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GN Northern Job No. 199-349
GN Northern Document No. 199-349.RPT

3/29/99
(JB)

Prepared for
Mr. Leland Davis and Mr. Lloyd Wachtel
8925 West Falls Avenue
Kennewick, Washington 99336

2/2

UNDERGROUND STORAGE TANK SITE ASSESSMENT
FORMER L & L EXXON SERVICE STATION
1315 LEE BOULEVARD
RICHLAND, WASHINGTON

C 5532
U213601

Prepared by
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March 19, 1999

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APPENDICES

EXECUTIVE SUMMARY

GN Northern, Inc. (GN Northern), has completed underground storage tank (UST) site assessment activities for the former L & L Exxon service station facility (Site ID #005532) located at 1315 Lee Blvd. in Richland, Washington. The USTs, piping, and ancillary equipment were decommissioned by removal on February 18, 22, and 26, 1999.

The purpose of this project was to assist responsible parties in complying with current United States Environmental Protection Agency (EPA) and Washington State Department of Ecology (WDOE) regulations and guidelines for the assessment of UST sites (WDOE, 1991 and 1992). Site specific objectives included the evaluation for the presence of petroleum hydrocarbons in subsurface media using field observations and confirmational laboratory sampling.

Major Petroleum, Inc. personnel removed the soil overlying the tanks using a rubber tired backhoe. After excavating around the tank sides, the USTs and piping were removed from the subsurface. The dispenser pump islands and other ancillary equipment were removed prior to our arrival on-site. The 6,000-gallon USTs and the 4,000 gallon-UST were in good condition with only minor to moderate rusting. There were no signs of significant damage. The 500-gallon heating oil and waste oil USTs were in poor condition with severe rusting. Seam failures and perforations, however, were not observed.

Soils from the excavation areas and overburden stockpiles were visually examined for evidence of petroleum hydrocarbon contamination. Stained and odorous soils were observed along the base and sidewalls of the tank basin used to house the former gasoline USTs and beneath the pump islands. No apparent odor or staining was observed in the heating oil and waste oil UST basin. Mild petroleum hydrocarbon odors were encountered in the stockpiled overburden material, but staining was not present. Following field observations, soil samples were collected from the tank basin areas and the stockpiled overburden material.

Elevated total petroleum hydrocarbons as gasoline (TPH-G) concentrations of 45,000 mg/kg, 40,000 mg/kg, and 45,000 mg/kg were detected in soil samples *NW Pump*, *SE Pump*, and *SW Pump*,

respectively. These concentrations exceeded the Model Toxics Control Act (MTCA) Method A cleanup level of 100 mg/kg for TPH-G in soil. Benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations exceeding MTCA Method A cleanup levels were also detected in the samples. Subsequent analysis of soil sample *NW Pump* for lead revealed lead concentrations of 27 mg/kg. The detected lead concentrations were below the MTCA Method A cleanup level of 250 mg/kg.

TPH-G and BTEX compounds were detected in soil samples *BT-1*, *BT-2*, *WW-1&2*, and *BT-3* collected from the base and west sidewall of the gasoline UST basin. Concentrations of TPH-G, toluene, ethylbenzene, and xylenes were below the established MTCA Method A cleanup levels of 100 mg/kg, 40 mg/kg, 20 mg/kg, and 20 mg/kg, respectively. Concentrations of benzene in soil samples *BT-1* (1.1 mg/kg), *BT-2* (1.3 mg/kg), and *WW-1&2* (0.56 mg/kg) were above the MTCA Method A cleanup level of 0.5 mg/kg for benzene in soil. Benzene was also detected in soil sample *BT-3*, but at concentrations below MTCA Method A cleanup levels.

TPH-G concentrations of 30 mg/kg were detected in stockpile soil sample *SP-2-N*. These concentrations were below the MTCA Method A cleanup level. Petroleum hydrocarbons were not detected in stockpiled soil or soil samples collected from the heating oil and waste oil UST basin. TPH concentrations, if present, were below the quantitation limits of the analytical method and below MTCA Method A cleanup levels.

Overburden soil was returned to the tank basin following the removal of the USTs. The two 6,000-gallon USTs were removed to the Mountain Oil, Inc., facility in Walla Walla, Washington, for scrap disposal. The 4,000-gallon and two-500 gallon USTs and ancillary equipment were transported off-site to the Major Petroleum, Inc. yard in Kennewick, Washington

In conclusion, UST closure activities including excavation, tank removal observations, analytical testing, and site evaluation have been completed for the site. Results of the subsurface investigation indicated that a petroleum hydrocarbon release had occurred.

Bioremediation alternatives are being evaluated to determine if a suitable method is available to enhance cleanup of the site. Further characterization will also be required to determine the extent of

groundwater impact from the release of petroleum products. Existing monitoring wells should be sampled to evaluate water quality and hydrogeologic conditions. It may be necessary to complete an additional downgradient well to assist in further characterization.

Two copies of the report and the UST Site Assessment Checklist will be filed with WDOE. WDOE will retain the report and checklist with their records in accordance with Washington Administrative Code (WAC) 173-360-630. GN Northern recommends that this report be kept as documentation of the tank removal activities in accordance with WAC 173-360-398.

1.0 PROJECT DESCRIPTION

1.1 Introduction

GN Northern, Inc. (GN Northern) has completed underground storage tank site assessment activities at the former L & L Exxon service station facility (Site ID #005532) located at 1315 Lee Blvd. in Richland, Washington (Site Location Map - Figure 1, Appendix 1). This report presents our findings on the decommissioning of five underground storage tanks (USTs). The USTs, piping, and ancillary equipment were decommissioned by removal on February 18, 22, and 26, 1999.

1.2 Purpose and Scope

The purpose of this project was to assist responsible parties in complying with current United States Environmental Protection Agency (EPA) and Washington State Department of Ecology (WDOE) regulations and guidelines for the assessment of UST sites (WDOE, 1991 and 1992). Site specific objectives included the evaluation for the presence of petroleum hydrocarbons in subsurface media using field observations and confirmational laboratory sampling.

The following scope of services were performed for this assessment:

- An environmental professional was mobilized to the site with the appropriate equipment to perform the required site assessment. The environmental professional was registered with WDOE to perform environmental site assessments and had 40 hour Occupational Safety and Health Administration (OSHA) hazardous waste site operations training.

- The excavation areas were evaluated by our field personnel for signs of contamination including visible free product, soil discoloration, and odor.

- Selected soil samples were collected from the excavation boundaries. The samples were shipped to a WDOE approved laboratory for total petroleum hydrocarbon analysis by Methods NWTPH-HCID and NWTPH-G/BTEX 8020 and lead by EPA Method 7420. Sampling locations were chosen based on field observations and at pre-specified points described by WDOE guidelines (WDOE, 1992).

- This report was prepared to summarize the field activities performed and the findings of the assessment.

1.3 Project Background

GN Northern was contacted by Mr. Gilbert Jones of Major Petroleum, Inc. (Major Petroleum), to oversee proper UST site assessment activities. Major Petroleum personnel performed tank decommissioning and excavation activities under the direction of a WDOE registered decommissioning supervisor. Mr. Leland Davis and Mr. Lloyd Wachtel (8925 West Falls Avenue, Kennewick, Washington 99336 - 509-783-2552) are the authorized representatives and points of contact.

2.0 SITE CHARACTERISTICS

2.1 Site Description

The former L & L Exxon service station facility is located at 1315 Lee Blvd. in Richland, Washington. Adjoining properties and roads consist of Lee Blvd., Albertson's grocery store, and Pizza Hut restaurant to the north, Goethals Street and Key Bank to the east, Bourban Street Bayou restaurant to the south, and Leo's Auto Express to the west. Land use in the immediate site vicinity is generally commercial in nature.

An approximate legal description for the site is the southwest quarter of the southwest quarter of section 11, township 9 north, range 28 east of the W.M. in Benton County, Washington. Based on the USGS 7.5 minute series topographic map of the area (Richland Quadrangle), the latitude is 46 degrees 16 minutes 29 seconds and the longitude is 119 degrees 16 minutes 46 seconds. Site Plans (Figures 2 and 3) are provided in Appendix 1.

2.2 Geology

The City of Richland is situated in the Columbia Basin on the east-central portion of the Columbia River Plateau physiographic province. The Columbia Plateau is comprised of a series of flood basalts which cover most of central and eastern Washington. The basalt flows of the Columbia Basalt Group are Miocene in age, forming an extensive volcanic plateau (Alt & Hyndman, 1984). Quaternary surface deposits are primarily outburst flood deposits and fluvial gravels. These materials generally consist of basalt clasts with subordinate Ringold Formation sediments and caliche. Mainstream facies may also contain clasts of granite, quartzite, diorite, volcanic porphyries, and metamorphic rocks. Mainstream facies are mostly distributed along the present and/or former courses of the Columbia, Snake, and Yakima Rivers (DNR, 1997).

The site area is generally level with elevations ranging between 360 and 365 feet above mean sea level (USGS, 1992). During our site assessment activities the subsurface soil was generally found to be sandy gravel (GW). The material was slightly moist, non-plastic, loose to dense, and brown in color.

2.3 Hydrology

The nearest surface water is the southerly flowing Columbia River, located about 0.5 mile east of the site. Groundwater is present in both unconfined and confined aquifers within the vicinity. The unconfined aquifer is generally located in the unconsolidated to semi-consolidated Ringold and Hanford formations that overlie the basalt bedrock. In some areas, low permeability mud layers form aquitards that create local, confined, hydraulic conditions in the underlying sediments. These aquitards, however, are not continuous and the entire suprabasalt aquifer is hydraulically connected. Contact with the upper unconfined aquifer is expected to occur at depths greater than 25 feet below ground surface (BGS). Based on topographic map review and prior work within the site vicinity, the groundwater flow direction is estimated to be toward the east and the Columbia River. Groundwater was not encountered in the tank basin.

2.4 Site History/Regulated Material Issues

The two 6,000-gallon gasoline USTs were installed at the site in the late-1950s. The 4,000-gallon gasoline UST located south of the 6,000-gallon tanks was installed in 1979. The 500-gallon waste oil and heating oil USTs located near the south outside wall of the service station building were installed in 1962. Ancillary equipment included four dispenser pumps and associated subsurface piping. In order to confirm that a release had not occurred and to comply with current EPA and WDOE regulations and guidelines, an UST site assessment was requested. The presence of additional USTs were not revealed through our site reconnaissance and discussions with Mr. Davis and Major Petroleum personnel.

3.0 ASSESSMENT PROCEDURES

3.1 Survey Methods

For each UST system, the tank is uncovered and inerted. The UST is then removed from the ground and inspected for signs of leakage. Visible cracks, seam failures, severe rusting, and staining may signify that a release has occurred. The piping and ancillary equipment is generally removed and inspected for signs of leakage including loose pipe fittings, cracks, and staining. The excavation and/or tank basin area is surveyed for staining that commonly creates discoloration of the soil. Grey or green discoloration is suggestive of soil contaminated by petroleum hydrocarbons.

3.2 Field Observations

An environmental professional from GN Northern arrived at the site to assess the excavation area and collect soil samples on February 18, 22, and 26, 1999. The USTs were uncovered and piping was disconnected from the tanks. Major petroleum personnel removed the soil overlying the tanks using a rubber tired back hoe. After excavating around the tank sides, the USTs and piping were removed from the subsurface.

3.2.1 Tank Condition

The condition of the removed tanks were visually verified by Major Petroleum personnel. The two 6,000-gallon USTs and the 4,000-gallon UST were in good condition with only minor to moderate rusting. There were no signs of significant damage (Jones, 1999). The 500-gallon heating oil and waste oil USTs were in poor condition with severe rusting. Seam failures and perforations, however, were not observed (Jones, 1999). Physical information pertaining to the tanks is presented in Table 1, Appendix 2.

3.2.2 Field Activities

Soils from the excavation areas and overburden stockpiles were visually examined for evidence of petroleum hydrocarbon contamination. Stained and odorous soils were observed along the base and sidewalls of the tank basin used to house the former gasoline USTs. No apparent odor or staining was observed in the heating oil and waste oil UST basin. Mild petroleum hydrocarbon odors were encountered in the stockpiled overburden material, but staining was not present. Following field

observations, soil samples were collected from the tank basin areas and the stockpiled overburden material. The sample locations are shown on Figures 2 and 3, Appendix 1.

3.3 Analytical Results

Representative soil samples were collected in 4 oz. glass jars with teflon lids for laboratory analysis. All samples were placed in a cooler with ice and remained in the custody of GN Northern personnel until shipment to Transglobal Environmental Geosciences Northwest, Inc. (TEG), a WDOE approved laboratory in Lacey, Washington, by overnight courier. Time and date of sample collection, sample identification numbers, custody personnel, and time and date received by the laboratory were transcribed onto the chain-of-custody form for each sample. Selected samples were analyzed for total petroleum hydrocarbons (TPH) by Methods NWTPH-HCID and NWTPH-G/BTEX 8020 comb. and lead by EPA Method 7420. Analytical laboratory test results are summarized in Tables 2, 3 and 4, Appendix 2. Laboratory reports and chain-of-custody documentation are contained in Appendix 3.

3.3.1 Selection of Cleanup Standards

The Model Toxics Control Act (Chapter 173-340 WAC) defines a two-step approach for establishing cleanup requirements for individual sites: establishing cleanup standards and selecting cleanup actions. Establishing cleanup standards for individual sites requires the specification of the following: 1) hazardous substance concentrations that protect human health and the environment ("cleanup levels"), 2) the location on the site where those cleanup levels must be attained ("points of compliance"), and 3) additional regulatory requirements that apply to a cleanup action because of the type of action and/or the location of the site. These requirements are specified in applicable state and federal laws and are generally established in conjunction with the selection of a specific cleanup action" (Ecology, 1996).

Model Toxics Control Act (MTCA) Method A cleanup levels for soil were selected for the L & L Exxon service station site, because these standards are the most stringent for the contaminants identified. WDOE has determined that compliance with these levels should be sufficient to protect human health and the environment. Method A cleanup levels for regulated substances are established at concentrations at least as stringent as concentrations specified in applicable state and federal laws. Method A cleanup levels for substances not addressed under applicable state and federal laws are

established at concentrations which do not exceed the natural background concentration or the practical quantitation limit for the substance in question. Method A cleanup levels have been defined for 25 of the most common hazardous substances found at sites.

3.3.2 Analytical Results

Analytical laboratory test results (Tables 2 and 4) show that gasoline range petroleum hydrocarbons and lead were detected in soil samples collected from the sidewalls and base of the gasoline UST basin and beneath the pump island area located north of the former L & L Exxon service station structure. Elevated TPH-G concentrations of 45,000 mg/kg, 40,000 mg/kg, and 45,000 mg/kg were detected in soil samples *NW Pump*, *SE Pump*, and *SW Pump*, respectively. These concentrations exceeded the MTCA Method A cleanup level of 100 mg/kg for TPH-G in soil. BTEX concentrations exceeding MTCA Method A cleanup levels were also detected in the samples. Subsequent analysis of soil sample *NW Pump* for lead revealed lead concentrations of 27 mg/kg. The detected lead concentrations were below the MTCA Method A cleanup level of 250 mg/kg.

TPH-G and BTEX compounds were detected in soil samples *BT-1*, *BT-2*, *WW-1&2*, and *BT-3* collected from the base and west sidewall of the gasoline UST basin. Concentrations of TPH-G, toluene, ethylbenzene, and xylenes were below the established MTCA Method A cleanup levels of 100 mg/kg, 40 mg/kg, 20 mg/kg, and 20 mg/kg, respectively. Concentrations of benzene in soil samples *BT-1* (1.1 mg/kg), *BT-2* (1.3 mg/kg), and *WW-1&2* (0.56 mg/kg) were above the MTCA Method A cleanup level of 0.5 mg/kg for benzene in soil. Benzene was also detected in soil sample *BT-3*, but at concentrations below MTCA Method A cleanup levels.

TPH-G concentrations of 30 mg/kg were detected in stockpile soil sample *SP-2-N*. These concentrations were below the MTCA Method A cleanup level. Petroleum hydrocarbons were not detected in stockpiled soil or soil samples collected from the heating oil and waste oil UST basin. TPH concentrations, if present, were below the quantitation limits of the analytical method and below MTCA Method A cleanup levels.

3.4 Material Disposal and Backfill

Overburden soil was returned to the tank basin following the removal of the USTs. The two 6,000-gallon USTs were removed to the Mountain Oil, Inc., facility in Walla Walla, Washington, for scrap disposal. The 4,000-gallon and two-500 gallon USTs and ancillary equipment were transported off-site to the Major Petroleum yard in Kennewick, Washington (Jones, 1999).

4.0 CONCLUSIONS / RECOMMENDATIONS

GN Northern has completed UST site assessment activities at the former L & L Exxon service station facility located at 1315 Lee Blvd. in Richland, Washington. This report presents our findings on the decommissioning of five USTs. The USTs, piping, and ancillary equipment were decommissioned by removal on February 18, 22, and 26, 1999.

Major Petroleum personnel removed the soil overlying the tanks using a rubber tired backhoe. After excavating around the tank sides, the USTs and piping were removed from the subsurface. The dispenser pump islands and other ancillary equipment were removed prior to our arrival on-site. The 6,000-gallon USTs and the 4,000 gallon-UST were in good condition with only minor to moderate rusting. There were no signs of significant damage. The 500-gallon heating oil and waste oil USTs were in poor condition with severe rusting. Seam failures and perforations, however, were not observed.

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In conclusion, UST closure activities including excavation, tank removal observations, analytical testing, and site evaluation have been completed for the site. Results of the subsurface investigation indicated that a petroleum hydrocarbon release had occurred.

Bioremediation alternatives are being evaluated to determine if a suitable method is available to enhance cleanup of the site. Further characterization will also be required to determine the extent of groundwater impact from the release of petroleum products. Existing monitoring wells should be sampled to evaluate water quality and hydrogeologic conditions. It may be necessary to complete an additional downgradient well to assist in further characterization.

5.0 REPORTING REQUIREMENTS

The WDOE UST Site Assessment Checklist has been completed for documentation purposes and is included in Appendix 4. Two copies of the report and the UST Site Assessment Checklist will be filed with WDOE. WDOE will retain the report and checklist with their records in accordance with Washington Administrative Code (WAC) 173-360-630. GN Northern recommends that this report be kept as documentation of the tank removal activities in accordance with WAC 173-360-398.

6.0 LIMITATIONS

This work was performed in accordance with the generally accepted practices of other consultants undertaking similar studies at the same time and in the same geographical area. GN Northern observed a degree of care and skill generally exercised by other consultants under similar circumstances and conditions. GN Northern's findings and conclusions must be considered not as scientific certainties, but as opinions based on our professional judgement concerning the significance of the data gathered during the course of monitoring. Other than this, no warranty is implied or intended.

7.0 REFERENCES

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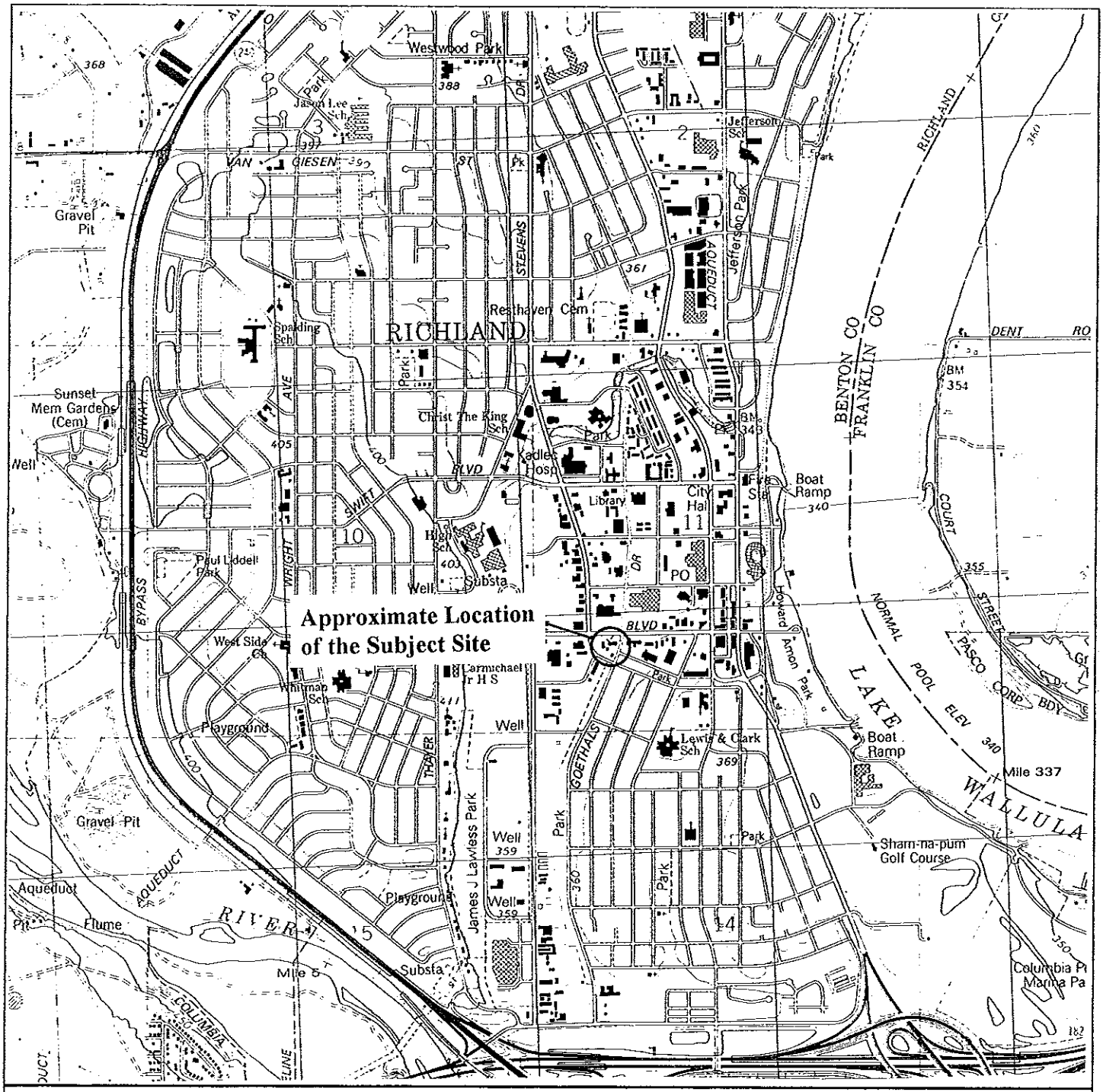
APPENDICIES

APPENDIX 1
Figures



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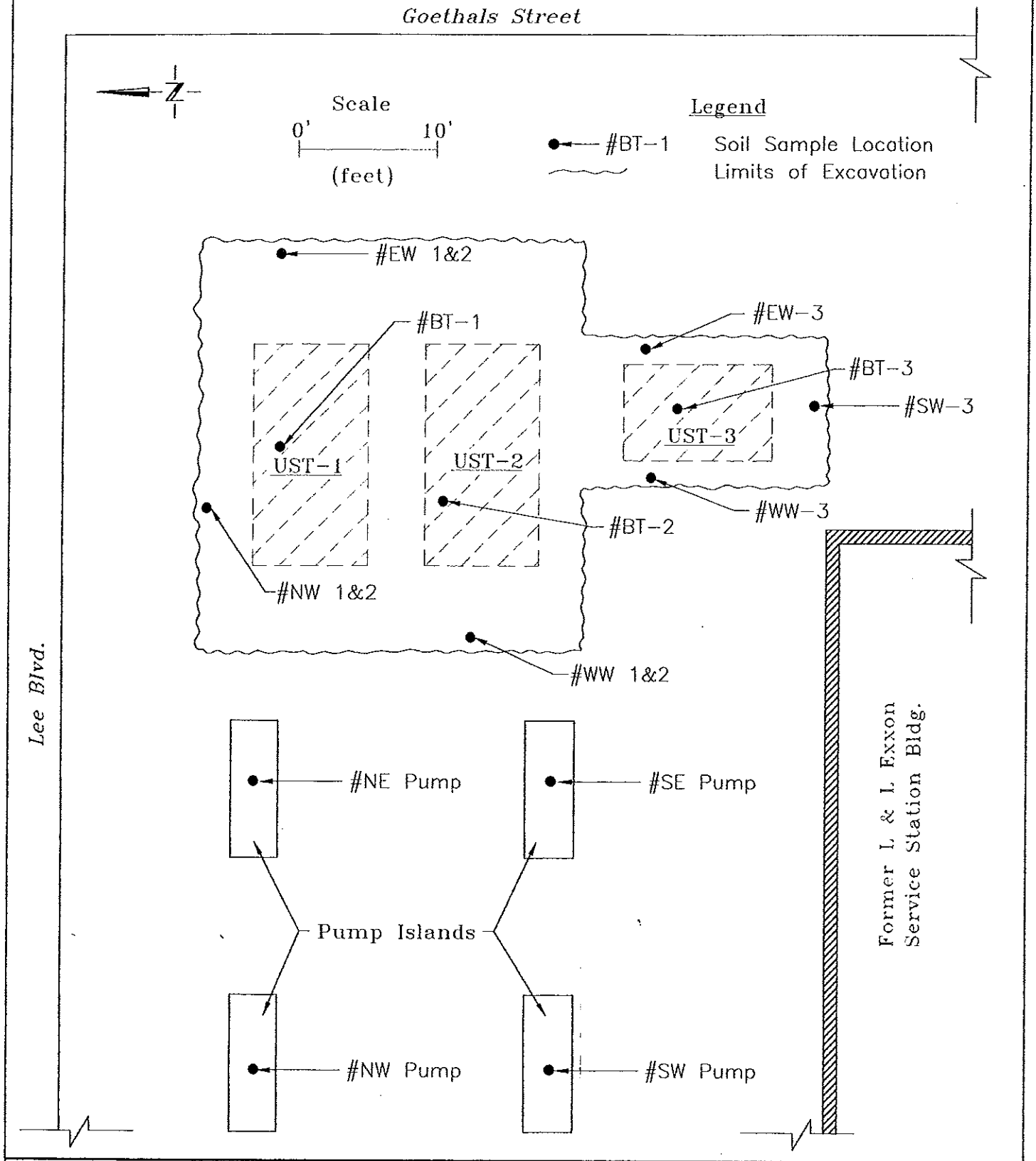
Northern, Inc.

Job No. 199-349

Site Location Map
USGS 7.5 Minute Series (Richland Quadrangle)
Underground Storage Tank Site Assessment
L & L Exxon Service Station
1315 Lee Boulevard
Richland, Washington

DATE: 1992	MOUNTED BY: JB	REVIEWED BY: GH	SCALE: As Shown	FIGURE NO. 1



Northern, Inc.

Job No.
199-349

Site Plan
Underground Storage Tank Site Assessment
L & L Exxon Service Station
1315 Lee Boulevard
Richland, Washington

DATE:	MOUNTED BY:	REVIEWED BY:	SCALE:	FIGURE NO.
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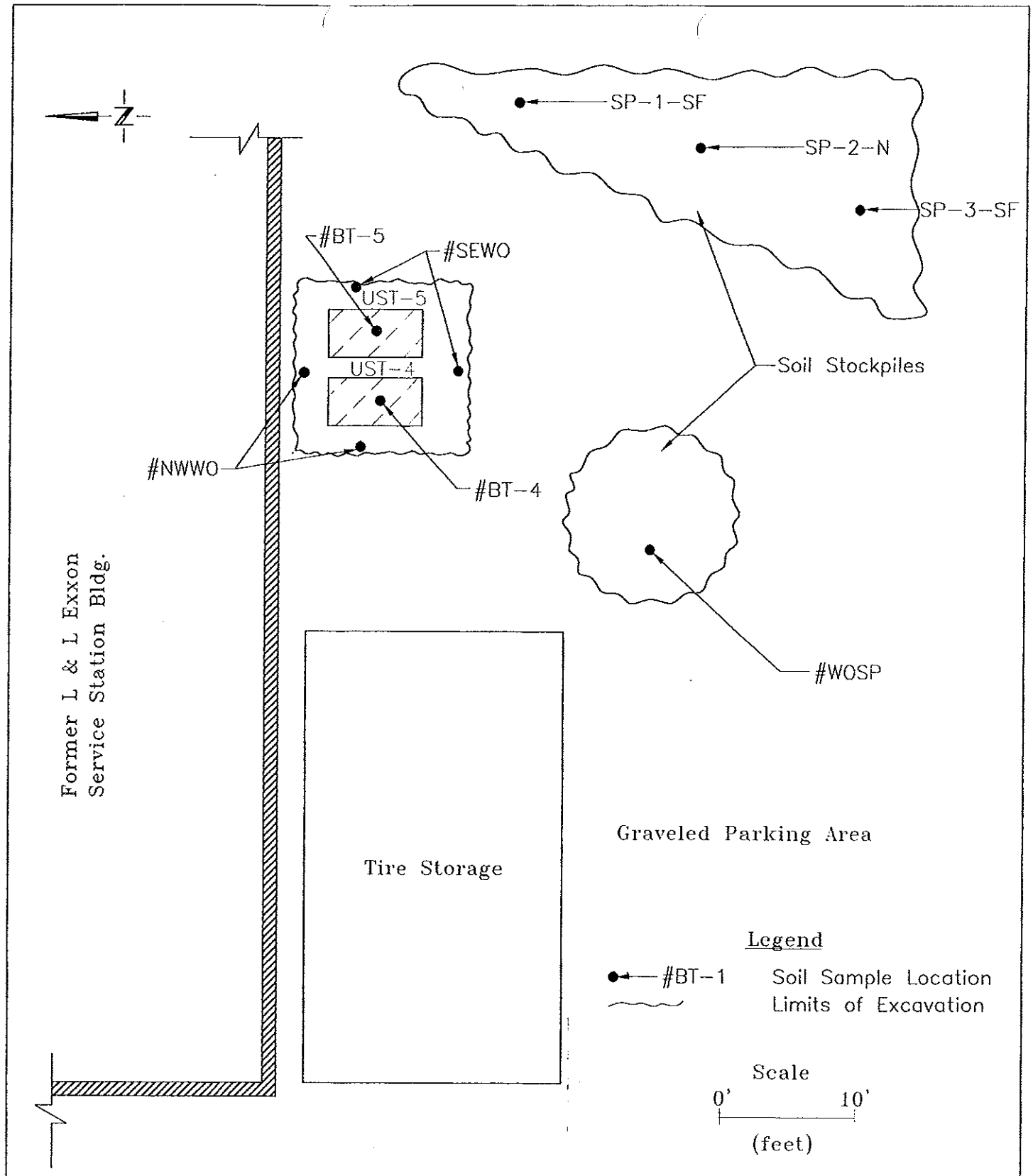

Northern, Inc.

Job No.
199-349

Site Plan
Underground Storage Tank Site Assessment
L & L Exxon Service Station
1315 Lee Boulevard
Richland, Washington

DATE:	MOUNTED BY:	REVIEWED BY:	SCALE:	FIGURE NO.
3/99	JB	GH	As Shown	3

APPENDIX 2
Tables

Table 1
Summary of Tank Physical Data
L & L Exxon Service Station Site

Tank No.	Construction Materials	Additional Protection	Diameter (ft)	Length (ft)	Capacity (gallons)	Age (years)	Former Contents
1	Steel	None	8.5	14	6,000	40?	Gasoline
2	Steel	None	8.5	14	6,000	40?	Gasoline
3	Steel	None	7.5	12	4,000	20?	Gasoline
4	Steel	None	3.5	6.5	500	37?	Heating Oil
5	Steel	None	3.5	6.5	500	37?	Waste Oil

Table 2
Summary of NWTPH-G and BTEX Analysis in Soil
L & L Exxon Service Station Site

Date Sample No.	Location[1]	Sample Type Matrix	Analyte				
			TPH-G[2] (mg/kg)	Benzene (mg/kg) (B)	Toluene (mg/kg) (T)	Ethylbenzene (mg/kg) (E)	Xylenes (mg/kg) (X)
2-18-99 NW Pump	Pump Isd. 3.5 ft. BGS	Grab Soil	45,000	<2	480	210	2,600
2-18-99 NE Pump	Pump Isd. 3.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-18-99 SE Pump	Pump Isd. 4.0 ft. BGS	Grab Soil	40,000	<4	440	82	1,400
2-18-99 SW Pump	Pump Isd. 4.0 ft. BGS	Grab Soil	45,000	56	800	280	2,700
2-22-99 BT-1	Base UST-1 9.5 ft. BGS	Grab Soil	89	1.1	1.8	2.0	8.2
2-22-99 BT-2	Base UST-2 10.0 ft. BGS	Grab Soil	41	1.3	6.5	1.4	5.9
2-22-99 EW-1&2	East Sidewall 6.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-22-99 WW-1&2	West Sidewall 7.0 ft. BGS	Grab Soil	74	0.56	3.1	1.2	5.3
2-22-99 NW-1&2	North Sidewall 7.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-22-99 BT-3	Base UST-3 9.5 ft. BGS	Grab Soil	ND	0.15	ND	ND	ND
2-22-99 EW-3	East Sidewall 7.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-22-99 WW-3	West Sidewall 6.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-22-99 SW-3	South Sidewall 7.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-26-99 SP-1-SF	Stockpile 1.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND
2-26-99 SP-2-N	Stockpile 1.0 ft. BGS	Grab Soil	30	ND	ND	ND	ND

Table 2 - *Continued*

Date Sample No.	Location[1]	Sample Type Matrix	Analyte				
			TPH-G[2] (mg/kg)	Benzene (mg/kg) **(B)**	Toluene (mg/kg) **(T)**	Ethylbenzene (mg/kg) **(E)**	Xylenes (mg/kg) **(X)**
2-26-99 SP-3-SF	Stockpile 1.0 ft. BGS	Grab Soil	ND	ND	ND	ND	ND

Notes: [1] Sample locations are characterized by area from which the sample was obtained and the depth (in feet) below ground surface.

[2] Soil sample results are reported as a dry weight basis in milligrams per kilogram (mg/kg), which is equivalent to parts per million (ppm).
ND indicates compound not detected at the listed method detection limit.
Method Detection Limits: Gasoline (10.0 mg/kg), Benzene (0.05 mg/kg), Toluene (0.05 mg/kg), Ethylbenzene (0.05 mg/kg), and Xylenes (0.05 mg/kg).
Model Toxics Control Act (MTCA) Method A Cleanup Level for: TPH as Gasoline (100.0 mg/kg), Benzene (0.5 mg/kg), Toluene (40.0 mg/kg), Ethylbenzene (20.0 mg/kg), and Xylenes (20.0 mg/kg).
Soil Samples analyzed by NWTPH-G and EPA Method 8020.
Samples shown on Figures 2 and 3, Appendix 1.

Table 3
Summary of NWTPH-HCID Analysis in Soil
L & L Exxon Service Station Site

Date Sample No.	Location[1]	Sample Type Matrix	Analyte	Concentration[2]
2-26-99 BT #4	Tank Basin Base, 7.0 ft. BGS	Grab Soil	Gasoline Diesel Fuel Heavy Oil	ND ND ND
2-26-99 BT #5	Tank Basin Base, 7.0 ft. BGS	Grab Soil	Gasoline Diesel Fuel Heavy Oil	ND ND ND
2-26-99 NWWO	North/West Sidewall, 5.0 ft. BGS	Composite Soil	Gasoline Diesel Fuel Heavy Oil	ND ND ND
2-26-99 SEWO	South/East Sidewall, 5.0 ft. BGS	Composite Soil	Gasoline Diesel Fuel Heavy Oil	ND ND ND
2-26-99 WOSP	Stockpile, 1.0 ft. BGS	Grab Soil	Gasoline Diesel Fuel Heavy Oil	ND ND ND

Notes: [1] Sample locations are characterized by area from which the sample was obtained and the depth (in feet) below ground surface.

[2] Soil sample results are reported as a dry weight basis in milligrams per kilogram (mg/kg), which is equivalent to parts per million (ppm).
ND indicates compound not detected at the listed method detection limit.
Method Detection Limits: Gasoline (20.0 mg/kg), Diesel Fuel (50.0 mg/kg) and Heavy Oil (100.0 mg/kg).
Model Toxics Control Act (MTCA) Method A Cleanup Level for TPH as: Gasoline (100.0 mg/kg), Diesel Fuel (200.0 mg/kg) and Heavy Oil (200.0 mg/kg).
Soil Samples analyzed by NWTPH-HCID.
Sample locations shown on Figures 2 and 3, Appendix 1.

Table 4
Summary of Lead Analysis in Soil
L & L Exxon Service Station Site

Date Sample No.	Location[1]	Sample Type Matrix	Analyte	Concentration[2]
2-18-99 NW Pump	NW Pump Island, 3.5 ft. BGS	Grab Soil	Lead (Pb)	27
2-18-99 SW Pump	SW Pump Island, 4.0 ft. BGS	Grab Soil	Lead (Pb)	ND
2-22-99 BT-1	Base Gas. Tank Basin, 9.5 ft. BGS	Grab Soil	Lead (Pb)	ND

Notes: [1] Sample locations are characterized by area from which the sample was obtained and the depth (in feet) below ground surface.

[2] Soil sample results are reported as a dry weight basis in milligrams per kilogram (mg/kg), which is equivalent to parts per million (ppm).
ND indicates compound not detected at the listed method detection limit.
Method Detection Limits: Lead (5.0 mg/kg).
Model Toxics Control Act (MTCA) Method A Cleanup Level for: Lead (250.0 mg/kg).
Soil samples analyzed by EPA Method 7420.
Sample locations shown on Figures 2 and 3, Appendix 1.

APPENDIX 3
Analytical Laboratory Test Results and Chain-of-Custody Documentation

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

7110 38th Drive SE
Lacey, Washington 98503

Mobile Environmental Laboratories
Environmental Sampling Services

Telephone: 360-459-4670
Fax: 360-459-3432

March 3, 1999

Gerry Harper
GN Northern, Inc.
6713 West Clearwater Ave., Suite F
Kennewick, WA 99336

Dear Mr. Harper:

Please find enclosed the analytical data report for the L & L Site Project in Richland, Washington. Soil samples were analyzed for Pb by Method 7420 on March 3, 1999.

The results of these analyses are summarized in the attached tables. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. The invoice for this work has been sent to your Yakima office for payment. A copy of the invoice is enclosed for your records.

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

Sincerely,

Sherry L. Chilcutt
Senior Chemist

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES, INC.

GN Northern, Inc. PROJECT #199-349
L&L EXXON SITE

TEG Project #

Heavy Metal Analysis of Soils

SAMPLE NUMBER	DATE ANALYZED	Lead (Pb) EPA 7420 (mg/kg)
Blank	03/03/99	nd
BT-1	03/03/99	nd
BT-1 Dup.	03/03/99	nd
DETECTION LIMITS		5

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS

QA/QC DATA - MATRIX SPIKE ANALYSES

Spike Added	250
Measured Conc.	279
% Recovery	111.6%
Spike Added	250
Measured Conc.	301
% Recovery	120.4%
RPD	7.6%

QA/QC DATA - LCS ANALYSIS

Spike Added	250
Measured Conc.	297
% Recovery	118.8%

ACCEPTABLE RECOVERY LIMITS: 65% TO 135%

CA-DOHS-ELAP CERTIFICATION #1887
ANALYSES PERFORMED BY: TM
DATA REVIEWED BY:

teg TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: L&L Exxon / GN Northern

ADDRESS: 6713 W. Clearwater, Suite F Kennewick, WA 99336

PHONE 509 734-9320 FAX: 509 734-9321

CLIENT PROJECT #: 199-349 PROJECT MANAGER: G. Harper

DATE: 2-22-99 PAGE 1 OF 1

PROJECT NAME: L&L Exxon Site

LOCATION: Richland, Washington

COLLECTOR: G. Harper DATE OF COLLECTION 2-22-99

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	TPH/BTEX	FIELD NOTES	Total Number of Containers	Laboratory Number
BT-1	9.5'	9:35	Soil	4oz Jar															X	X			
BT-2	10'	9:40																	X	X			
EW-BT#2	6'	9:45																	X	X			
WW-BT#2	7'	9:50																	X	X			
NW-BT#2	7'	9:55																	X	X			
BT-3	9.5'	10:00																	X	X			
EW-BT3	7'	10:05																	X	X			
WW-BT3	6'	10:10																	X	X			
SW-BT3	7'	10:15																	X	X			

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	2-22-99 5:00 pm	Julie Mellke	2/23/99
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG 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:

Analyze sample BT 1 for Pb only GH/TM fax 3/3/99

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

7110 38th Drive SE
Lacey, Washington 98503

Mobile Environmental Laboratories
Environmental Sampling Services

Telephone: 360-459-4670
Fax: 360-459-3432

March 3, 1999

Gerry Harper
GN Northern, Inc.
6713 West Clearwater Ave., Suite F
Kennewick, WA 99336

Dear Mr. Harper:

Please find enclosed the analytical data report for the L & L Site Project in Richland, Washington. One soil sample was analyzed for Pb by Method 7420 on March 3, 1999.

The results of these analyses are summarized in the attached tables. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. The invoice for this work has been sent to your Yakima office for payment. A copy of the invoice is enclosed for your records.

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

Sincerely,

Sherry L. Chilcutt
Senior Chemist

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES, INC.

GN Northern, Inc. PROJECT #199-349

L&L EXXON SITE

TEG Project #

Heavy Metal Analysis of Soils

SAMPLE NUMBER	DATE ANALYZED	Lead (Pb) EPA 7420 (mg/kg)
Blank	03/03/99	nd
NW Pump	03/03/99	27
NW Pump A14Dup.	03/03/99	26
SW	03/03/99	nd
DETECTION LIMITS		5

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS

QA/QC DATA - MATRIX SPIKE ANALYSES

Spike Added	250
Measured Conc.	279
% Recovery	111.6%
Spike Added	250
Measured Conc.	301
% Recovery	120.4%
RPD	7.6%

QA/QC DATA - LCS ANALYSIS

Spike Added	250
Measured Conc.	297
% Recovery	118.8%

ACCEPTABLE RECOVERY LIMITS: 65% TO 135%

CA-DOHS-ELAP CERTIFICATION #1887
ANALYSES PERFORMED BY: TM
DATA REVIEWED BY:

teg TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

P.O # 1643

CLIENT: L+L Exxon/GN Northern

ADDRESS: 6713 W. Clearwater, Suite F Kennewick, WA

PHONE 509 734-9320 FAX: 509 734-9321

CLIENT PROJECT #: 199-349 PROJECT MANAGER: G. Harper

DATE: 2-18-99 PAGE 1 OF 1

PROJECT NAME: L+L Site

LOCATION: Richland, WA

COLLECTOR: G. Harper DATE OF COLLECTION 2-15-99

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	TPH-G/BTEX	FIELD NOTES	Total Number of Containers	Laboratory Number
NW Pump	3.5'	1:10	Soil	4oz															X				
NE Pump	3'	12:55		4oz															X				
SE	4'	~~1:51~~ 1:00		4oz															X				
SW	4	1:15		4oz															X				

RELINQUISHED BY (Signature) DATE/TIME RECEIVED BY (Signature) DATE/TIME

RELINQUISHED BY (Signature) DATE/TIME Julie Molke 3/2/99 RECEIVED BY (Signature) DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG 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:

Analyze samples NW Pump & SW for Lead as Pb GH/CK

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

7110 38th Drive SE
Lacey, Washington 98503

Mobile Environmental Laboratories
Environmental Sampling Services

Telephone: 360-459-4670
Fax: 360-459-3432

March 2, 1999

Gerry Harper
GN Northern, Inc.
6713 West Clearwater Ave., Suite F
Kennewick, WA 99336

Dear Mr. Harper:

Please find enclosed the analytical data report for the L & L Site Project in Richland, Washington. Soil samples were analyzed for Gasoline by NWTPH-Gx, BTEX by Method 8020, and Hydrocarbon Identification by NWTPH-HCID on March 2, 1999.

The results of these analyses are summarized in the attached tables. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. The invoice for this work has been sent to your Yakima office for payment. A copy of the invoice is enclosed for your records.

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

Sincerely,

Michael A. Korosec
President

QA/QC FOR ANALYTICAL METHODS

GENERAL

The TEG Northwest Laboratory quality assurance and quality control (QA/QC) procedures are conducted following the guidelines and objectives which meet or exceed certification/-accreditation requirements of California DOHS, Washington DOE, and Oregon DEQ. The Quality Control Program is a consistent set of procedures which assures data quality through the use of appropriate blanks, replicate analyses, surrogate spikes, and matrix spikes, and with the use of reference standards that meet or exceed EPA standards.

When analyses are taking place on-site with the mobile lab, the need for Field Blanks or Travel/Trip Blanks is eliminated. If there is going to be a delay before sample preparation for analysis, the sample is stored at 4^{O} C.

ANALYTICAL METHODS

TEG Northwest Labs use analytical methodologies which are in conformity with U. S. Environmental Protection Agency (EPA), Washington DOE, and Oregon DEQ methodologies. When necessary and appropriate due to the nature or composition of the sample, TEG may use variations of the methods which are consistent with recognized standards or variations used by the industry and government laboratories.

TPH-Gasoline, TPH-Diesel
(Gasoline and/or Diesel, Modified EPA 8015, NWTPH-Gx and NWTPH-Dx)

A check standard is run at the beginning of the day. 1) A close standard is run at the end of the day. 2) Both open and close standards must be within 15% of the continuing calibration curve value. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135% unless high sample concentrations interfere with the determination of the recovery percentage. A duplicate sample is run at a rate of 1 per 10 samples. At least 1 method blank is run per 20 samples analyzed.

Purgeable Volatile Aromatics
(BTEX, EPA 602/8020)

A check standard is run at the beginning of the day. The check standard is run at the end of the day. Both open and close standards must be within 15% of the continuing calibration curve value. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135% unless high sample concentrations interfere with the determination of the recovery percentage. At least 1 method blank is run per day.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

L + L SITE PROJECT
Richland, WA
GN Northern, Inc.
Client Project #199-349

Hydrocarbon Identification by NWTPH-HCID for Soil

SAMPLE NUMBER	DATE ANALYZED	SURROGATE RECOVERY (%)	GASOLINE (mg/kg)	DIESEL (mg/kg)	HEAVY OIL (mg/kg)
Method Blank	03-02-99	115%	nd	nd	nd
BT #4	03-02-99	102%	nd	nd	nd
BT #5	03-02-99	97%	nd	nd	nd
WOSP	03-02-99	93%	nd	nd	nd
NWWO	03-02-99	83%	nd	nd	nd
SEWO	03-02-99	103%	nd	nd	nd
Method Detection Limits			20	50	100

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

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: TM, CK
DATA REVIEWED BY: Sherry Chilcutt

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

L + L SITE PROJECT
Richland, WA
GN Northern, Inc.
Client Project #199-349

Analyses of Gasoline (NWTPH-Gx) & BTEX (EPA Method 8021B) in Soil

SAMPLE NUMBER	DATE ANALYZED	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYLBENZENE (mg/kg)	XYLENES (mg/kg)	GASOLINE (mg/kg)	SURROGATE RECOVERY (%)
Method Blank	03-02-99	nd	nd	nd	nd	nd	122%
SP-1-SF	03-02-99	nd	nd	nd	nd	nd	99%
SP-1-SF Dup.	03-02-99	nd	nd	nd	nd	nd	102%
SP-2-N	03-02-99	nd	nd	nd	nd	30	98%
SP-3-SF	03-02-99	nd	nd	nd	nd	nd	100%
Method Detection Limits		0.05	0.05	0.05	0.05	10	

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

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

ANALYSES PERFORMED BY: TM, CK
DATA REVIEWED BY: Sherry Chilcutt

teg TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: L+L Exxon / GN Northern Inc.
DATE: 3-1-99 PAGE 1 OF 1

ADDRESS: 6713 W Clearwater, Suite F Kennewick Wa 99336
PROJECT NAME: L+L Site

PHONE (509) 734-9320 FAX: (509) 734-9321
LOCATION: Richland WA

CLIENT PROJECT #: 199-349 PROJECT MANAGER:
COLLECTOR: G. Harper DATE OF COLLECTION 2-26-99

Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	WTPH-HCID	TPH-G/B/E	FIELD NOTES	Total Number of Containers	Laboratory Number
SP-1-SF	-1	11:18	Soil	4oz Jar															X	X	X			
SP-2-N	-1	11:15																	X	X	X			
SP-3-SF	-1	11:20																	X	X	X			
NW W.O.	-5	10:58																	X					
W.O. S.P.	-1	11:10																	X					
BT #5	-7	11:00																	X					
SE W.O.	-5	11:05																	X					
BT #4	-7	10:55																	X					

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	3-1-99 12:30	Julie Miller	3/2/99
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS
☐ TEG 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:

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

7110 38th Drive SE
Lacey, Washington 98503

Mobile Environmental Laboratories
Environmental Sampling Services

Telephone: 360-459-4670
Fax: 360-459-3432

February 24, 1999

Gerry Harper
GN Northern, Inc.
6713 West Clearwater Ave., Suite F
Kennewick, WA 99336

Dear Mr. Harper:

Please find enclosed the analytical data report for the L & L Site Project in Richland, Washington. Soil samples were analyzed for Gasoline by NWTPH-Gx and BTEX by Method 8020 on February 23, 1999.

The results of these analyses are summarized in the attached tables. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. The invoice for this work has been sent to your Yakima office for payment. A copy of the invoice is enclosed for your records.

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

Sincerely,

Sherry L. Chilcutt
Senior Chemist

QA/QC FOR ANALYTICAL METHODS

GENERAL

The TEG Northwest Laboratory quality assurance and quality control (QA/QC) procedures are conducted following the guidelines and objectives which meet or exceed certification/-accreditation requirements of California DOHS, Washington DOE, and Oregon DEQ. The Quality Control Program is a consistent set of procedures which assures data quality through the use of appropriate blanks, replicate analyses, surrogate spikes, and matrix spikes, and with the use of reference standards that meet or exceed EPA standards.

When analyses are taking place on-site with the mobile lab, the need for Field Blanks or Travel/Trip Blanks is eliminated. If there is going to be a delay before sample preparation for analysis, the sample is stored at 4^{O} C.

ANALYTICAL METHODS

TEG Northwest Labs use analytical methodologies which are in conformity with U. S. Environmental Protection Agency (EPA), Washington DOE, and Oregon DEQ methodologies. When necessary and appropriate due to the nature or composition of the sample, TEG may use variations of the methods which are consistent with recognized standards or variations used by the industry and government laboratories.

TPH-Gasoline, TPH-Diesel
(Gasoline and/or Diesel, Modified EPA 8015, NWTPH-Gx and NWTPH-Dx)

A check standard is run at the beginning of the day. 1) A close standard is run at the end of the day. 2) Both open and close standards must be within 15% of the continuing calibration curve value. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135% unless high sample concentrations interfere with the determination of the recovery percentage. A duplicate sample is run at a rate of 1 per 10 samples. At least 1 method blank is run per 20 samples analyzed.

Purgeable Volatile Aromatics
(BTEX, EPA 602/8020)

A check standard is run at the beginning of the day. The check standard is run at the end of the day. Both open and close standards must be within 15% of the continuing calibration curve value. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135% unless high sample concentrations interfere with the determination of the recovery percentage. At least 1 method blank is run per day.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

L & L EXXON SITE PROJECT
Richland, Washington
G N Northern
Project No.: 199-349

Gasoline (NWTPH-Gx) & BTEX (EPA 8020) Analyses for Soils

Sample Number	Date Analyzed	Benzene mg/kg	Toluene mg/kg	Eth Benz mg/kg	Xylene mg/kg	Gasoline mg/kg	Recovery (%)
Meth. Blank	02/23/99	nd	nd	nd	nd	nd	101
BT-1	02/23/99	1.1	1.8	2.0	8.2	89	92
BT-2	02/23/99	1.3	6.5	1.4	5.9	41	68
EW-1 & 2	02/23/99	nd	nd	nd	nd	nd	102
WW-1 & 2	02/23/99	0.56	3.1	1.2	5.3	74	85
NW-1 & 2	02/23/99	nd	nd	nd	nd	nd	111
BT-3	02/23/99	0.15	nd	nd	nd	nd	106
EW-3	02/23/99	nd	nd	nd	nd	nd	101
EW-3 Dup	02/23/99	nd	nd	nd	nd	nd	98
WW-3	02/23/99	nd	nd	nd	nd	nd	103
SW-3	02/23/99	nd	nd	nd	nd	nd	135
Detection Limits		0.05	0.05	0.05	0.05	10	

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interferences prevent determination.

teg TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: L+L Exxon / GN Northern
ADDRESS: 6713 W. Clearwater, Suite F Kennewick, WA 99336
PHONE 509 734-9320 FAX: 509 734-9321
CLIENT PROJECT #: 199-349 PROJECT MANAGER: G. Harper

DATE: 2-22-99 PAGE 1 OF 1
PROJECT NAME: L+L Exxon Sitz
LOCATION: Richland, Washington
COLLECTOR: G. Harper DATE OF COLLECTION 2-22-99

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX. CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	TPH/BTEX	FIELD NOTES	Total Number of Containers	Laboratory Note Number
BT-1	9.5'	9:35	Soil	4oz Jar															X				
BT-2	10'	9:40																	X				
EW-BT#2	6'	9:45																	X				
WW-BT#2	7'	9:50																	X				
NW-BT#2	7'	9:55																	X				
BT-3	9.5'	10:00																	X				
EW-BT3	7'	10:05																	X				
WW-BT3	6'	10:10																	X				
SW-BT3	7'	10:15	↓	↓															X				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	2-22/99 5:00 pm	Julie Nielke	2/23/99
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS
☐ TEG 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:

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

7110 38th Drive SE
Lacey, Washington 98503

Mobile Environmental Laboratories
Environmental Sampling Services

Telephone: 360-459-4670
Fax: 360-459-3432

February 22, 1999

Gerry Harper
GN Northern, Inc.
6713 West Clearwater Ave., Suite F
Kennewick, WA 99336

Dear Mr. Harper:

Please find enclosed the analytical data report for the L & L Site Project in Richland, Washington. Soil samples were analyzed for Gasoline by NWTPH-Gx and BTEX by Method 8020 on February 19, 1999.

The results of these analyses are summarized in the attached tables. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. The invoice for this work has been sent to your Yakima office for payment. A copy of the invoice is enclosed for your records.

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

Sincerely,

Michael A Korosec

Michael A. Korosec
President

QA/QC FOR ANALYTICAL METHODS

GENERAL

The TEG Northwest Laboratory quality assurance and quality control (QA/QC) procedures are conducted following the guidelines and objectives which meet or exceed certification/-accreditation requirements of California DOHS, Washington DOE, and Oregon DEQ. The Quality Control Program is a consistent set of procedures which assures data quality through the use of appropriate blanks, replicate analyses, surrogate spikes, and matrix spikes, and with the use of reference standards that meet or exceed EPA standards.

When analyses are taking place on-site with the mobile lab, the need for Field Blanks or Travel/Trip Blanks is eliminated. If there is going to be a delay before sample preparation for analysis, the sample is stored at 4^{O} C.

ANALYTICAL METHODS

TEG Northwest Labs use analytical methodologies which are in conformity with U. S. Environmental Protection Agency (EPA), Washington DOE, and Oregon DEQ methodologies. When necessary and appropriate due to the nature or composition of the sample, TEG may use variations of the methods which are consistent with recognized standards or variations used by the industry and government laboratories.

TPH-Gasoline, TPH-Diesel
(Gasoline and/or Diesel, Modified EPA 8015, NWTPH-Gx and NWTPH-Dx)

A check standard is run at the beginning of the day. 1) A close standard is run at the end of the day. 2) Both open and close standards must be within 15% of the continuing calibration curve value. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135% unless high sample concentrations interfere with the determination of the recovery percentage. A duplicate sample is run at a rate of 1 per 10 samples. At least 1 method blank is run per 20 samples analyzed.

Purgeable Volatile Aromatics
(BTEX, EPA 602/8020)

A check standard is run at the beginning of the day. The check standard is run at the end of the day. Both open and close standards must be within 15% of the continuing calibration curve value. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135% unless high sample concentrations interfere with the determination of the recovery percentage. At least 1 method blank is run per day.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

L & L SITE PROJECT
Richland, Washington
GN Northern
199-349

Gasoline (NWTPH-Gx) & BTEX (EPA 8020) Analyses for Soils

Sample Number	Date Analyzed	Benzene mg/kg	Toluene mg/kg	Eth Benz mg/kg	Xylene mg/kg	Gasoline mg/kg	Recovery (%)
Meth. Blank	02/19/99	nd	nd	nd	nd	nd	101
NW Pump	02/19/99	<2	480	210	2600	45000	int
NE Pump	02/19/99	nd	nd	nd	nd	nd	99
SE	02/19/99	<4	440	82	1400	40000	int
SW	02/19/99	56	800	280	2700	45000	int
SW Dup.	02/19/99	47	750	290	2700	43000	int
Detection Limits		0.05	0.05	0.05	0.05	10	

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interferences prevent determination.

teg TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

P.O # 1643

CHAIN-OF-CUSTODY RECORD

CLIENT: L+L Exxon/GN Northern

ADDRESS: 6713 W. Clearwater, Suite F Kennewick, WA

PHONE 509 734-9320 FAX: 509 734-9321

CLIENT PROJECT #: 199-349 PROJECT MANAGER: G. Harper

DATE: 2-18-99 PAGE 1 OF 1

PROJECT NAME: L+L Site

LOCATION: Richland, WA

COLLECTOR: G. Harper DATE OF COLLECTION 2-15-99

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	TPH-G/BTEX				FIELD NOTES	Total Number of Containers	Laboratory Note Number
NW Pump	3.5'	1:10	Soil	4oz															X							
NE Pum	3'	12:55		4oz															X							
SE	4'	~~1:15~~ 1:00		4oz															X							
SW	4	1:15	↓	4oz															X							

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG 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:

APPENDIX 4
Washington State Department of Ecology UST Site Assessment Checklist

3/29/99

UNDERGROUND STORAGE TANK
Site Check/Site Assessment Checklist

For Office Use Only
Owner # U213601
Site # 5532

INSTRUCTIONS:

When a release has **not** been confirmed and reported, this Site Check/Site Assessment Checklist must be completed and signed by a person registered with the Department of Ecology. **The results of the site check or site assessment must be included with this checklist.** This form must be submitted to Ecology at the address shown below within 30 days after completion of the site check/site assessment.

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

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

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

CHECKLIST: Please initial each item in the appropriate box.

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

Underground Storage Tank Section
Department of Ecology
P. O. Box 47655
Olympia, WA 98504-7655

SITE INFORMATION

Site ID Number (on invoice or available from Ecology if the tanks are registered): 005532

Site/Business Name: L+L Exxon

Site Address: 1315 Lee Blvd. (Street) Telephone: (509) 783-2552

Richland (City) WA (State) 9933 (ZIP-Code)

RECEIVED
MAR 2 6 1999
ECOLOGY

TANK INFORMATION

Tank ID No.	Tank Capacity	Substance Stored
1 ✓	6000	Gasoline
2 ✓	6000	Gasoline
3 ✓	4000	Gasoline
4 ✓	500	Heating Oil
5 ✓	500	Waste Oil
~~6~~ ✓		

REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT

Check one:

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

APPENDIX 5
Site Photographs

PHOTOGRAPHER: Gerald Harper

DATE: 2/22/99

VIEW: East sidewall of gasoline UST basin. Marker indicates location of soil sample *#EW 1& 2.*

PHOTOGRAPHER: Gerald Harper

DATE: 2/22/99

VIEW: Looking northwest across gasoline UST basin. Markers indicate locations of soil samples *#WW 1 & 2, #BT-2, #BT-1,* and *#NW 1 &2.*

GN NORTHERN, INC. Job No.: 199-349	SITE PHOTOGRAPHS Underground Storage Tank Site Assessment L & L Exxon Service Station 1315 Lee Boulevard Richland, Washington			
	DATE: 3/99	MOUNTED BY: JB	REVIEWED BY: GH	EXHIBIT NO. A