LUST 1365

GLACIER
NORTHWEST

5975 East Marginal Way S.
Seattle, WA 98134
P.O. Box 1730
Seattle, WA 98111
Telephone: (206) 764-3000

Fax Numbers:
Corporate (206) 764-3012
Sales (206) 764-3014
Credit (206) 764-3013
Warehouse (206) 762-3077
Cement Terminal (206) 764-7176

USA # 2211
Seattle Ready Mix
Glacier Northwest
Seattle

July 15, 2003

Department of Ecology
Northwest Regional Office
3190 160th Avenue S.E.
Bellevue, Washington 98008-5452

Attention: Mr. John Bails

COPY

Subject: Cleanup Report
Glacier Northwest, Inc. Seattle Ready-Mix Plant

Dear Mr. Bails:

The purpose of this letter is to transmit the report on the cleanup of spilled fuel at the Glacier Northwest, Inc. Seattle Ready-Mix Plant. The spill, which occurred as a result of a leaking diesel fuel pump, was discovered on March 5, 2003, reported to the State Division of Emergency Management, and assigned tracking number 03-044/A report on the leak investigation was previously transmitted to your office on April 29, 2003.

Feel free to contact me at (206) 768-7612 if you should have any questions or require additional information.

Sincerely,

Thomas G. Hanson

Thomas G. Hanson
Environmental Manager, Washington Division

Enc.

cc: Matt Fein
Mark Leatham (w/o enclosure)
Darrell Herman

RECEIVED
JUL 17 2003
DEPT OF ECOLOGY

g-logics

Logical Solutions for Complex Problems

UST # 2211

Cleanup Report - Pump Island Area
Seattle Ready Mix Plant
5975 E. Marginal Way S
Seattle, WA 98134

Prepared for: Mr. Thomas Hanson
Glacier Northwest
PO Box 1730
Seattle, WA 98111-1730

Prepared by: G-Logics, Inc.
175 First Place NW, Suite A
Issaquah, WA 98027

Telephone: (425) 391-6874
Facsimile: (425) 313-3074

July 11, 2003

G-Logics Project 01-0272-B

g-logics

Logical Solutions for Complex Problems

July 11, 2003
G-Logics Project 01-0272-B

Mr. Thomas Hanson
Glacier Northwest
PO Box 1730
Seattle, WA 98111-1730

Subject: Cleanup Report - Pump Island Area
Seattle Ready Mix Plant
5975 E. Marginal Way S
Seattle, WA 98134

Dear Mr. Hanson:

Presented in this cleanup report are the results of the petroleum-contaminated soil cleanup at the diesel pump fuel island at the above-referenced property. This report documents the purpose, approach, and results of the site remediation in this area. This work included the excavation and handling of contaminated soil and subsequent site restoration in accordance with state regulations.

Based on these findings, the closure has been completed in conformance with Ecology requirements and the residual hydrocarbon contaminants in the soil do not pose an unacceptable hazard to human health and the environment. Following Ecology guidance, we recommend that this report be submitted to Ecology's Northwest Regional Office to document the completed cleanup.

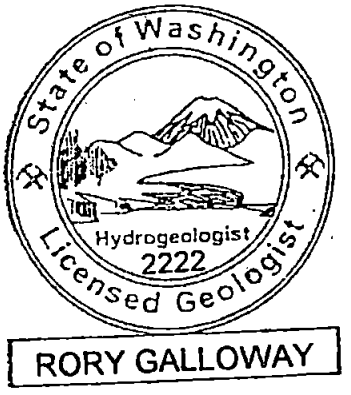
G-Logics, Inc.
175 First Place NW, Suite A
Issaquah, WA 98027
T: 425-391-6874
F: 425-313-3074
01-0272-B-RT.doc

We trust the information presented in this report meets your needs at this time. Should you require additional information or have any questions, please contact us at your convenience. Thank you again for this opportunity to be of service.

Sincerely,
G-Logics, Inc.

Rob Roberts
Environmental Chemist

Rory L. Galloway, LG, LHG
Principal



g-logics

TABLE OF CONTENTS

g-logics

APPENDICES

EXECUTIVE SUMMARY

The Seattle Ready Mix Plant is located at 5975 E. Marginal Way South in Seattle, Washington (Figure 1). The facility includes a gasoline and diesel fueling area located near the truck wash rack (Figure 2). In March 2003, a fuel leak was discovered beneath the eastern diesel fuel dispenser during removal and upgrading of the pump system (Section 1.2.1). Glacier Northwest personnel then notified the Washington Department of Ecology (Ecology) of the release. As a result of the release, Glacier Northwest has performed an independent remedial action for this site in accordance with Ecology's Model Toxics Control Act (MTCA) and Ecology's Guidance for Remediation of Petroleum Contaminated Soils.

Results from a site exploration conducted in March 2003 indicated that petroleum-affected soils were limited to the area beneath the fuel pumps and within the UST backfill (G-Logics report dated April 3, 2003). Based on the findings of this exploration, additional site cleanup beneath the pump island was recommended.

On June 12 and 13, 2003, G-Logics observed Glacier personnel and Clear Creek Contractors Inc. remove approximately 2 cubic yards of petroleum-impacted soil from the affected area beneath the former eastern diesel dispenser (Figure 3). Soil samples collected from the final excavation sidewalls and bottom were non-detect or below MTCA Method A cleanup levels for diesel and oil-range total petroleum hydrocarbons (TPH). The Phase II assessment conducted by G-Logics in March 2003 indicated that groundwater has not been impacted. Therefore, it appears that TPH-impacted soils have been adequately removed from the area of identified release and that remaining subsurface conditions do not appear to present a potential threat to human health or the environment.

The excavation has been backfilled with clean pit-run material, and new dispensers have been installed and equipped with secondary containment features. No further assessment or remediation appears necessary for this area.

1.0 INTRODUCTION

Presented in this report are the results of a cleanup of petroleum-containing soils performed at the fueling area of the Seattle Ready Mix Plant located at 5975 E. Marginal Way S in Seattle, Washington. G-Logics, Inc. (G-Logics) was retained by Glacier Northwest

(Glacier), to monitor and document the remediation of contaminated soils at the fueling area. The following report presents the findings of the soil remediation effort on the property conducted in June 2003 (Figure 3).

The objective of this project was to remediate the subject area in a cost-effective and efficient manner meeting the cleanup criteria specified under Washington's Model Toxics Control Act (MTCA). This work included the excavation, removal, and off-site recycling of soils containing elevated concentrations of TPH.

Presented below are a description of the performed site cleanup work and the results of confirmation sampling. G-Logics' activities, observations, and findings relating to this work are subject to the limitations included as a separate section of this report.

1.1 Site Description

The subject property is located at 5975 E. Marginal Way S in Seattle, Washington. The Glacier Northwest site is fully paved and is the location of a concrete mix plant and office buildings. Surrounding land use includes a gypsum board manufacturing plant to the north, and a shipping container storage lot to the east. The Duwamish Waterway and a Slip 2 are located to the south and west (Figure 1).

1.2 Site Background

This section presents background information regarding the discovery and assessment of the petroleum contamination in the fueling area of the facility.

1.2.1 Release Discovery and Reporting

Two underground storage tanks (USTs) are located at the property in an area adjacent to the truck-wash rack. The area surrounding the USTs and wash rack is paved with 12-inch thick concrete. Rain water and wash-water drain to a facility-wide stormwater system equipped with settling basins and an oil/water separator. The fuel USTs (6,000-gallon gasoline and 10,000-gallon diesel) provide fuel to management vehicles and facility-support equipment. The tank systems reportedly were installed in 1989. During an upgrade of the fuel-delivery documentation system in early March 2003, Glacier personnel identified a leaking fitting within the eastern diesel-fuel dispenser. A drip pan was not located beneath this dispenser, allowing the diesel fuel to enter soil directly beneath the dispenser. Glacier subsequently

reported the release to Mr. Carl Andersen at the Washington State Department of Ecology (Ecology).

Glacier personnel disconnected the dispenser, removed a section of concrete paving, and excavated approximately three cubic yards of affected soil immediately east of the diesel dispenser (Figures 2 and 3). The excavation was covered with plastic to prevent surface water infiltration.

During a site visit by G-Logics on March 7, 2003, two existing monitoring wells within the corners of the UST excavation were reviewed. The wells contained 4-inch diameter PVC casings (slotted to the surface) and contained a few inches of water at approximately 10 feet below grade. The amount of water in the wells was not sufficient for sampling and may have been due to surface water infiltration. Based on the observed site conditions, G-Logics prepared a workplan for site exploration (dated March 12, 2003).

1.2.2 G-Logics' March 2003 Pump Island and UST Area Exploration

To provide information on possible soil and groundwater contamination in the area surrounding the leaking pump, a subsurface exploration was conducted at the UST and fuel dispenser area. The exploration included completion of six Strataprobe soil borings (TB-1 through TB-6, shown in Figure 2). Groundwater was encountered during drilling in all borings at approximately 10 feet below grade. Depth was near the fill-native soil interface (typically 9 to 10 feet). The water appeared clear and absent of suspended particulate during sample collection.

Soil and groundwater samples were submitted for analysis of gasoline-, diesel-, and oil-range TPH, benzene, toluene, ethylbenzene, and xylenes (BTEX), and MTBE. All eight soil samples and five groundwater samples were non-detect for all of the analytes. Analytical results are summarized in the tables presented in Appendix A.

Based on field observations and the results of the chemical analysis, G-Logics concluded that groundwater had not been impacted by the diesel release and that diesel-impacted soil appeared to be limited to shallow soil around the diesel-fuel dispenser. The results were summarized in G-Logic's Pump Island and UST Area Exploration report to Glacier Northwest, dated April 3, 2003.

1.3 Site Geological Setting

The borings drilled during the March 2003 site exploration were advanced to depths ranging from approximately 12 to 16 feet below ground surface. Borings completed within the UST backfill encountered approximately 12 feet of sand and gravel. Other borings generally encountered poorly graded (well sorted) sands to the explored depths. Outside of the tank backfill area, fill material was encountered to a depth of about 9 to 10 feet below grade, and was underlain by native tideland sands. Groundwater was present at approximately 10 feet below grade. Groundwater flow is likely to the west and northwest, toward the Duwamish Waterway. However, groundwater depths and flow directions are likely tidally influenced.

1.4 Hazardous Substance Sources and Locations

This work identified that near surface soils containing elevated concentrations of diesel-range TPH required remedial actions. These soils were located beneath the eastern diesel dispenser and immediately to the south in some of the UST backfill sand.

1.5 Regulatory Background

To identify the limits of the required remedial excavations, G-Logics used Ecology's published MTCA soil cleanup levels. Specifically, analytical results for TPH as diesel fuel and heavy oil were compared to the identified MTCA Method A Residential Cleanup Levels of 2,000 mg/kg. As an Independent Cleanup Action, this work was performed without Washington Department of Ecology (Ecology) direct assistance or approval. Additionally, this work was not performed under an order or decree.

1.6 Groundwater

Groundwater was not encountered during excavation of TPH-impacted soil. Groundwater sampled by G-Logics in March 2003, did not contain sheens or detectable levels of TPH, BTEX, or MTBE. Therefore, groundwater remediation was not deemed necessary.

2.0 PURPOSE AND SCOPE OF CLEANUP ACTION

The cleanup action and compliance-monitoring work was conducted in accordance with Washington's MTCA regulations and the Ecology guidance document, "*Guidance on Remediation of Petroleum Contaminated Soils*", (Revised November 1995). The project included the following scope of site-remediation work:

- Evaluation for the potential presence and extent of soils impacted by petroleum hydrocarbons by collection of soil samples.
- Collection of confirmation soil samples and submittal to an analytical laboratory for cleanup-documentation purposes.
- Excavate the identified impacted soils for treatment/recycling.
- Preparation of this cleanup report. This report which summarizes the performed cleanup action activities and our interpretations of the laboratory testing results.

3.0 CLEANUP ACTION CONDUCTED

The following sections describe general activities performed during the remediation of petroleum-contaminated soils (PCS) in the identified area of the property. Photographs taken during the excavation are presented in Appendix B. The limits of excavation, sampling locations, and photograph locations are shown in Figure 3.

3.1 June 12 Soil Excavation

A G-Logics chemist was present during the soil removal and performed the post-excavation soil sampling. The removal of soil was conducted by Glacier Northwest personnel under guidance of Clear Creek Contractors and G-Logics. To avoid damaging the existing fiberglass fuel lines and UST vent lines, soils were excavated using a Glacier Northwest vacuum truck. However, prior to excavation of soil by vacuum truck, approximately 1 cubic yard of overlying broken concrete was removed (Photo 1). During removal of PCS, particular attention was given to noting visible evidence of staining, discoloration, odors, or other relevant factors indicative of a release of petroleum hydrocarbons. Some minor PCS was encountered in the top two feet of soil beneath the western diesel dispenser. However,

the main area of contamination observed was beneath the eastern diesel dispenser (Photo 2).

The PCS appeared to extend to a depth of approximately 7 feet below grade beneath the east dispenser, and 5 to 7 feet into the UST backfill to the south (Figure 3, and Photo 3). The contamination was primarily limited to loose sandy backfill soils. Photo-ionization readings measured by Clear Creek indicated low levels (3 to 4 ppm) of volatile organic compounds (VOCs) were present in soils collected from the bottom and south sidewall. The south sidewall extended beneath the edge of the saw-cut concrete. Additional excavation of the south sidewall could not be conducted due to caving of the UST backfill material (loose sand). A silty, clayey soil layer present from 4 to 7 feet below grade appeared to have limited the vertical extent of TPH migration. Therefore, the excavation was halted at a maximum depth of 7 feet below the east diesel dispenser. Approximately 1.5 cubic yards of PCS was excavated on June 12, 2003. The PCS was stockpiled on site in a concrete-lined storage bin.

The excavation conducted by Glacier Northwest in March 2003 (Shown in Figure 3) had no visual or olfactory indications of PCS. A small amount of PCS (less than ½ cubic yard) was reportedly over-excavated by Glacier Northwest and used in construction of "Ecology" blocks. No additional excavation was conducted in this area.

3.1.1 June 12 Soil Sampling and Analysis

The following confirmation soil samples were collected by a G-Logics UST Site Assessor from the June 12 excavation:

- Bottom sample B-1, collected 3 feet below the former west diesel dispenser;
- Bottom sample B-2, collected 7 below the former east diesel dispenser;
- Sidewall sample South-1, collected 4 feet below grade in sandy backfill material; and
- Sidewall sample North-1, collected 4 feet below grade, immediately north of the former east diesel dispenser and apparent zone of maximum PCS.

Field sampling methods are described in Appendix C. The samples were submitted on June 12, 2003 to Advanced Analytical Laboratory (Redmond) for analysis of diesel-range TPH by Ecology Method NWTPH-D-extended.

The results of the analysis indicate that diesel-range TPH was detected in two of the four samples. Sample South-1 contained 1,500 milligrams per kilogram (mg/kg) diesel-range TPH. Sample North-1 contained 45,000 mg/kg diesel-range TPH, exceeding the Method A cleanup level of 2,000 mg/kg. The sample results are summarized in Table 1.

3.2 June 13 Soil Excavation

Based on the analytical results for sample North-1, additional material was excavated from the north wall by Glacier Northwest personnel on June 13, 2003. Approximately 1 to 2 lateral feet of soil were removed from the area adjacent to North-1 (Photo 4). The PCS was added to the June 12 excavation soils. Following excavation, the north sidewall appeared to be free of staining or odor indicative of diesel contamination.

3.2.1 June 13 Soil Sampling and Analysis

G-Logics collected sample North-2 from the north sidewall at a depth of 4 feet below grade. An additional sidewall sample (North-3) was collected 12 inches into the north wall at 4 feet below grade to assess the potential for PCS to extend further to the north (in case North-2 contained elevated diesel-range TPH). Sample locations are shown in Figure 3.

The samples were submitted on June 13, 2003 to Advanced Analytical Laboratory (Redmond) for analysis of diesel-range TPH. Both samples contained no detectable diesel-range TPH. The results are included in Table 1. A copy of the Advanced Analytical Laboratory report is presented in Appendix D.

3.3 Waste Characterization and Disposal

Given the discovered concentrations of diesel-range TPH, the location of release beneath a diesel dispenser, and the absence of any other constituents such as gasoline, BTEX, or MTBE during G-Logics March 2003 exploration, the 2 cubic yards of material excavated on June 12 and 13, 2003 was handled as petroleum-contaminated soils. Later in June 2003, Glacier Northwest mixed the PCS with approximately 12 cubic yards of clean concrete mix. The resulting mixture was poured onto a concrete slab and allowed to harden. The hardened concrete was broken up and removed from the site by Walrath Trucking (Tacoma) for reuse as concrete aggregate. There were no shipping documents available for the transport and reuse of the material.

3.4 Groundwater

Shallow groundwater was not observed in the excavation, and for the reasons presented in Section 1.6, was not considered an issue at this site.

3.5 Site Restoration

The excavation was backfilled, and the dispensers were installed by Glacier Northwest and Clear Creek Contractors over new containment systems. G-Logics was not present during site backfill and restoration.

4.0 CONCLUSIONS

Based on the results of the analysis of confirmation samples, soils containing concentrations of diesel-range TPH exceeding the Method A cleanup level of 2,000 mg/kg have been successfully removed from the fuel-dispenser area. Previous sampling by G-Logics in March 2003 indicated that PCS did not extended past the dispenser and UST backfill area and that petroleum impacted groundwater was not present.

G-Logics concludes that contaminated soils at this site have been successfully remediated in accordance with MTCA requirements. Therefore, G-Logics believes that no further action is required to address the identified site contamination. Additionally, institutional controls in the form of new secondary containment systems have been installed. These combined efforts are protective of human health and the environment for the intended use of the site.

5.0 LIMITATIONS

The conclusions presented in this report are our professional opinions based solely upon our visual observations and field screening during the PCS removal, and the analysis of the soil samples collected from the excavation. The results and conclusions are intended exclusively for the purpose outlined herein and for the site location and project indicated. Opinions and recommendations presented herein apply to site conditions existing at the time of our assessment and do not necessarily apply to future changes or other prior conditions at the site of which G-Logics, Inc. is not aware and has not had the opportunity to evaluate. Our scope of work was limited to those items specifically identified in this

report. Other activities not specifically included in this report are excluded and are therefore not part of our services.

The property owner is solely responsible for notifying all governmental agencies, and the public at large, of the existence, release, treatment, or disposal of any hazardous materials observed at the project site. G-Logics assumes no responsibility or liability whatsoever for any claim, loss of property value, damage, or injury which results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials.

This report is prepared for the sole use of Glacier Northwest. The scope of services performed during this cleanup may not be appropriate for the needs of other users, and re-use of this document or the findings, conclusions, or recommendations presented herein are at sole risk of said user(s). Based on the intended use of the report, G-Logics may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements will release G-Logics from any liability resulting from the use of this report by any unauthorized party.

No warranty, either express or implied, is made.

REFERENCES

G-Logics, 2003. *Pump Island and UST Area Exploration,* Seattle Ready Mix Plant. Prepared for Glacier Northwest. Prepared by G-Logics, Inc., Issaquah, Washington. April 3, 2003.

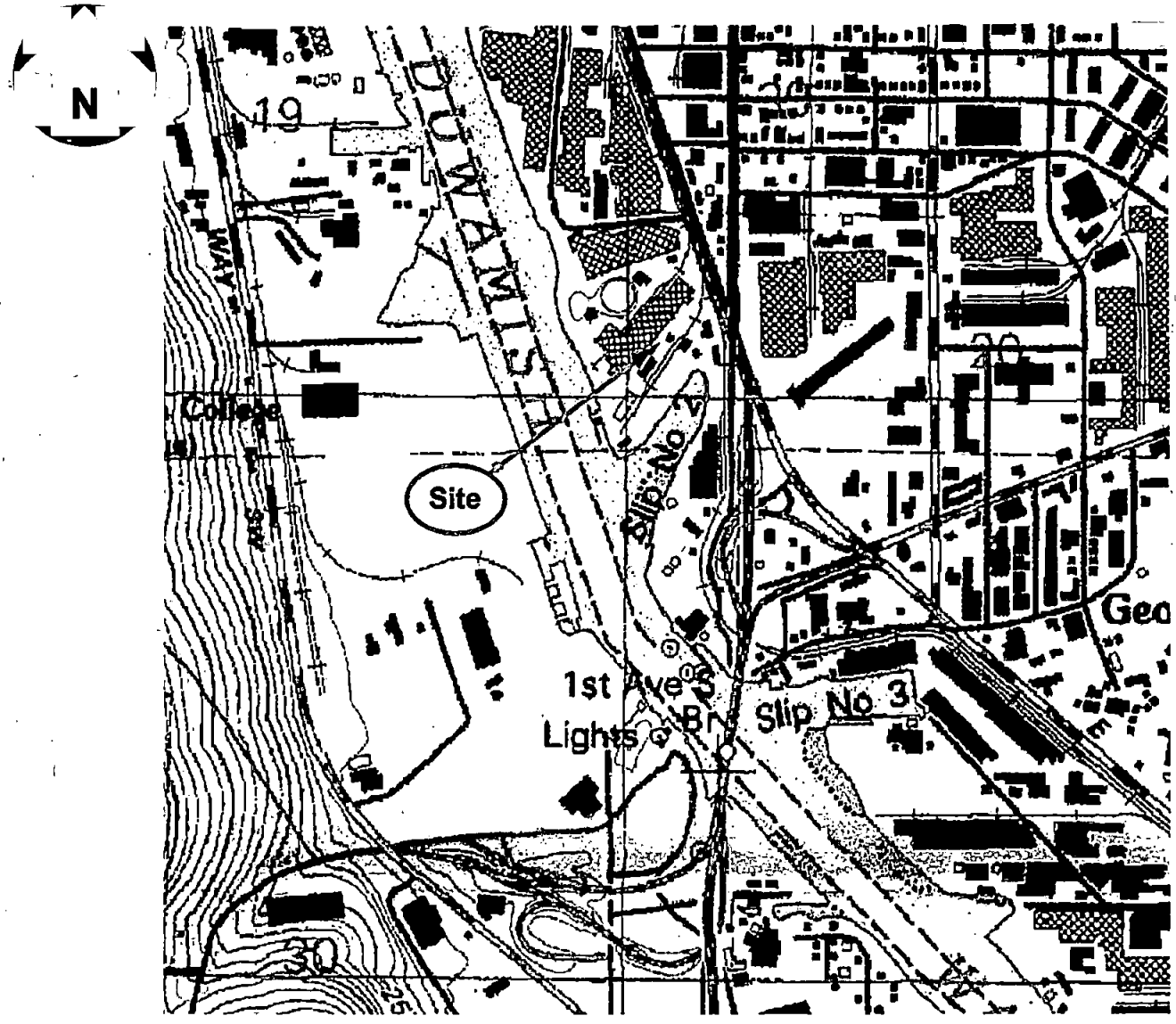
Ecology 1997a. Analytical Methods for Petroleum Hydrocarbons. Toxics Cleanup Program and the Ecology Environmental Laboratory. Washington State Department of Ecology, Olympia, Washington. Publication No. ECY97-602.

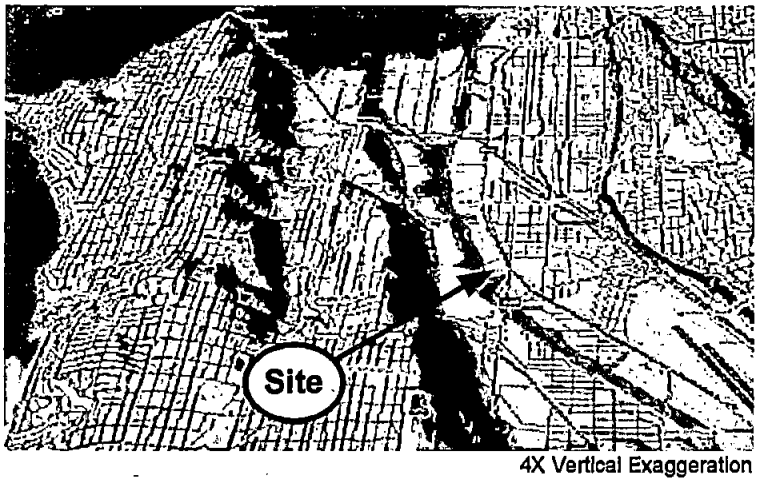
Ecology, 1995, Guidance for Remediation of Petroleum Contaminated Soils, Publication 91-30, Revised 1995.

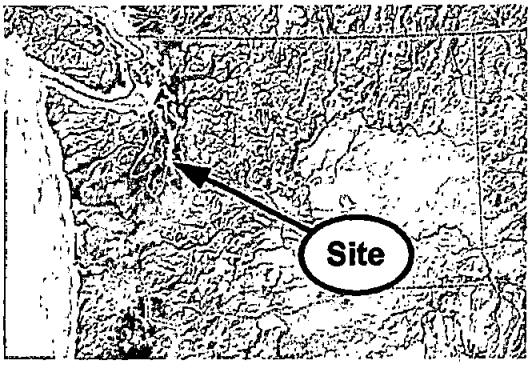
American Society for Testing and Materials, 1997, Standard Guide for Environmental Site Assessments: Phase II Environmental Site Assessment Process: West Conshohocken, Penn., American Society for Testing and Materials, Designation E 1903 -97, 13 p.

Washington Department of Ecology (Ecology), The Model Toxics Control Act cleanup regulation, chapter 173-340 WAC: Olympia, Wash., Washington State Department of Ecology Publication No 94-06, Amended February 12, 2001.

g-logics







4X Vertical Exaggeration

Project File: 01-0272-A-F1.vsd

Topographic mapping from Delorme 3-D TopoQuads

g-logics

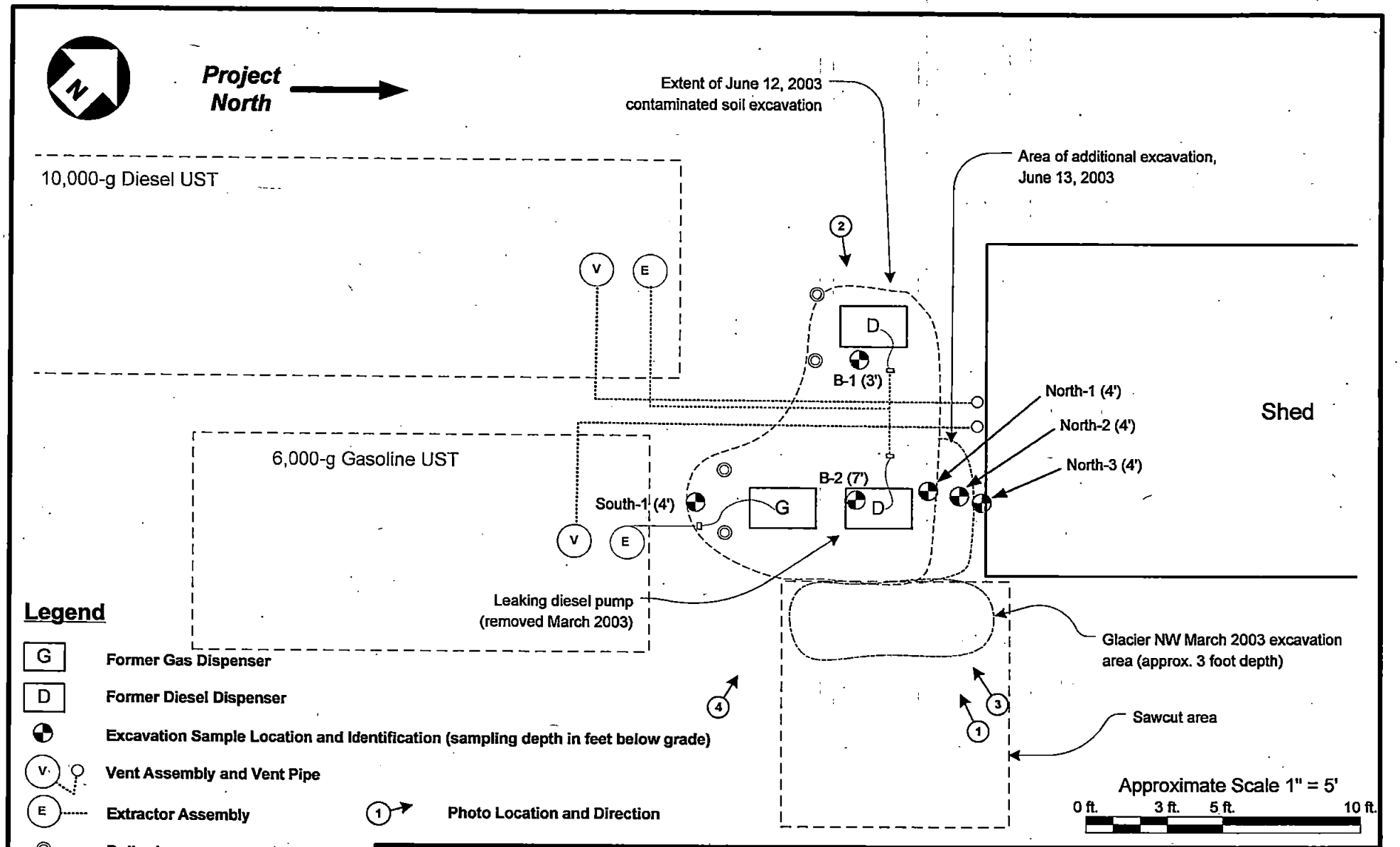
Site Location Maps

Seattle Ready Mix Plant

5975 E. Marginal Way S

Seattle, WA 98143

Figure 1



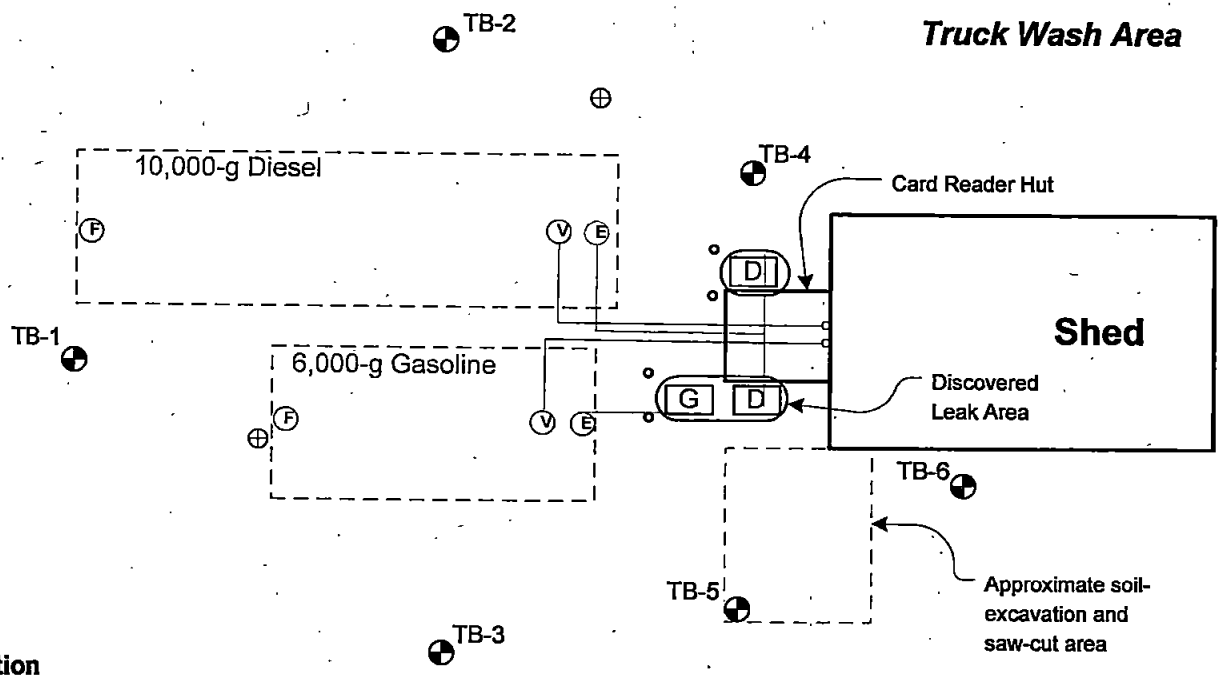
Mapping Reference: MTM Mapping of 7-10-89 and Site Visit Measurements

g-logics

Site Diagram - Soil Excavation
Seattle Ready Mix Plant
5975 E. Marginal Way
Seattle, Washington

Figure 3

Project File: 01-0272-B-F3.vsd



Legend

- March 2003 Boring Location
- UST Vent
- Bollard
- Fill Port
- UST Vault Well
- Vent Assembly
- Extractor Assembly
- G Gas Dispenser
- D Diesel Dispenser
- 2" FG Piping (not verified)

Approximate Scale 1" = 10'

0 ft. 6 ft. 10 ft. 20 ft.

Mapping Reference: MTM Mapping of 7-10-89 and site-visit measurements

Project File: 01-0272-B-F2.vsd

g-logics

Site Diagram - March 2003
Seattle Ready Mix Plant
5975 E. Marginal Way S
Seattle, WA 98134

Figure 2

TABLE 1

Soil Sample Analysis - Total Petroleum Hydrocarbons as Diesel and Oil (1)

Fuel Pump Area Excavation

Glacier NW Ready Mix Plant, Seattle, WA

Excavation Location	Sample Number	Sampling Date	Depth (feet below grade)	Diesel	Oil
Soil Samples (units in mg/kg)					
Bottom	B-1	06/12/03	3	nd	nd
	B-2	06/12/03	7	nd	nd
South Sidewall	South-1	06/12/03	4	1,500	nd
North Sidewall	North-1	06/12/03	4	**45,000**	nd
	North-2	06/13/03	4	nd	nd
	North-3	06/13/03	4	nd	nd
MTCA Method A Soil Cleanup Level (2)				2,000	2,000

Notes: Refer to site diagram(s) for sampling locations.

(1) Method NWTPH-Dx/Dx Extended

(2) Method A Soil Cleanup Levels (mg/kg) for Unrestricted Land Use, MTCA, Amendments adopted in August 2001. *

* Exceeding these levels do not necessarily trigger requirements for cleanup action under MTCA.

nd Concentration less than the laboratory method detection limit.

Results exceeding Method A Cleanup Levels are bolded.

APPENDIX A

APPENDIX A- TABLE 1

Soil Sample Analysis - Total Petroleum Hydrocarbons as Gasoline, Diesel, Oil, BETX, and MTBE (1)

Samples Collected on March 21, 2003

Seattle Ready Mix Plant, Seattle, WA

Exploration Location	Sample Number	Depth (feet)	Gasoline	Diesel	Oil	Benzene	Ethylbenzene	Toluene	Xylenes	MTBE
Soil Samples (units in mg/kg)										
TB-1	TB-1-4	4	nd	nd	nd	nd	nd	nd	nd	nd
	TB-1-12	12	-	nd	nd	-	-	-		
TB-2	TB-2-4	4	nd	nd	nd	nd	nd	nd	nd	nd
	TB-2-12	12	nd	nd	nd	nd	nd	nd	nd	nd
TB-3	TB-3-12	12	-	nd	nd	-	-	-	-	-
TB-4	TB-4-12	12	nd	nd	nd	nd	nd	nd	nd	nd
TB-5	TB-5-12	12	-	nd	nd	-	-	-	-	-
TB-6	TB-6-12	12	-	nd	nd	-	-	-	-	-
MTCA Method A Soil Cleanup Level (2)			100**	2,000	2,000	0.03	6.0	7.0	9.0	0.10

Notes: Refer to site diagram(s) for sampling locations.

(1) Methods NWTPH-G, NWTPH-Dx Extended, for gasoline, diesel, and oil fractions Method 8260 for BTEX and MTBE.

(2) Method A Soil Cleanup Levels (mg/kg) for Unrestricted Land Use, MTCA, Amendments adopted in August 2001. *

* Exceeding these levels do not necessarily trigger requirements for cleanup action under MTCA.

** Cleanup Level for Gasoline with no detectable benzene in soil.

nd Concentration less than the laboratory method detection limit.

\- Not Analyzed

APPENDIX A - TABLE 2

Groundwater Sample Analysis - Total Petroleum Hydrocarbon Gasoline, Diesel, Oil, BTEX, and MTBE Analysis (1)
Samples Collected on March 21, 2003
Seattle Ready Mix Plant, Seattle, WA

Exploration Location	Sample Number	Depth (feet)	Date Collected	NWTPH - as Gasoline	NWTPH - as Diesel	NWTPH - as Oil	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
(units in ug/L)											
TB-1	TB-1-W	10 to 12	03/21/03	nd	nd	nd	nd	nd	nd	nd	nd
TB-2	TB-2-W	10 to 12	03/21/03	nd	nd	nd	nd	nd	nd	nd	nd
TB-4	TB-4-W	10 to 12	03/21/03	nd	nd	nd	nd	nd	nd	nd	nd
TB-5	TB-5-W	10 to 12	03/21/03	nd	nd	nd	nd	nd	nd	nd	nd
TB-6	TB-6-W	10 to 12	03/21/03	nd	nd	nd	nd	nd	nd	nd	nd
MTCA Method A Cleanup Level for Groundwater (2)				1,000**	500	500	5.0	1,000	700	1,000	20

Notes: Refer to site diagram for sampling locations.

(1) TPH by NWTPH-G and NWTPH-Dx methods, BTEX and MTBE by Method 8260

(2) Method A Groundwater Cleanup Levels, MTCA, Amended February 2001. *

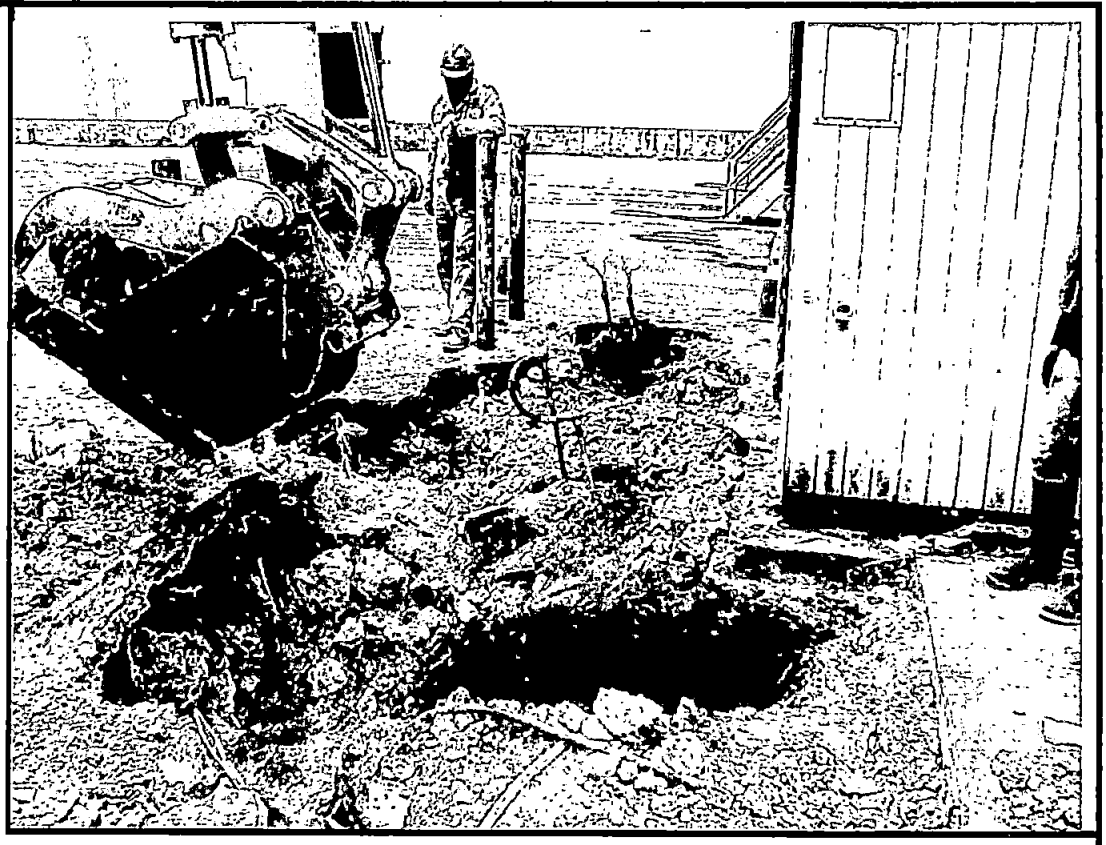
* Exceeding these levels do not necessarily trigger requirements for cleanup action under MTCA.

** Groundwater Cleanup Level for Gasoline with no detectable benzene in the ground water.

nd Concentration less than the laboratory method detection limit

APPENDIX B

Photo 1



Description: Concrete rubble is removed by backhoe prior to use of the vacuum truck for soil removal.

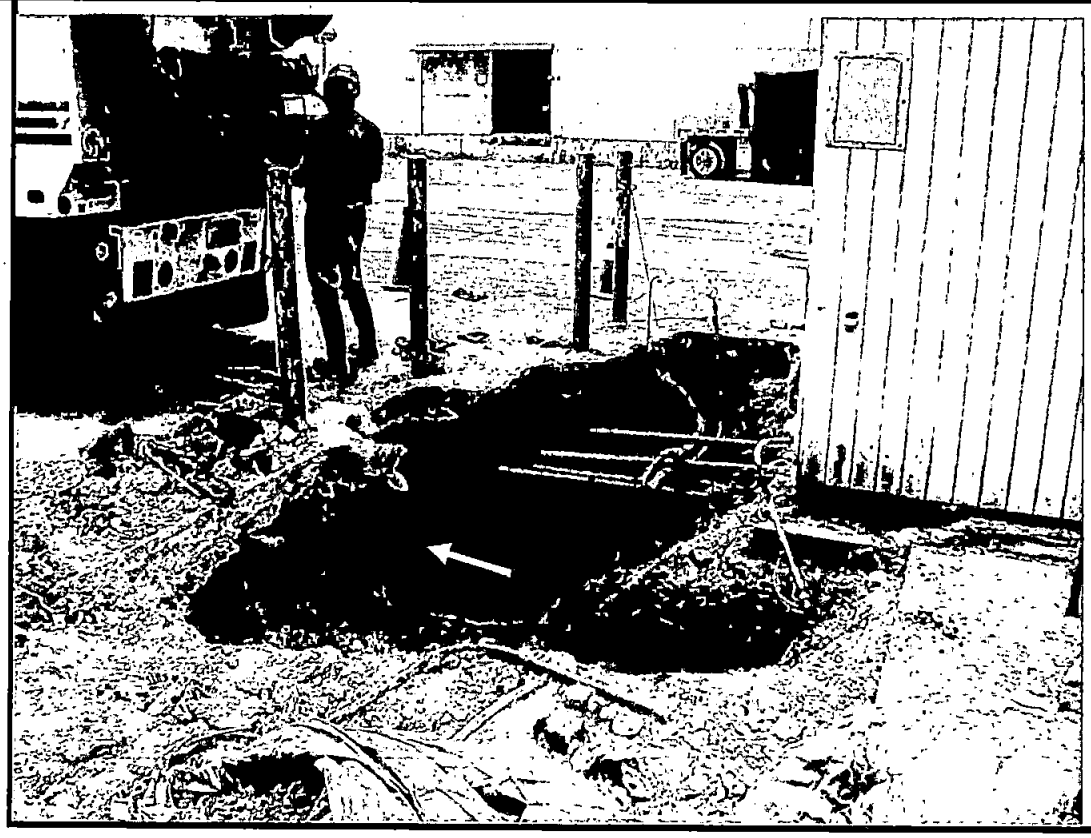
Comments: The March 2003 Glacier NW trench is visible in the foreground (dark sidewall).

Photo 2

Description: Soil removal beneath the diesel fuel line "T" and UST vent lines.

Comments: Minor TPH contamination was removed under west pump, foreground. Deeper excavation proceeded beneath east pump.

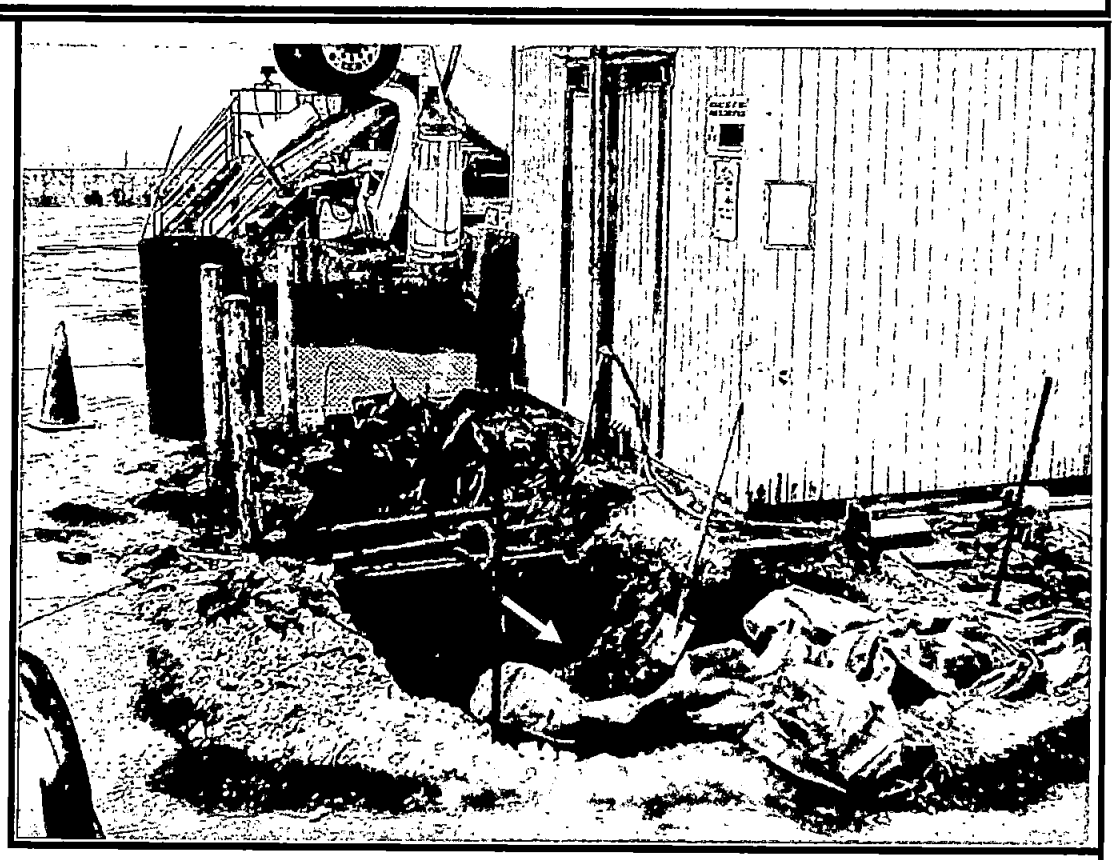
Photo 3



Description: Completed excavation on June 12, 2003.

Comments: The south sidewall is beneath the overhanging concrete slab (arrow).

Photo 4



Description: Final extent of excavation on June 13, 2003.

Comments: Petroleum-impacted soils have been removed from the north sidewall. Location of North-2 and North-3 samples at arrow.

APPENDIX C

APPENDIX C

FIELD SAMPLING METHODS

G-Logics performed soil sampling during the petroleum-contaminated soil (PCS) excavation conducted on the subject property. The sampling activities were conducted in general accordance with Ecology's guidelines and regulations.

Quality Assurance Quality Control

Quality Assurance/Quality Control (QA/QC) for the presented scope of work included generally accepted procedures for sample collection, storage, tracking, and documentation. All sampling equipment was washed with a detergent wash and tap water rinse before the collection of the samples. All samples were labeled with a sample number, date, time, and sampler name, and were stored in an ice chest containing frozen "blue ice". Appropriate chain-of-custody documentation was completed.

The samples were then placed into an ice chest containing frozen "blue ice" for preservation. The samples were then forwarded to the analytical laboratory using proper Chain-of-Custody procedures. All soil sample containers were labeled with sample identification numbers, the date, and the sampler's name. Sample containers prepared by the contract laboratory were used to conform to EPA-recommended preservation techniques for the analytes of concern. Sample containers were open only as long as necessary to collect the samples.

Excavation Soil Sampling

A G-Logics employee performed the soil sampling work. The employee collected subsurface soil samples from excavated locations at the depths specified in Table 1 of this report. A clean spoon or trowel was used to expose undisturbed soil along the bottom and sidewalls of the excavation. At depths exceeding four feet or in areas where the unshored excavation was potentially dangerous, a decontaminated long-handled shovel was used to collect discrete samples. Sidewall and bottom samples were placed directly into laboratory-provided sample jars.

The G-Logics employee reviewed soil samples for evidence of contamination, indicated by noticeable odor, visible staining, or discoloration on the soil sampler and in the soil sample.

Regardless of the sampling technique employed, all soil samples were labeled with a sample number, date, time, and sampler's name and were stored in an ice chest containing frozen "blue ice". Appropriate chain-of-custody documentation was completed.

APPENDIX D

ADVANCED ANALYTICAL

Environmental Testing Laboratory

June 16, 2003

Rob Roberts
G-Logics
175 1st Pl NW
Issaquah, WA 98027

Dear Mr. Roberts:

Please find enclosed the analytical data report for the Glacier NW, 01-0272 Project.

Samples were received on June 12 and 13, 2003. The results of the analyses are presented in the attached tables. Applicable reporting limits, QA/QC data and data qualifiers are included. A copy of the chain-of-custody and an invoice for the work is also enclosed.

ADVANCED ANALYTICAL LABORATORY appreciates the opportunity to provide analytical services for this project. Should there be any questions regarding this report, please contact me at (425) 497-0110.

It was a pleasure working with you, and we are looking forward to the next opportunity to work together.

Sincerely,

V. Ivanov

Val G. Ivanov, Ph.D.
Laboratory Manager

Overlake Business Center ■ 2821 152 Avenue NE ■ Redmond, WA 98052
ph 425.497.0110 fax 425.497.8089
E-mail: aachemlab@yahoo.com

Advanced Analytical Laboratory
(425) 497-0110, fax (425) 497-8089

AAL Job Number: A30612-2
Client: G-Logics
Project Manager: Rob Roberts
Client Project Name: Glacier NW
Client Project Number: 01-0272
Date received: 06/12/03

Analytical Results

NWTPH-Dx, mg/kg		MTH BLK	North-1	South-1	Dupl South-1	RPD South-1	B-1@3
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	06/12/03	06/12/03	06/12/03	06/12/03	06/12/03	06/12/03
Date analyzed	Limits	06/12/03	06/12/03	06/12/03	06/12/03	06/12/03	06/12/03
Kerosene/Jet fuel	20	nd	nd	nd	nd		nd
Diesel/Fuel oil	20	nd	45,000	1,500	1,600	6%	nd
Heavy oil	50	nd	nd	nd	nd		nd
Surrogate recoveries:							
Fluorobiphenyl		79%	C	100%	108%		80%
o-Terphenyl		83%	80%	92%	99%		83%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Results reported on dry-weight basis
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

Advanced Analytical Laboratory
(425) 497-0110, fax (425) 497-8089

AAL Job Number:	A30612-2
Client:	G-Logics
Project Manager:	Rob Roberts
Client Project Name:	Glacier NW
Client Project Number:	01-0272
Date received:	06/12/03

Analytical Results

NWTPH-Dx, mg/kg		MTH BLK	B-2@7	MTH BLK	North-2	North-3	Dupl North-3
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	06/12/03	06/12/03	06/13/03	06/13/03	06/13/03	06/13/03
Date analyzed	Limits	06/12/03	06/12/03	06/13/03	06/13/03	06/13/03	06/13/03
Kerosene/Jet fuel	20	nd	nd	nd	nd	nd	nd
Diesel/Fuel oil	20	nd	nd	nd	nd	nd	nd
Heavy oil	50	nd	nd	nd	nd	nd	nd
Surrogate recoveries:							
Fluorobiphenyl		79%	80%	83%	78%	89%	88%
o-Terphenyl		83%	83%	87%	84%	92%	92%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Results reported on dry-weight basis
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

ESN NORTHWEST | Environmental Services Network

A30612-2

CHAIN-OF-CUSTODY RECORD

CLIENT: G-LOGICS

ADDRESS:

PHONE: 425-391-6874 FAX:

CLIENT PROJECT #: 01-0272 PROJECT MANAGER: Rob Roberts

DATE: 6/12/03 PAGE 1 OF 1

PROJECT NAME: GLACIER NW

LOCATION: 1ST AVE SOUTH

COLLECTOR: ROB ROBERTS DATE OF COLLECTION 6/12/03

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	TPH - NWTPH-Dx	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PAH 8270	PCBs 8082	Pesticides 8081	EPH	VPH	Methamphetamine	Pb	Hex Chrome	NOTES	Total Number of Containers	Laboratory Note Number
1. NORTH-1	4	2:30	SOIL	4 oz JARS				X															1	
2. SOUTH-1	4	"	"	"				X															1	
3. B-1 @3	3	"	"	"				X															1	
4. B-2 @7	7	↓	↓	↓				X															1	
5.			"																					
6.																								
7.																								
8.																								
9.																								
10.																								
11.																								
12.																								
13.																								
14.																								
15.																								
16.																								
17.																								
18.																								

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
Rob Roberts	6/12/03 3:30		6/12/03
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

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

LABORATORY NOTES:
24-HR TAT

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

ADVANCED ANALYTICAL

Chain of Custody Record

2821 152 Avenue NE
REDMOND, WA 98052
Phone: (425) 497-0110 Fax: (425) 497-8089
e-mail: aachemlab@yahoo.com

Page of

Client: G-Logics

Project Name: GLACIER NW

Project Manager: Rob Roberts

Project Number: 01-0272-B

Address:

Collector: R Roberts

Phone: 425-

Fax:

Date of collection: 6/13/03

	Sample ID	Time	Matrix	Container type	8260 Volatiles	8021B Volatiles	BTEX	BTEX-NWTPH-Gx	NWTPH-Gx	NWTPH-Dx	NWTPH-HCID	8270	8270 PAH	PCB 8082	Pesticides 8081	RCRA 8 Metals	Lead			Notes, comments	# of containers
1	NORTH-2	1:00	SOIL	4oz					X												1
2	NORTH-3	1:00	SOIL	4oz					X												1
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					
15																					

Relinquished by:	Date/Time	Received by:	Date/Time
Rob Roberts	6/13 2:00		6/13/03 2:00
Relinquished by:	Date/Time	Received by:	Date/Time

Sample receipt info:

Total # of containers: 2

Condition (temp, °C)

Seals (intact?, Y/N)

Comments:

Turnaround time:

Same day O

24 hr O

48 hr O

Stdandard O