	SP6-6		1320	Soil	1 ✓													X
15	SP6-9		1330	Soil	1 ✓													X
16	SP6W-9.5		1335	Water	2 ✓													
17	SP8-6		1405	Soil	1 ✓													X
18	SP8-9.5		1410	Soil	1 ✓													X
19	SP8W-9.5		1420	Water	2 ✓													
20	SP9W-9.5		1430	Water	2 ✓													
21	SP5-5.5		1455	Soil	1 ✓													X
22	SP5-8.5		1500	Soil	1 ✓													X
23	SP5W-9.5		1510	Water	2 ✓													
24	SP4-6		1530	Soil	1 ✓													X

RELINQUISHED BY	DATE	RECEIVED BY	DATE
Daniel P. White	9/10/98	M. Dooley	9-10-98
FIRM: ICF Kaiser	TIME: 1000	FIRM: OSE	TIME: 10:00
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:

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Chain Of Custody

OnSite Environmental Inc.
14924 NE 31st Circle • Redmond, WA 98052
Fax: (206) 885-4603 • **Phone: (206) 883-3881**

Company: TCF Kaiser
Project No: 81302-004-01
Project Name: USPS - GMF
Project Manager: Robert Taffe (206) 521-5962

Turn Around Requested (Check One)
- ☐ Same Day
- ☐ 24 Hours
- ☐ 48 Hours
- ☐ Standard
- ☒ 5-day (other)

Project Chemist: AAB

Laboratory No.

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	WTPH-HCID	WTPH-G/BTEX	WTPH-Dx	WTPH-418.1	Volatiles by 8240/624	Volatiles by 8260	Chlorinated Volatiles by 8240/8260/624	Semivolatiles by 8270/625	PAHs by 8270/625	PCB's by 8080/608	Total RCRA Metals (8)	TCLP Metals	% Moisture
25	SP4-9	9/9/98	1535	Soil	1			X							X			X
26	SP4W-9.5	9/9/98	1550	Water	2			X							X			X
27	SP1-9.5	9/9/98	1020	Soil	1			X							X			X
																		X
																		X
																	X	
																	X	
																	X	

RELINQUISHED BY	DATE	RECEIVED BY	DATE
Daniel P. White	9/10/98	M. Dodey	9-10-98
FIRM: TCF Kaiser	TIME: 1600	FIRM: OSE	TIME: 10:00
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS:

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

USPS-Gen Facility
SIT 3.6.7

FAX COVER SHEET

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ICF KAISER

TO: Maura O'Brien
WA State Dept of Ecology

TELECOPY NUMBER:
(425) 649-7098

FROM: Jan Shellooe

TELEPHONE:
(206) 521-5940

CHARGE NO:

NUMBER OF PAGES FOR TRANSMISSION: 17*

MESSAGE: URGENT!
Materials for meeting tomorrow a.m.

Re: Seattle USPS Property

Maura—

Background Data. Please call if any of this is illegible & will bring hard copies tomorrow.

for the mtg tomorrow (11:00 am)
I will have Craig Wrench of Lowe Enterprises and David Raubvogel (Geologist) from Dames & Moore with me.

Thanks much for scheduling us in! Jan

If there is a problem with this transmission, or all pages have not been received, please call (206) 521-5900.
THANK YOU

* NOTE: We have cut the large figures in half before faxing to you.

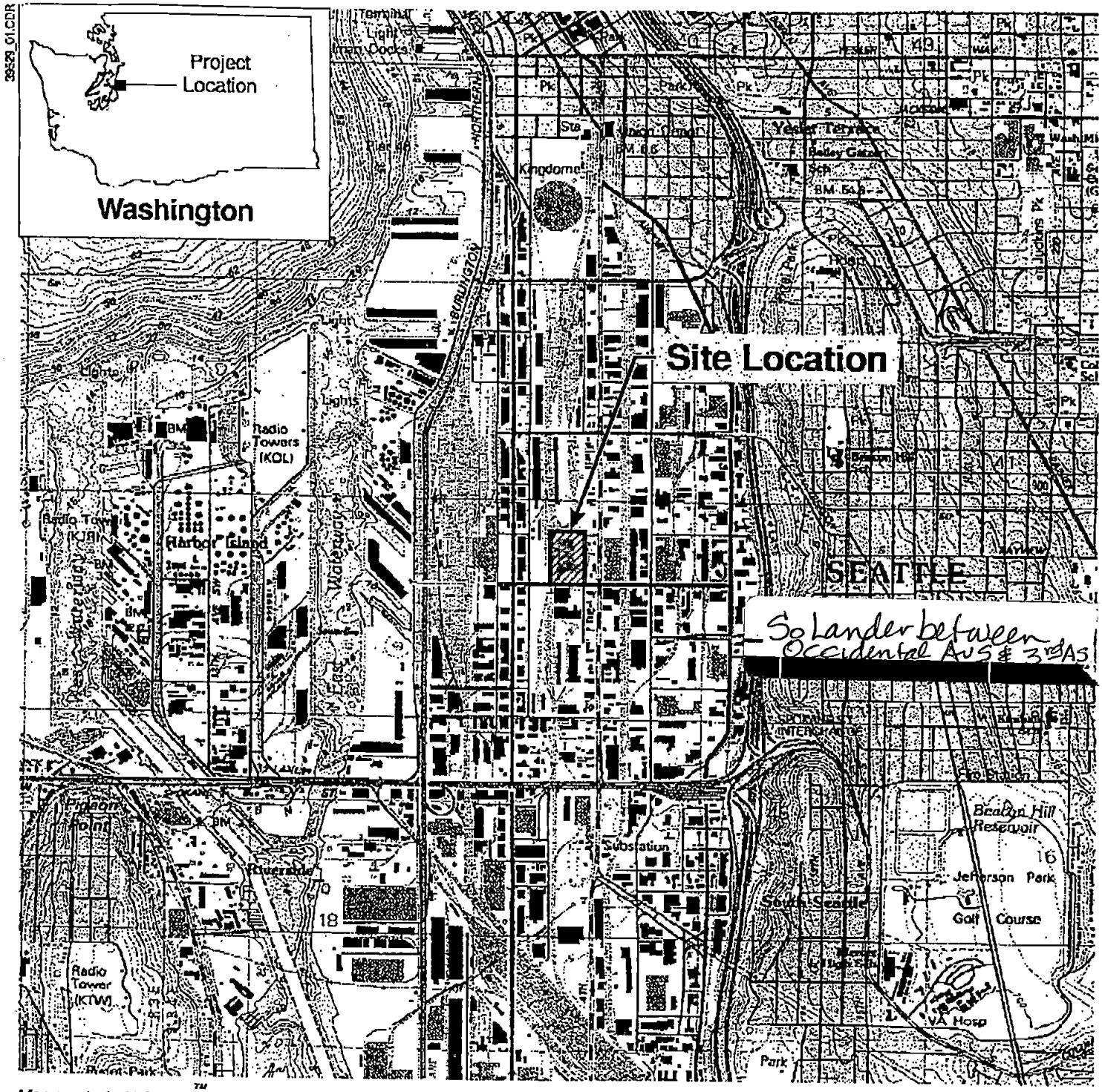

Figure 1

SITE LOCATION MAP

USPS GMF/VMF Property — Seattle, Washington

DAMES & MOORE

A DAMES & MOORE GROUP COMPANY

Job No. 39529-001-195

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Lowe Enterprises Northwest, Inc.

[redacted]

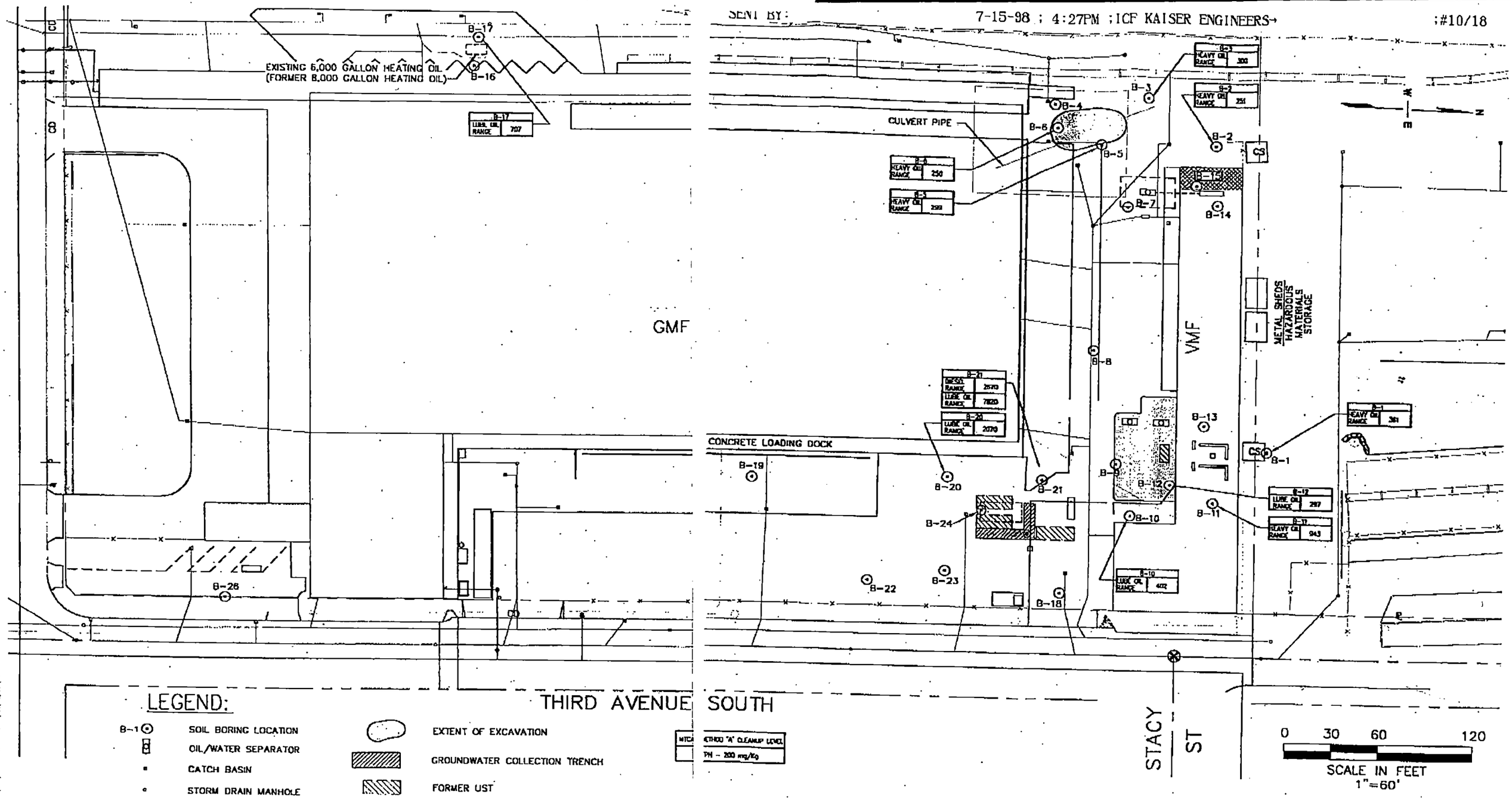

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FIGURE 4

SOIL CONTAMINANTS

USPS GMF/VMF Property - Seattle, Washington

Lowe Enterprises Northwest, Inc.

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TPH-g TPH-d TPH-o B T

mg/kg Fig 4 B-soils
B-gw
C-Interim-soils

34.5 16,000
1.51 1600
4530 700,000
15.1 3520

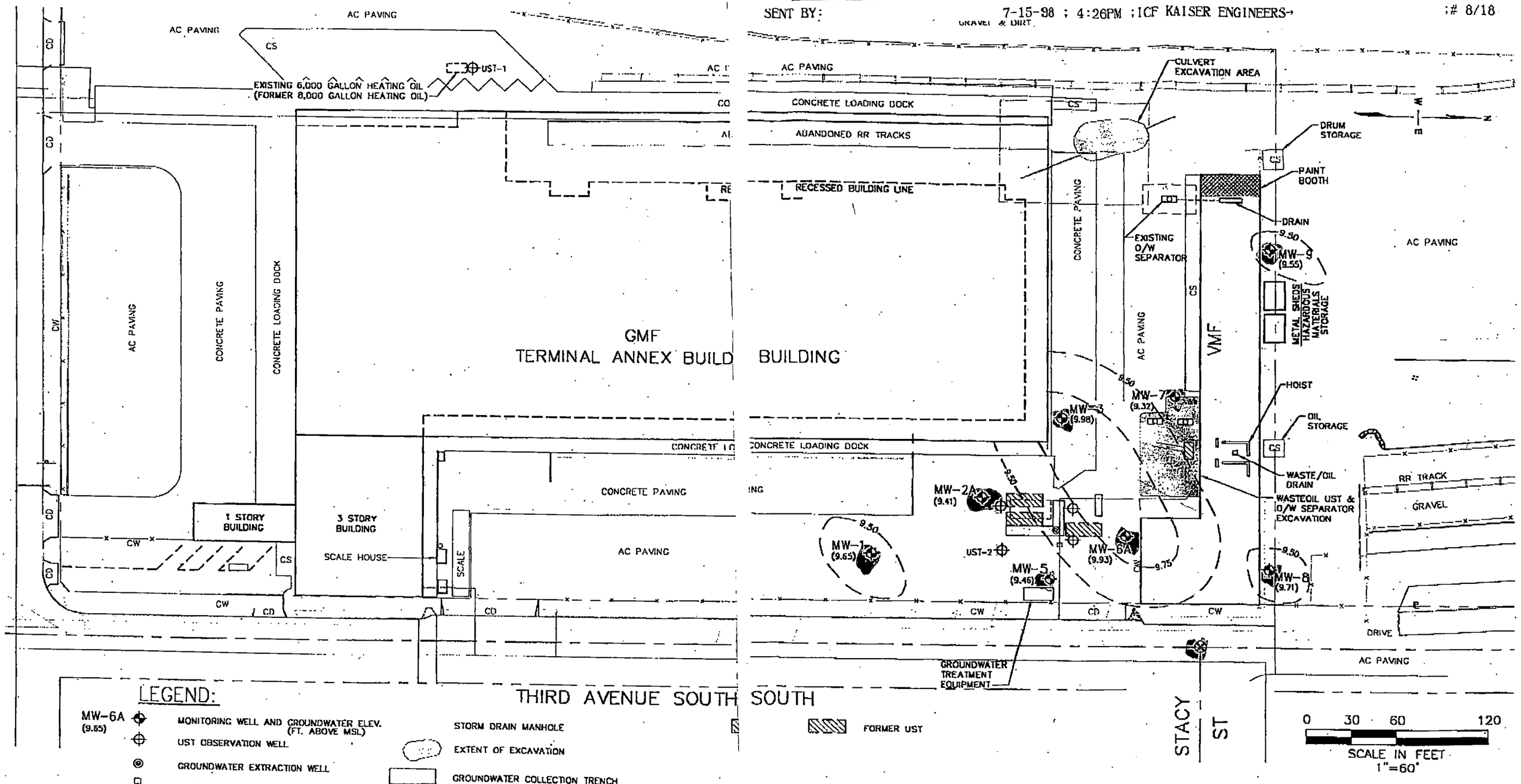

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Fig 3 (1)

FIGURE 3
MAY 15, 1998
GROUNDWATER ELEVATION CONTOUR MAP
USPS GMF/VMF Property - Seattle, Washington
Lowe Enterprises Northwest, Inc.

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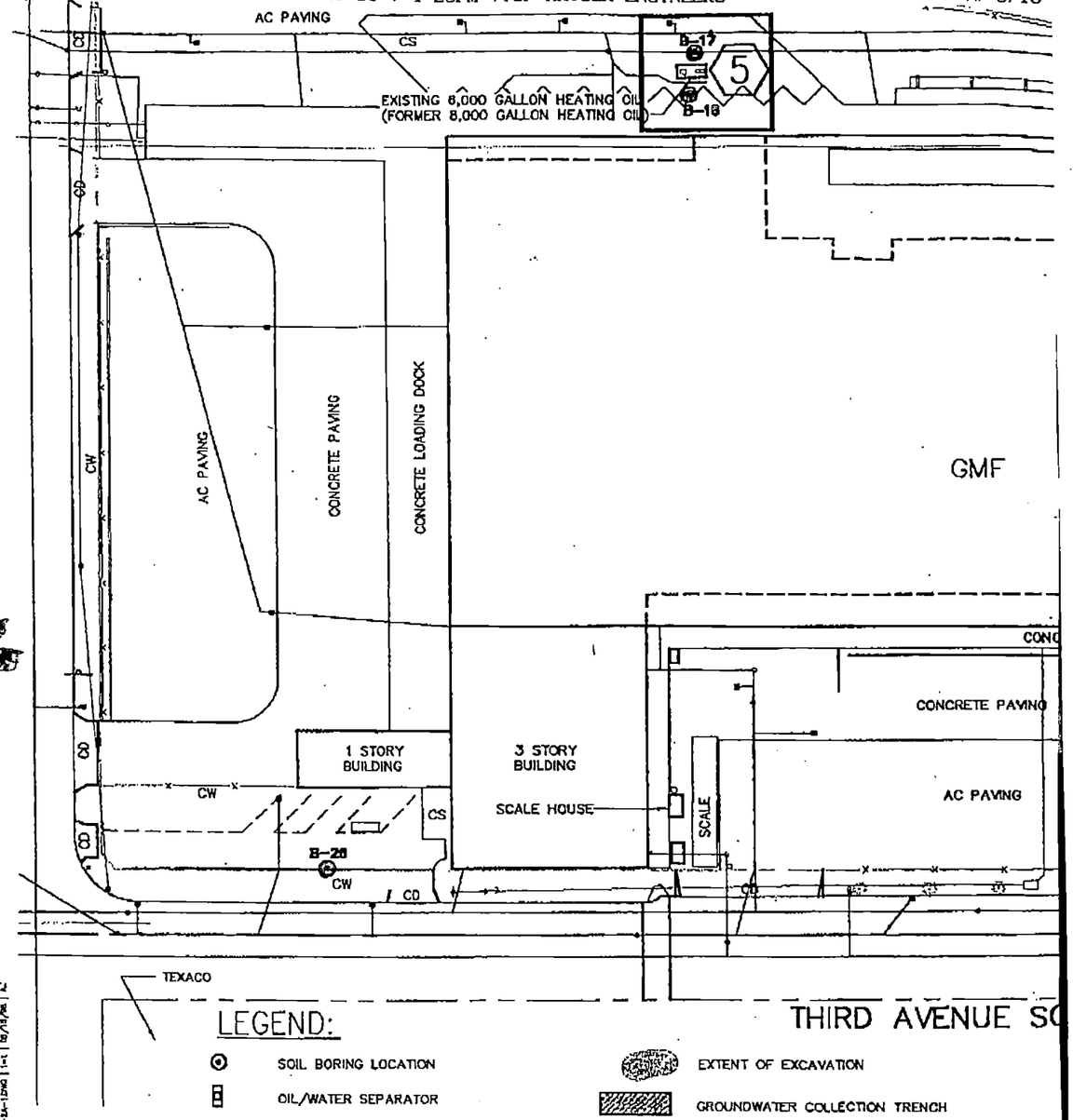
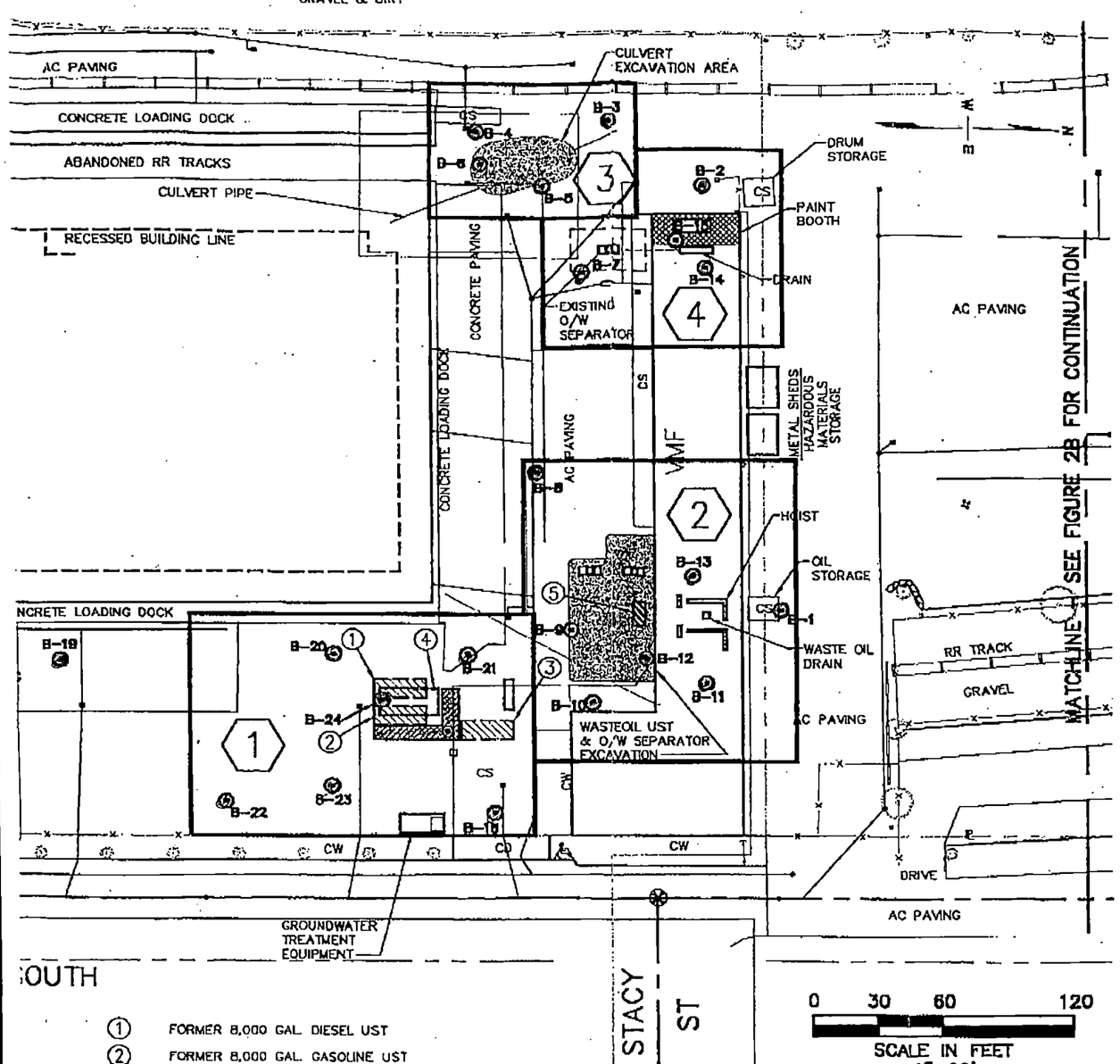
FIG 3





MATCHLINE - SEE FIGURE 2B FOR CONTINUATION

LEGEND:

- SOIL BORING LOCATION
- OIL/WATER SEPARATOR
- CATCH BASIN
- STORM DRAIN MANHOLE
- EXTENT OF EXCAVATION
- GROUNDWATER COLLECTION TRENCH
- FORMER UST
- (1) AREA OF CONCERN

1. FORMER 8,000 GAL. DIESEL UST
2. FORMER 8,000 GAL. GASOLINE UST
3. FORMER 8,000 GAL. GASOLINE UST
4. FORMER 12,000 GAL. DIESEL UST
5. FORMER 550 GAL. WASTE OIL UST

FIGURE 2A

SITE PLAN AND SOIL SAMPLING LOCATIONS
USPS GMF/VMF Property - Seattle, Washington

Lowe Enterprises Northwest, Inc.

DAMES & MOORE
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DRAFT Fig 2A (1)

DRAFT Fig 2A (2)

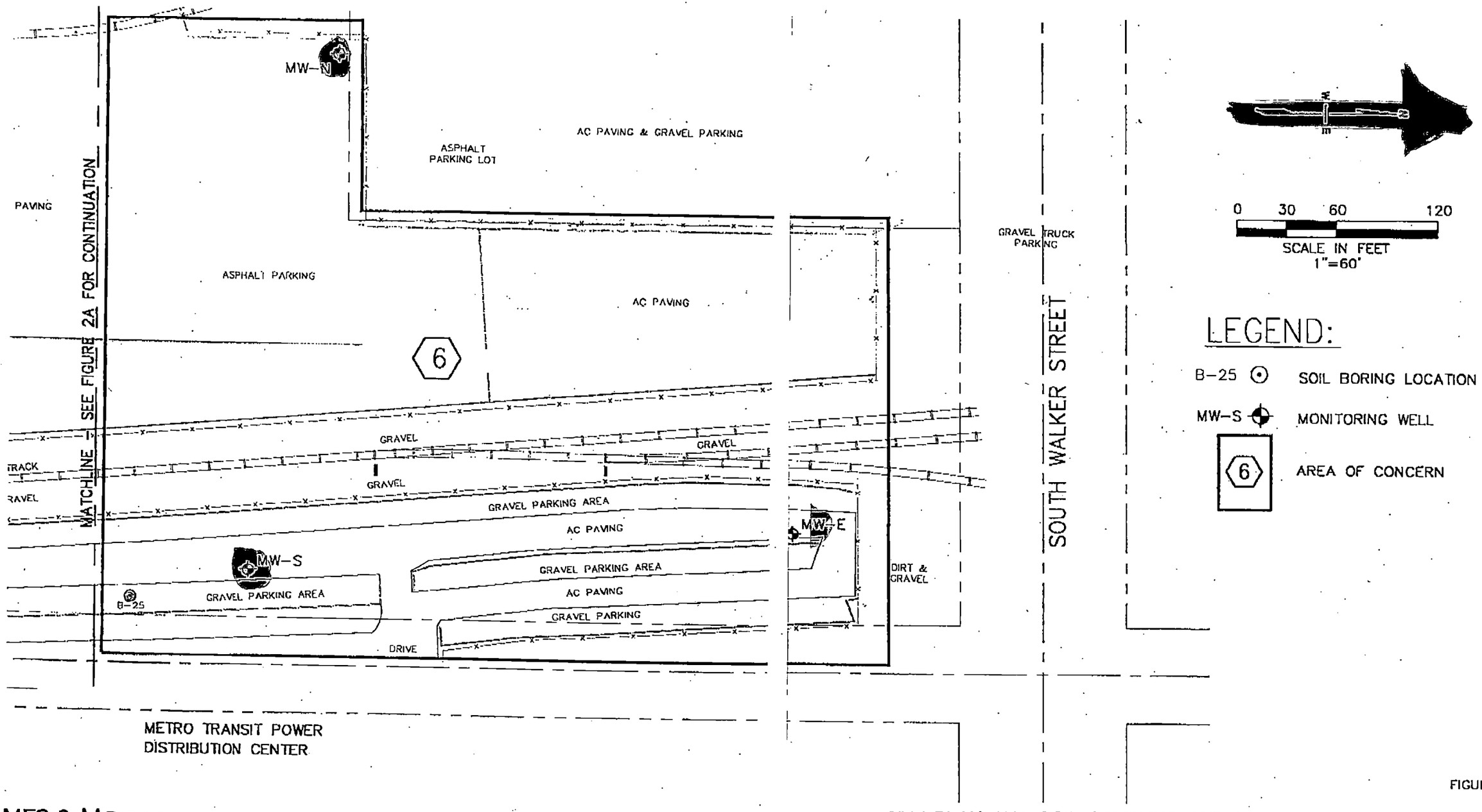

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Fig 2B (1)

FIGURE 2B

SITE PLAN AND SOIL SAMPLING AND MONITORING WELL LOCATIONS
USPS GMF/VMF Property - Seattle, Washington

Lowe Enterprises Northwest, Inc.

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Fig 2B (2)

TABLE 1
GEOPROBE SOIL & GROUNDWATER INVESTIGATION LOCATIONS AND ANALYTICAL PROGRAM
USPS GMF/VMF
SEATTLE, WASHINGTON

Area Designation	Area Description	Boring I.D.	Analytical Parameters
Area 1	Former 8,000 Gal. Unleaded Gasoline UST (Existing 6,000 Gallon Heating Fuel UST)	B-18, B-19, B-21, B-22	NWTPH-Gx and MTBE
	Former 8,000 Gal. Unleaded Gasoline UST (South of former pump island)	B-23, B-24	NWTPH-Gx and MTBE
	Former 8,000 Gal. Diesel UST	B-20 (southwest), B-24	NWTPH-Dx and NWTPH-Gx
	Former 12,000 Gal. Diesel UST	B-20 (southwest), B-24	NWTPH-Dx and NWTPH-Gx
Area 2	Hydraulic Lift Pits/Waste Oil Floor Drain	B-1, B-11, B-13	NWTPH-Dx, RCRA Metals, PCBs, and VOCs
	Former 550 Gal. Wast Oil UST and Oil/Water Separator	B-8, B-9, B-10, B-12	NWTPH-Dx, RCRA Metals, PCBs, and VOCs
Area 3	Culvert Remediation Area	B-3, B-4, B-5, B-6	NWTPH-Dx, PAHs, PCBs, RCRA Metals, and VOCs
Area 4	Paint Booth and Drum Storage areas	B-2	NWTPH-Dx
	Existing Oil/Water Separator and Drain System	B-7, B-14, B-15	NWTPH-Dx and VOCs
Area 5	Former 8,000 Gal. Heating Oil UST (Existing 6,000 Gallon Heating Fuel UST)	B-16, B-17	NWTPH-Dx
Exxon LUST Site, Metro Spill Site, Texaco LUST Site	Located along east property boundary (4th Ave. S.)	B-22, B-25, B-26, (respectively)	NWTPH-Gx, PAHs, PCBs, and VOCs

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TABLE 2
SUMMARY OF GROUNDWATER ELEVATIONS
USPS GMF/VMF
SEATTLE, WASHINGTON

Well ID	Screened Interval (feet, bgs)	TOC Elevation (feet, amsl)	Depth to Water (feet)		Groundwater Elevation (feet, amsl)	
			6/28/94	5/15/98	6/28/94	5/15/98
MW-1	3.5-13.5	14.78	6.29	5.13	8.49	9.65
MW-2A	3.0-13.0	14.03	5.5	4.62	8.53	9.41
MW-3	3.0-14.0	14.73	6.38	4.75	8.35	9.98
MW-5	5.0-15.0	16.07	7.52	6.61	8.55	9.46
MW-6A	3.5-13.5	16.48	8.01	6.55	8.47	9.93
MW-7	3.0-13.0	16.22	7.72	6.9	8.5	9.32
MW-8	3.5-13.5	16.66	Dry	6.95	Dry	9.71
MW-9	3.5-13.0	16.25	7.7	6.7	8.55	9.55
MW-N	NA	NA	NA	2.78	NA	NA
MW-S	NA	NA	NA	5.72	NA	NA
MW-E	NA	NA	NA	5.59	NA	NA
UST-1	NA	NA	NA	5.58	NA	NA

Notes:
bgs - below ground surface
TOC - Top of Casing
amsl - above mean sea level
NA - Not Available

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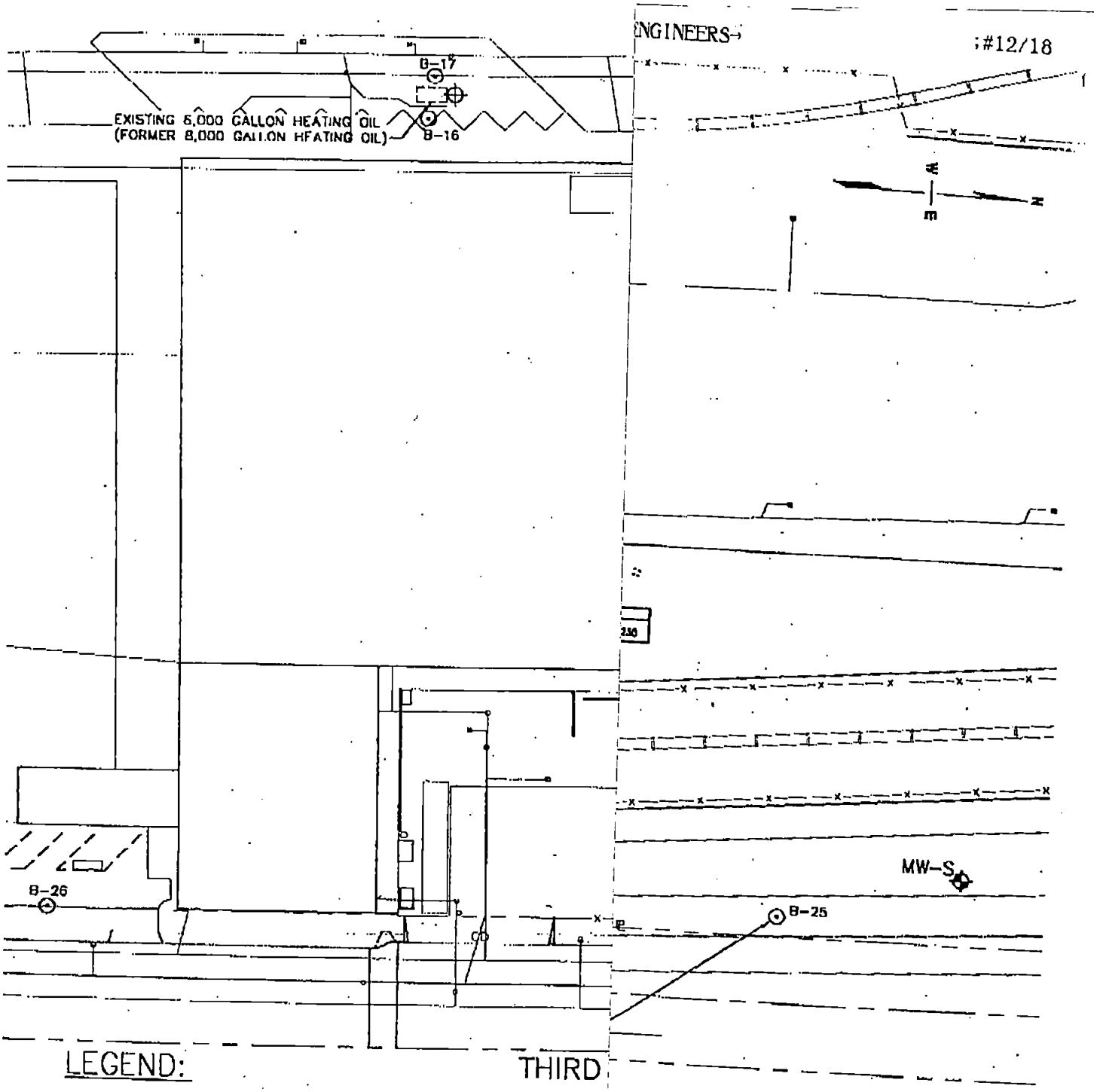

THIRD

TER CONTAMINANTS

FIGURE 6

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F Property - Seattle, Washington

Lowe Enterprises Northwest, Inc.

Job No. 39529-001-195

FIG 6

(2)

SENT BY:

7-15-98 ; 4:32PM ; ICF KAISER ENGINEERS-

;#17/18

TABLE 4
SUMMARY OF GROUNDWATER GEOPROBE ANALYTICAL RESULTS
USPS GMF/VMF
SEATTLE, WASHINGTON

Boring ID	Area	Sample Date	Total Petroleum Hydrocarbons (µg/L)				Volatile Organic Compounds (µg/L)			PCBs (µg/L)	PAHs (µg/L)		Dissolved Metals (µg/L)			
			Diesel Range	Lube Oil Range	Heavy Fuel Oil Range	Gasoline Range	Benzene	Toluene	Vinyl Chloride	Aroclor 1260	Acenaphthene	Anthracene	Arsenic	Barium	Chromium	Lead
B-4-5W	Area 3	05/18/98	ND	ND	1,090	ND	ND	ND	ND	0.213	0.302	ND	NA	NA	NA	NA
B-5-6W	Area 3	05/19/98	431	ND	ND	ND	ND	1.490	ND	ND	ND	0.113	NA	NA	NA	NA
B-7-6W	Area 4	05/18/98	ND	ND	8,050	ND	ND	ND	1.31	NA	NA	NA	NA	NA	NA	NA
B-8-5.5W	Area 2	05/18/98	ND	ND	18,100	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA
B-13-8.5W	Area 2	05/19/98	1,230	632	ND	ND	ND	ND	ND	ND	NA	NA	4.33	61.8	2.07	7.25
B-15-6W	Area 4	05/19/98	718	1,250	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA
B-19-W	Area 1	05/19/98	491	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA
B-21-W	Area 1	05/20/98	279	ND	ND	ND	1.05	0.570	ND	NA	NA	NA	NA	NA	NA	NA
B-25-W	Metro	05/20/98	1,380	1,920	ND	ND	1.19	0.722	ND	NA	NA	NA	NA	NA	NA	NA
B-26-W	Texaco	05/20/98	812	796	ND	ND	ND	0.676	ND	ND	NA	NA	NA	NA	NA	NA
Trip Blank	--	05/18/98	NA	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA
MTCA Method A or B Groundwater Cleanup Level			1,000 (A)	1,000 (A)	1,000 (A)	1,000 (A)	5.0 (A)	40.0 (A)	0.2 (A)	0.1 (A)	960 (B)	4,800 (B)	5.0 (A)	NE	50.0 (A)	5.0 (A)

Notes:
PCB - Polychlorinated Biphenyls. Samples analyzed by using EPA Method 8082.
PAH - Polynuclear Aromatic Compounds. Samples analyzed by using GC/MS with Selected Ion Monitoring method.
TPH - Total Petroleum Hydrocarbons. Samples analyzed by using NWTPH-Gx and EPA Method 8021-B.
VOC - Volatile Organic Compounds. Samples analyzed by using EPA Method 8260-B
NA - Not Analyzed
NE - Not Established.
ND - Not Detectable at method reporting limit
(A) - MTCA Method A Groundwater Cleanup level.
(B) - MTCA Method B Groundwater Cleanup level.
MTCA - Model Toxics Control Act. Method A and B values shown are reported with the same concentration units as the sample results.
Numbers in bold font indicate that the reporting limit exceeds the MTCA cleanup level.

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TABLE 5
SUMMARY OF GROUNDWATER MONITORING WELL ANALYTICAL RESULTS
USPS GMF/VMF
SEATTLE, WASHINGTON

Well ID	Sample Date	Total Petroleum Hydrocarbons (ug/L)			Dissolved Metals (ug/L)					PAHs (ug/L)	PCBs (ug/L)	VOCs (ug/L)
		Diesel range	Lube Oil Range	Gasoline Range [1]	Arsenic	Barium	Chromium	Lead	Selenium			
MW-1	01/16/96	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NA
	05/14/98	354	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
MW-2A	01/16/96 [1]	270	ND	NA	NA	NA	NA	NA	NA	NA	NA	*
	05/14/98	772	1820	190	NA	NA	NA	NA	NA	NA	NA	NA
MW-3	01/16/96 [2]	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	**
	05/14/98	565	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
MW-5	01/16/96	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NA
	05/14/98	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
MW-6A	01/16/96	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NA
	05/14/98	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
MW-7	01/16/96	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NA
	05/14/98	333	786	NA	1.96	86.9	2.27	1.28	1.04	NA	ND	ND
MW-8	01/15/96	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NA
	05/14/98	ND	ND	NA	ND	7.72	2.22	ND	1.11	NA	ND	ND
MW-9	01/16/96	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NA
	05/15/98	335	ND	NA	1.16	53.4	3.44	ND	ND	NA	ND	ND
MW-N	05/15/98	582	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
MW-S	05/15/98	329	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
MW-E	05/15/98	366	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
UST-1	05/15/98	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trip Blank	05/14/98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
MTCA Method A or B Groundwater Cleanup Level		1,000 (A)	1,000 (A)	1,000 (A)	5.0 (A)	1120 (B)	50 (A)	5.0 (A)	NE	–	0.1 (A)	--

Notes:
TPH - Total Petroleum Hydrocarbons
VOC - Volatile Organic Compounds
NA - Not Analyzed
ND - Not Detectable at method reporting limit
(A) - MTCA Method A Groundwater Cleanup level.
(B) - MTCA Method B Groundwater Cleanup level.
MTCA - Model Toxics Control Act. Method A and B values shown are reported with the same concentration units as the sample results.
Numbers in bold font indicate that the reporting limit exceeds the MTCA cleanup level.
All 1/16/96 samples collected by PEMCO (ICFK, 1997)
Previous sampling results from the following wells are not available: MW-N, MW-S, MW-E, and UST-1.
[1] Analysis method for gasoline range hydrocarbons for May 1998 samples by NWTPH-Gx and EPA 8021-B method.
* MW-2A detected Benzene (180 ug/L) and Ethylene (5.4 ug/L) during the 1/16/96 sampling event.
Other VOCs deted included Carbon Disulfide (5.8 ug/L), Isopropylbenze (20 ug/L), and n-Propylbenzene (41 ug/L).
** Other VOCs detected included Napthalene (8.6 ug/L).

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7-15-98 ; 4:32PM ; ICF KAISER ENGINEERS→ ;#18/18

TABLE 3

table 3 (2)

TABLE 3
SUMMARY OF SOIL ANALYTICAL RESULTS
USPS GMF/VMF
SEATTLE, WASHINGTON C industrial C commercial

B Meth C

Sample ID	MTCA Method A or B Soil Cleanup Level	Area 1				Area 4					Area 5
		B-10-6'	B-18-6'	B-20-6'	B-21-6'	B-7-6'	B-14-6'	B-15-3'	B-15-6'	B-17-5'
Sample Depth (feet)		6.0	6.0	6.0	6.0	6.0	6.0	3.0	6.0	5.0
Sample Date		05/18/98	05/19/98	05/20/98	05/20/98	05/18/98	05/19/98	05/19/98	05/19/98	05/19/98
Total Petroleum Hydrocarbons, (mg/kg) [1]										
Diesel Range	200 (A)	ND	ND	ND	2,670	ND	ND	ND	ND	ND
Heavy Fuel Oil Range	200 (A)	ND	ND	ND	ND	134	85	200	64	ND
Lube Oil Range	200 (A)	402	ND	2,070	7,820	ND	ND	ND	ND	707
Gasoline Range	100 (A)	ND	ND	7.7	6.34	NA	NA	NA	NA	NA
Total Metals, (mg/kg) [2]										
Arsenic	20 (A)	NA	NA	NA	NA					
Barium	5600 (B)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	100 (A)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	250 (A)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	1.0 (A)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls, (mg/kg) [3]										
1.6 Aroclor 1260 C-ind 70 C-com 64	1.0 (A)	NA	NA	NA	NA					
Volatile Organic Compounds, (mg/kg) [4]						NA	NA	NA	NA	NA
Methylene chloride *	0.5 (A)	1.03*	NA	NA	NA					
Naphthalene	NE	ND	NA	NA	NA	2.2*	ND	ND	ND	NA
Polynuclear Aromatic Compounds, (mg/kg) [5]						ND	ND	ND	ND	NA
Anthracene	NE	NA	NA	NA	NA					
Benzo (a) anthracene	20 (A)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (a) pyrene	20 (A)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (b) fluoranthene	20 (A)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (g,h,i) perylene	20 (A)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (k) fluoranthene	20 (A)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	20 (A)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno (1,2,3-cd) pyrene	20 (A)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total cPAH	1.0 (A)	-	-	-	-	-	-	-	-	-

Notes:
NA - Not Analyzed
ND - Not Detectable at method detection limit
NE - Not Established
(A) MTCA Method A soil cleanup level
(B) MTCA Method B soil cleanup level
MTCA - Model Toxics Control Act. Method A and B values shown are reported with the same concentr
Numbers in bold font indicate that the reporting limit exceeds the MTCA cleanup level.
[1] Analysis method NWTPH-Gx, NWTPH-Dx, and EPA 8021-B
[2] Analysis method EPA 6000/7000 series
[3] Analysis method EPA 8082
[4] Analysis method EPA 8260-B
[5] Analysis method GC/MS with Selected Ion Monitoring
* Methylene chloride is a suspected laboratory contaminant (see North Creek Analytical Laboratory Rep

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