JB 8/16/90
S.R. done

ECOVA

RECEIVED
JUL 31 1990
DEPT. OF ECOLOGY

July 30, 1990

JN: 90012

Mr. Gary Densow
Birtcher Construction Seattle
17171 Bothell Way N.E.
Seattle, Washington 98155

Dear Mr. Densow:

This report summarizes the activities conducted by Ecova Corporation, in behalf of Birtcher Construction, for excavating and disposing of petroleum-contaminated soil at Lake Forest Park Towne Centre, 17171 Bothell Way N.E., in Lake Forest Park (Seattle), Washington.

Background

Fuel oil contamination was discovered during the excavation of a 500-gallon underground storage tank (UST) located in the alley behind the Forest Park Dry Cleaners (Figure 1). The previous occupant of the building had been a Firestone Tire Store. The storage tank supplied #2 fuel oil for heating.

Tank removal activities were conducted on April 5, 1990, by O'Sullivan Construction. Boss Testing, Inc., provided documentation. During excavation, evidence of fuel leakage was noted on the outer surface of the tank and in soils adjacent to the filler pipe. Because the tank showed no visible signs of corrosion or distress, it is likely that the leakage was caused by overfilling or by a loose connection at the filler pipe inlet.

Prior to backfilling, two composite soil samples representing the sidewalls and bottom of the excavation were collected by O'Sullivan personnel. The samples provided the following analytical results (parts per million):

	Sample 1	Sample 2
Total Petroleum Hydrocarbons (TPH)	1962.6	5393.5
Benzene	<0.25	<0.25
Toluene	<7.5	<7.5
Xylenes	<5.0	<5.0

Corporate Office
3820 159th Avenue NE
Redmond, WA 98052
(206) 883-1900
(206) 867-2210 FAX

Gulf Coast Region
9304 Forest Lane #161
Dallas, TX 75243
(214) 553-1017
(214) 349-5510 FAX

Eastern Region
500 Fifth Avenue
Suite 935
New York, NY 10110
(212) 840-1042
(212) 840-1663 FAX

The concentrations for TPH exceeded the 200 ppm soil cleanup level established by the Washington State Department of Ecology (WDOE). Therefore a remedial action was necessary to determine the extent of contamination and reduce concentrations to acceptable levels.

Site Investigation and Soil Removal

Because of the apparent limited extent of contaminated soil, a remediation plan was designed to (1) remove and dispose of as much affected soil as possible, and (2) install a shallow groundwater monitoring well to test for possible water contamination.

On June 18, 1990, a monitoring well was installed about 20 feet immediately down-gradient from the tank excavation (Figure 1). The well was constructed of 4-inch-diameter PVC and completed to a depth of ten feet. The static groundwater level was measured at 4.7 feet below ground surface. Soils encountered were principally medium sands with minor silt/clay content. The well log is included in Attachment 1.

A monitoring well was installed to obtain the most representative water samples possible. A common problem encountered during the process of removing an underground tank or excavating contaminated soil is the unavoidable mixing of the soil with potentially clean groundwater at the bottom of the excavation. Initially clean water may thus be exposed to the contaminants and provide unrepresentative samples. This is an especially important consideration because of recent efforts to improve and maintain nearby Lyon's Creek as a salmon-spawning tributary. The creek passes within about 50 feet of the tank pit.

Following well development, two groundwater samples were collected and delivered to Pacific Northwest Environmental Laboratory, of Redmond, Washington, for analysis. The samples were analyzed for total petroleum hydrocarbons (California LUFT Method) and benzene, toluene, ethylbenzene, and xylenes (BTEX) (EPA Method 8020). All results showed the compounds were not detected. All analytical data is included in Attachment 2.

On June 19, 1990, a backhoe was mobilized to further investigate the extent of soil contamination around the tank pit and remove as much affected soil as necessary. The excavation contractor was Bolles Construction. Some difficulty was expected because of the close proximity of the excavation to the dry cleaner's building and various utility lines, including a ten-inch water main.

Because of the minor volatile component in fuel oil, it was expected that common field screening devices, such as a photoionization detector, would not be useful in identifying the limits of contamination in the soils. In addition to the common visual and smell criteria, a "spoon test" was employed in which, periodically, a small portion of excavated soil was mixed into a strong tri-sodium phosphate solution. If the surface of the solution showed a distinctive petroleum sheen, the presence of contamination was confirmed and additional soil was removed until all the field criteria were satisfied.

Following the removal of fill materials, the excavation was deepened and the sidewalls extended outward to the limits of field-discernable contamination. Groundwater gradually seeped into the

excavation until there was about two feet of water standing in the bottom. A total of approximately 25 to 30 cubic yards of material was eventually excavated, including the fill.

Soil samples were collected from each sidewall, just above the water table, and analyzed for TPH (EPA Method 418.1) to evaluate the presence of residual fuel oil contamination. Only the east sidewall showed detectible levels of TPH contamination (145 ppm). This was the result of the limited area between the tank location and the wall of the dry cleaner's building (see Figure 1). Only a relatively small amount of soil could be removed without affecting the building foundation.

During excavation, all soils were loaded into a dump truck and moved a short distance away where a pile was constructed on the asphalt base of a parking lot. While awaiting permission to dispose of the soil, the pile was covered with poly-film to avoid possible runoff caused by heavy rains.

Soil Disposal

Because of the small quantity of contaminated soil excavated, it was decided that disposal at a local landfill would provide the most practical disposition. To allow proper screening for disposal, samples were collected from the soil pile and analyzed for TPH (California LUFT Method) and benzene, toluene, ethylbenzene, and xylenes (BTEX) (EPA Method 8020), and flashpoint (EPA Method 1010). TPH was determined to be 1625 ppm and most closely characterized as a mix of kerosene and motor oil. At 54 ppb, total xylenes were the only principal volatiles present. The flashpoint or ignitability was greater than 210°F.

This information was sent to the Seattle-King County Department of Public Health and the soil was cleared for disposal at the Cedar Hills Landfill (see Attachment 3). The material was finally delivered to the landfill by Bolles Construction on July 25, 1990.

Conclusion of Closure

With the removal of additional soil from the tank excavation, the extent of contamination was determined and the level of petroleum contamination remaining was reduced to below regulatory action levels. In addition, no contamination was detected in groundwater directly adjacent to the tank pit. Thus, it has been satisfactorily demonstrated that the tank closure has been a clean one.

To conclude permanent closure a "Notice of Permanent Closure of Underground Storage Tank" was submitted to the Storage Tank Unit of the Washington Department of Ecology. A copy of the notice is included in Attachment 4.

The results of the site assessment and all other closure records must be maintained at the site, or at a readily available alternative location, and must be immediately available for inspection by any regulatory agency for a period of at least three years. The records provide proof that the site was properly closed; therefore, it is recommended that the records be maintained indefinitely.

If you have any questions about this report or if we may be of additional service to you, please call us at (206) 883-1900.

Sincerely,

Don Lance
Project Manager

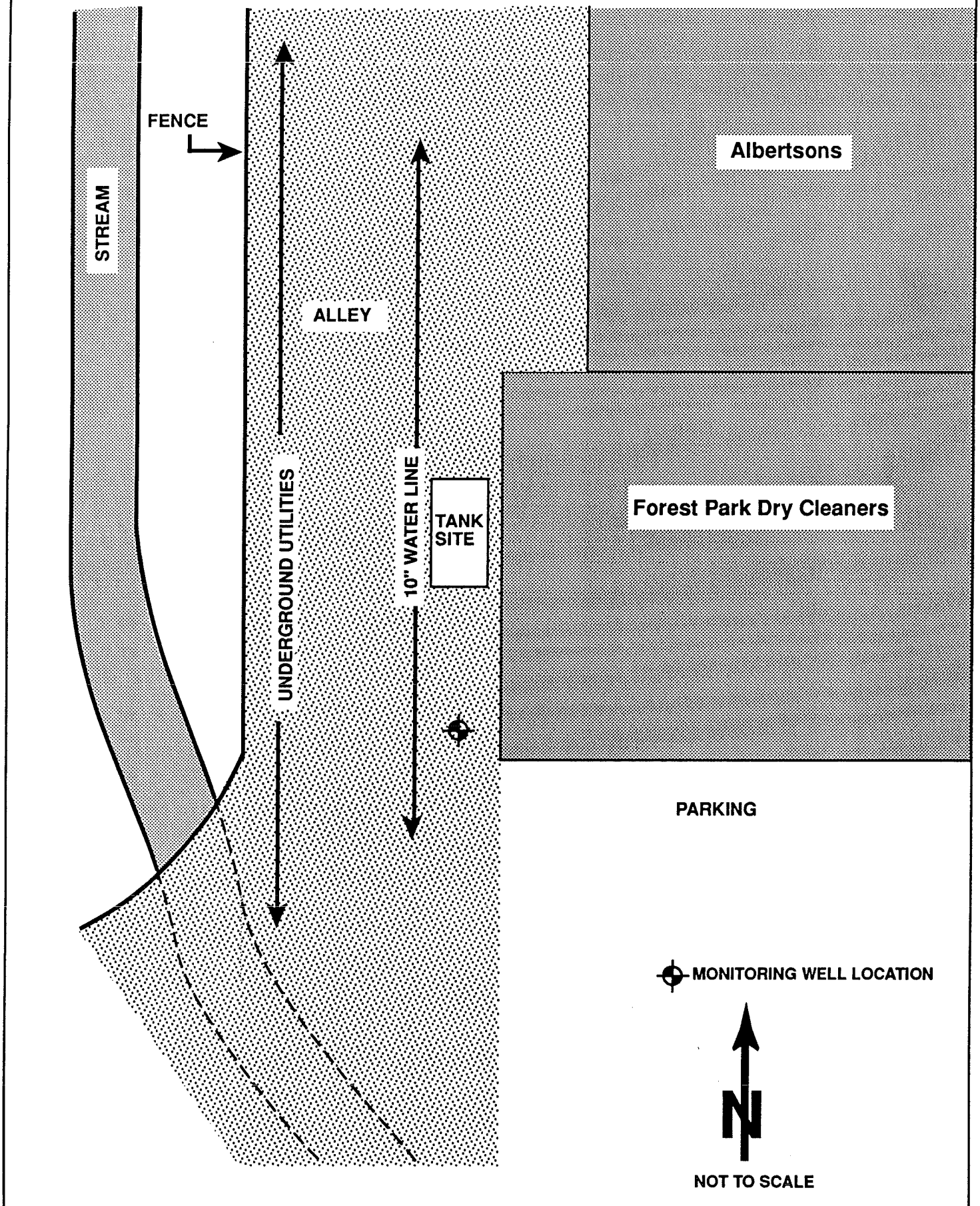
John Kinsella
Vice President, Operations

Attachments - As Stated

cc: Joe Hickey - Washington Department of Ecology

90012/BIRTCHER.RPT:bkh/1

GURE 1. Lake Forest Park UST Site M



50032-F1-014.1

ATTACHMENT 1

GROUNDWATER MONITORING WELL LOG AND COMPLETION INFORMATION

ECOVA Corporation

Well Installation Log

Well Number MW-1

Date Drilled 6/17/90

Client Birtcher

Drilling Company Kring

Coordinates NA N

Site Lake Forest Park.

Boring Method Hollow Auger

NA E

Job Number 90012

Borehole Depth 10 FT BGS

Ground Elevation NA

Field Geologist J. Kinsella

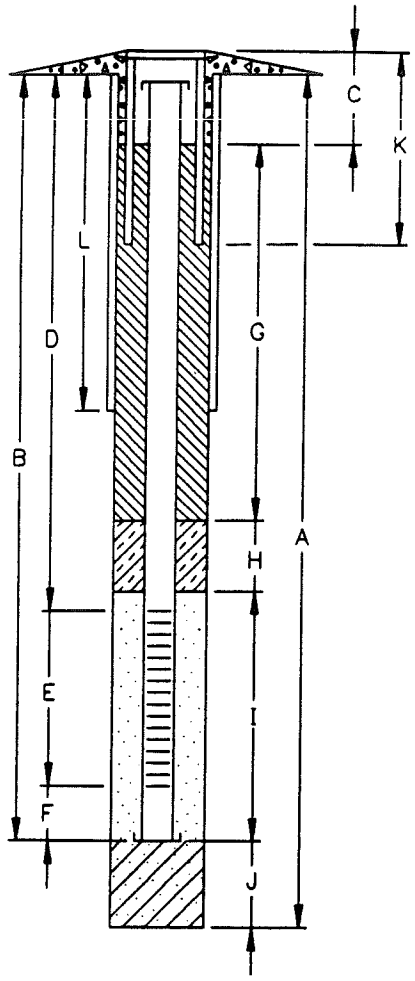
Water Depth 4.7FT BGS

Sheet 1 of 1

Depth (Feet)	Blow Counts	Sample No.	Recover	Organic* Vapor (ppm)	% LEL	% O_2	Sample Description	Graphic Log
							ASPHALT	
1								
2								
3								
4								
5							GREY/GREEN MEDIUM, UNIFORM SAND	
6	7 29 30	1	100	—	—	—	W/TRACE SILT/CLAY, WET & DENSE (SP)	
7								
8								
9								
10								
11	13 28 14	2	100	—	—	—	GY/GN MED SAND (SP) GY SILTY SAND W/SOME CLAY (SM).	
12								

* Background = _____ppm

WELL COMPLETION MW-1



TOP OF CASING ELEVATION _____

A BORING DEPTH 10.1 FT.
BORING DIAMETER 12.0 IN.

B WELL DEPTH 10.0 FT.

C WELL STICKUP 0.0 FT.

D BLANK INTERVAL 5.0 FT.
BLANK DIAMETER 4.0 IN.

E SCREEN INTERVAL 5.0 FT.
SCREEN DIAMETER 4.0 IN.
TYPE/SLOT SIZE MACH/10.

F SEDIMENT TRAP 0.5 FT.

G ANNULAR SEAL 3.5 FT.
MATERIAL: BENTONITE.

H. BENTONITE SEAL / FT.

I SANDPACK 6.5 FT.
TYPE/SIZE: 10/20.

J BOTOM SEAL/PACK / FT.
MATERIAL: /

K WELL COVER 1.0 FT.

L CONDUCTOR CASING / FT.

NOT TO SCALE

DRILLING TIMES:
START 09:12 FINISH 1:55 (includes time to install and sample well).
STANDBY or DOWN TIME:

METHOD OF DECON. PRIOR TO DRILLING: NONE

DEVELOPMENT

METHOD OF DEVELOPMENT: BAILING

YIELD	TIME	DATE
~50 GALLONS	11:45 AM TO 1:30 pm.	
	TO	
	TO	
	TO	

TURBIDITY AFTER DEVELOPMENT: ___ CLEAR ✓ MOD. TURBID ___ SL. TURBID ___ TURBID

ODOR IN WATER ? NO

WATER DISCHARGED TO: ___ GROUND SURFACE ___ STORAGE TANK ___ STORM SEWERS ___ TANK TRUCK ✓ DRUMS

DEPTH OF WATER AFTER DEVELOPMENT: 5.0 FT BGS.

MATERIALS USED

1 SACKS of 10/20 COL. SILICA SAND
— SACKS of _____ CEMENT
2 SACKS of PREMIX CONCRETE
— GALLONS of GROUT USED
GROUT COMPOSITION _____
1 SACKS of BENTONITE PELLETS
— BUCKETS of BENTONITE PELLETS
— YARDS CEMENT - SAND USED
— CENTRALIZERS at _____ BGS

WELL COVER USED: ✓ Above Grade ___ At Grade ___ Other ___ Lockable

ATTACHMENT 2

SOIL AND GROUNDWATER ANALYTICAL DATA

...IONAL EXPRESS LABORATORIES, INC.

NATEX

Pacific Northwest Environmental Laboratory, Inc.
3820 159th Avenue, N.E.
Redmond, WA 98052
(206) 885-0083
FAX (206) 867-2214

06-29-90

ECOVA
Don Lance

NARRATIVE FOR PNEL 2500
Submission from Pacific Northwest Environmental Laboratory

Enclosed are data summary sheets and supporting documentation for the two samples received on June 18, 1990 of the Lake Forest Park Shopping Center project. The field identification numbers, corresponding lab identification numbers, and dates collected are listed below.

FIELD ID	LAB ID	DATE COLLECTED
0718-01	2500-01	06-18-90
0718-02	2500-02	06-18-90

Listed below are anomalies and narratives associated with the receipt and/or analysis of these samples.

Sample Receiving

The sample 0718-02 (2500-02) contained an airbubble in one of two vials for volatile analysis. Don Lance of Ecova was notified verbally. The vial without the airbubble was to be used for analysis.

TPH-GC

This water sample contained no petroleum hydrocarbon patterns above background.

BTEX

No annomalies are present with this batch.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Sincerely,

mg Williams

\NAR-0603.500
Enclosures

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

METHOD REFERENCE

Total Petroleum Hydrocarbons (Gas Chromatography)	Extraction as per the California State Water Resources Control Board "Leaking Underground Fuel Tank (LUFT) Field Manual", April 1989 revision, followed by GC analysis, Modified Method 8015, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, 3rd Ed., 1986.
Benzene, Toulene, Ethylbenzene, and Xylene	Method 8020, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, 3rd Ed., 1986.

\MTH-0603.500

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

DATA REPORTING QUALIFIERS

Some of these qualifiers may appear in this analytical data report. Soil samples are analyzed and reported on a dry weight basis unless otherwise noted.

ORGANICS QUALIFIERS

A - This flag indicates that a TIC is a suspected aldol-condensation product.

B - Indicates compound was found in the associated blank as well as in the sample.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a target compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

M - Indicates value is taken from a medium level analysis.

ND- Not detected. Detection limit shown in parentheses.

NQ- Not quantitated as...

U - Indicates compound was analyzed for but not detected at the given detection limit. The sample quantitation limit was corrected for dilution and for percent moisture, when applicable.

X - Other specific flags and footnotes may be required to properly define the results. If more than two qualifiers are required for a sample result, the "X" flag combines several flags, as needed. For instance, the "X" flag might combine the "A," "B," and "D" flags for some sample.

* - Indicates spiked compounds used for MS/MSD analysis.

INORGANICS QUALIFIERS

NA- Relative percent difference calculation is not applicable to analytes when not detected.

NC- Not calculated when analyte is not detected.

NS- Not calculated when sample concentration of analyte exceeds spike level by a factor of four or more.

U - Indicates that analyte was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

INORGANICS METHOD QUALIFIERS

CV- Manual Cold Vapor AA

F - FURNACE AA

P - ICP

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

Client No: 72-900603

ORGANIC ANALYSIS REPORT

Client Sample ID	Blank	0718-01
PNEL Sample ID	2500-MB	2500-01
Matrix	Water	Water
Date Received	NA	06-18-90
Date Extracted	06-19-90	06-19-90
Date Analyzed	06-25-90	06-25-90
Units of Measure	µg/ℓ	µg/ℓ

Compound		
Total Petroleum Hydrocarbons		
As: Gasoline	500 U	500 U
As: Diesel	500 U	500 U
As: Motor Oil	500 U	500 U

\TPH-0603.500

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

Client Number: 72-900603

VOLATILE ORGANICS ANALYSIS

Client Sample ID.	Blank	0718-02
PNEL Sample ID.	2500-MB	2500-02
Matrix	Water	Water
Date Received	06-18-90	06-18-90
Date Analyzed	06-22-90	06-22-90
Units	µg/ℓ	µg/ℓ
Compounds		
Benzene	0.5 U	0.5 U
Toluene	0.5 U	0.5 U
Ethylbenzene	0.5 U	0.5 U
Total Xylene	1.0 U	1.0 U
Surrogate		
% a,a,a-Trifluorotoluene	94	84
% 4-Bromofluorobenzene	96	94

\602-0603.500

PACIFIC NORTHWEST
ENVIRONMENTAL
LABORATORY

VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

PNEL Sample ID.:	2503-01	**Client No.:**	72-900603
Client Sample ID.:	NA	**Sample Matrix:**	Water
Date Sample Received:	NA	**Date Sample Analyzed:**	06-22-90

Compound	SPIKE ADDED (µg/ℓ)	SAMPLE CONC. (µg/ℓ)	MS CONC. (µg/ℓ)	MS % REC#	QC LIMITS REC
1,1-Dichloroethene	10	ND	6.9	69*	61-145
Trichloroethene	10	ND	9.0	90*	71-120
Benzene	10	ND	9.5	95	76-127
Toluene	10	ND	10.9	109	76-125
Chlorobenzene	10	ND	9.1	91*	75-130

Compound	SPIKE ADDED (µg/ℓ)	MSD CONC. (µg/ℓ)	MSD % REC#	% RPD#	QC LIMITS RPD	QC LIMITS REC
1,1-Dichloroethene	10	6.9	69	0*	14	61-145
Trichloroethene	10	8.6	86	4.5*	14	71-120
Benzene	10	10.4	104	9.0*	11	76-127
Toluene	10	11.3	113	3.6	13	76-125
Chlorobenzene	10	8.9	89	2.2*	13	75-130

NOTE: This MS/MSD is valid for method 602/8020 only.

\# Column to be used to flag recovery and RPD (Relative % Difference) values with an asterisk.

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

\VMS-0603.500

PNELI — CHAIN-OF-CUSTODY / REQUEST FOR ANALYSIS — Control No.

Client Name: ECOVA
Client Number:
Bill To: ECOVA

PO No.:
Carrier No.:

Laboratory Contact:
Send Lab Report To: Don Lance, Ecova
Date Report Required: STANDARD TURN
Client Contact:
Client Contact Phone:

PNEL 2500

Sample Number	Sample Location and Description	Date Collected	Time Collected	Sample Matrix	Number of Containers	TPH by GC 1L Glass	BETX 2-40mL VOA					Comments
1 0718-01	Birtcher Const	6-18	1300	~~AQUA~~	1L	X						Sample ok
2 0718-02	Birtcher Const	6-18	1300	AQUA	2.40mL		+					1 of 2 small air bubble

Special Instructions:
Possible Sample Hazards:

Was Preservative Used? No ☐ Yes ☒ What Kind? BETX - HCL What Analysis?

1. Relinquished By [signature] Date 6-18-90 Time 1430 Received By [signature] Date 6/18/90 Time 1452
2. Relinquished By ____ Date ____ Time ____ Received By ____ Date ____ Time ____
3. Relinquished By ____ Date ____ Time ____ Received By ____ Date ____ Time ____
4. Relinquished By ____ Date ____ Time ____ Received By ____ Date ____ Time ____

NATIONAL EXPRESS LABORATORIES, INC.

NATEX

Pacific Northwest Environmental Laboratory, inc.
3820 159th Avenue, N.E.
Redmond, WA 98052
(206) 885-0083
FAX (206) 867-2214

06-29-90

ECOVA
Don Lance

NARRATIVE FOR PNEL 2501
Submission from Pacific Northwest Environmental Laboratory

Enclosed are data summary sheets and supporting documentation for the six samples received on June 19, 1990 of the 90012 project. The field identification numbers, corresponding lab identification numbers, and dates collected are listed below.

FIELD ID	LAB ID	DATE COLLECTED
719-01	2501-01	06-19-90
719-02	2501-02	06-19-90
719-03	2501-03	06-19-90
719-04	2501-04	06-19-90
719-05	2501-05	06-19-90
719-06	2501-06	06-19-90

Listed below are anomalies and narratives associated with the receipt and/or analysis of these samples.

TPH-IR

There were no anomalies associated with the preparation or analyses of these samples.

Inorganic results have been expressed on a dry-weight basis.

TPH-GC

This sample contained two well-separated petroleum hydrocarbon patterns. The first matches the boiling range and pattern of our kerosene standard well. The second is higher boiling and approximates the boiling range of motor oil.

BTEX

No anomalies are present with this batch.

Results are on a wet weight basis.

This soil sample was analyzed at dilution. This involves extraction of the soil into methanol and spiking the methanol extract into a larger volume of water. Therefore analysis is equivalent to a water analysis.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Sincerely,

\NAR-0603.501
Enclosures

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

METHOD REFERENCE

Soil Extraction	Method 9071, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, 3rd Ed., 1986.
Petroleum Hydrocarbons Total, Recoverable Spectrometric Infrared	Method 418.1, Methods for Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 600/4-79-020, March 1983.
Total Petroleum Hydrocarbons (Gas Chromatography)	Extraction as per the California State Water Resources Control Board "Leaking Underground Fuel Tank (LUFT) Field Manual", April 1989 revision, followed by GC analysis, Modified Method 8015, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, 3rd Ed., 1986.
Benzene, Toulene, Ethylbenzene, and Xylene	Method 8020, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, 3rd Ed., 1986.

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

DATA REPORTING QUALIFIERS

Some of these qualifiers may appear in this analytical data report. Soil samples are analyzed and reported on a dry weight basis unless otherwise noted.

ORGANICS QUALIFIERS

A - This flag indicates that a TIC is a suspected aldol-condensation product.

B - Indicates compound was found in the associated blank as well as in the sample.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a target compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

M - Indicates value is taken from a medium level analysis.

ND- Not detected. Detection limit shown in parentheses.

NQ- Not quantitated as...

U - Indicates compound was analyzed for but not detected at the given detection limit. The sample quantitation limit was corrected for dilution and for percent moisture, when applicable.

X - Other specific flags and footnotes may be required to properly define the results. If more than two qualifiers are required for a sample result, the "X" flag combines several flags, as needed. For instance, the "X" flag might combine the "A," "B," and "D" flags for some sample.

* - Indicates spiked compounds used for MS/MSD analysis.

INORGANICS QUALIFIERS

NA- Relative percent difference calculation is not applicable to analytes when not detected.

NC- Not calculated when analyte is not detected.

NS- Not calculated when sample concentration of analyte exceeds spike level by a factor of four or more.

U - Indicates that analyte was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

INORGANICS METHOD QUALIFIERS

CV- Manual Cold Vapor AA

F - FURNACE AA

P - ICP

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

Client No: 72-900603

ORGANIC ANALYSIS REPORT

Client Sample ID	Blank	719-04 - Soil for disposal
PNEL Sample ID	2501-MB	2501-04
Matrix	Soil	Soil
Date Received	NA	06-19-90
Date Extracted	06-20-90	06-20-90
Date Analyzed	06-23-90	06-23-90
Units of Measure	µg/kg	µg/kg

Compound		
Total Petroleum Hydrocarbons		
As: Gasoline	10000 U	11000 U
As: Diesel	10000 U	11000 U
As: Motor Oil	10000 U	1600000
As: Kerosene	10000 U	25000

\TPH-0603.501

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

Client Number: 72-900603

VOLATILE ORGANICS ANALYSIS

Client Sample ID.	Blank	719-05
PNEL Sample ID.	2501-MB	2501-05
Matrix	Water	Soil
Date Received	NA	06-19-90
Date Analyzed	06-26-90	06-26-90
Units	µg/ℓ	µg/kg
Compounds		
Benzene	0.5 U	50 U
Toluene	0.5 U	50 U
Ethylbenzene	0.5 U	50 U
Total Xylene	1.0 U	54
Surrogate		
% a,a,a-Trifluorotoluene	93	88
% 4-Bromofluorobenzene	96	94

\602-0603.501

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

Client No: 72-900603

INORGANIC ANALYSIS REPORT

Client Sample ID.	719-05 - Soil for disposal
PNEL Sample ID.	2501-05
Matrix	Soil
Date Received	06-19-90
Units of Measure	mg/kg

Parameters

Flashpoint	>210°F

\IARS603.501

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

Client No: 72-900603

INORGANIC ANALYSIS REPORT

Client Sample ID.	719-01	719-02	719-03	719-06
PNEL Sample ID.	2501-01	2501-02	2501-03	2501-06
Matrix	Soil	Soil	Soil	Soil
Date Received	06-19-90	06-19-90	06-19-90	06-19-90
Date Analyzed	06-21-90	06-21-90	06-21-90	06-21-90
Units of Measure	mg/kg	mg/kg	mg/kg	mg/kg
Parameters				
Total Petroleum Hydrocarbons	59.9 U	57.6 U	63.3 U	145

\IAR-603.501

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

PNEL Sample ID.:	2501-05	**Client No.:**	72-900603
Client Sample ID.:	719-05	**Sample Matrix:**	Water
Date Sample Received:	06-19-90	**Date Sample Analyzed:**	06-26-90

Compound	SPIKE ADDED (µg/ℓ)	SAMPLE CONC. (µg/ℓ)	MS CONC. (µg/ℓ)	MS % REC#	QC LIMITS REC
1,1-Dichloroethene	10	ND	7.4	74	61-145
Trichloroethene	10	ND	8.7	87	71-120
Benzene	10	ND	9.4	94	76-127
Toluene	10	ND	9.9	99	76-125
Chlorobenzene	10	ND	9.4	94	75-130

Compound	SPIKE ADDED (µg/ℓ)	MSD CONC. (µg/ℓ)	MSD % REC#	% RPD#	QC LIMITS RPD	QC LIMITS REC
1,1-Dichloroethene	10	7.7	77	4.0	14	61-145
Trichloroethene	10	8.4	84	3.5	14	71-120
Benzene	10	9.2	92	2.2	11	76-127
Toluene	10	9.7	97	2.0	13	76-125
Chlorobenzene	10	9.1	91	3.2	13	75-130

\# Column to be used to flag recovery and RPD (Relative % Difference) values with an asterisk.

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

\VMS-0603.501

PNELI

CHAIN-OF-CUSTODY / REQUEST FOR ANALYSIS

Control No.

Client Name: Birtcher Const

Client Number: 90012

Bill To: Ecova

PO No.:

Carrier No.:

PNEL 2501

Laboratory Contact: Susan

Send Lab Report To: Don Lance

Date Report Required: Std Turn (7 days)

Client Contact:

Client Contact Phone:

Sample Number	Sample Location and Description	Date Collected	Time Collected	Sample Matrix	Number of Containers	Analysis and Container: TPH-IR 418.1	TPH-GC Fuel 0:1 LUFT	BTEX 8020	Flash point 1010			Comments
719-01	South wall	6-19-90	1100	So:1	1	X						
-02	North wall		1300		1	X						
-03	West wall		1400		1	X						samples
-04	Stockpile		1400		1	⊗	X					OK
-05	~~East wall~~ PNL Stockpile		1400		1		⊗	X	X			
-06	East wall		1430		1	X						

Special Instructions: _____ Possible Sample Hazards: _____

Was Preservative Used? No [X] Yes [ ] What Kind? _____ What Analysis? _____

1. Relinquished By: Jack Kash Date: 6-19-90 Time: 1600 Received By: [signature] Date: 6/19/90 Time: 1600
2. Relinquished By: _____ Date: _____ Time: _____ Received By: _____ Date: _____ Time: _____
3. Relinquished By: _____ Date: _____ Time: _____ Received By: _____ Date: _____ Time: _____
4. Relinquished By: _____ Date: _____ Time: _____ Received By: _____ Date: _____ Time: _____

ATTACHMENT 3

CLEARANCE MEMO FOR SOIL DISPOSAL

City of Seattle
Norman B. Rice, *Mayor*

King County
Tim Hill, *Executive*

Seattle-King County Department of Public Health
Bud Nicola, M.D., M.H.S.A., *Director*

TO: Rod Hansen, Manager, King County Solid Waste Division
ATTN: Mel Andriesen, Cedar Hills

FROM: Steve Burke, Senior Environmental Health Specialist
Chemical/Physical Hazards Program

DATE: July 13, 1990

SUBJECT: WASTE MATERIAL CLEARED FOR DISPOSAL AT CEDAR HILLS LANDFILL

This is to advise you that we find that the waste material listed from the following company is a solid waste, and if disposed of in King County, must be disposed at Cedar Hills.

Generator: Forest Park Associates Contact: Gary Densow
17171 Bothell Way N.E.
Suite 15
Seattle, WA 98155

Transporter: Bolles Construction, Inc.,
18844 N.E. 84th St.
Redmond, WA 98056

Delivery must be scheduled with Mel Andriesen at 296-4490

Material: Soil excavated with the removal of an underground fuel oil storage tank at the Lake Forest Park Shopping Center, King County.

Amount: 30 cubic yards.

Approximate total weight 45 tons.

Frequency: This one time only.

Expiration Date: October 13, 1990

Consulted with: Mel Andriesen (July 10, 1990)

The above substances were found not to meet the State DOE definitions for either extremely hazardous waste or dangerous waste or Federal EPA criteria for hazardous waste or toxic substances. A summary of the available chemical analysis is attached, if applicable.

WASTE SCREENING CHECKLIST

Generator: Forest Park Associates
Materials: Soil

Date: July 13, 1990

WAC 173-303	TITLE OR TEST	DONE	RESULT	COMMENTS
-090	D.W. Characteristics a) Ignitability b) Corrosivity c) Reactivity d) E.P. Tox	a) Y	a) Not D.W.	
-101	Toxic D.W. a) Equivalent Conc. b) Bioassay			
-102	Persistent D.W. a) Halogenates b) PAH's			
-103	Carcinogenic D.W.			
Other	a) TPH b) B-E-T-X	a) Y b) Y	a) l.t. 0.2% b) Not D.W.	

Abbreviations

Y = Yes; N = No; NA = Not Applicable;
WAC = Washington Administrative Code; E.P. Tox = Extraction Procedure Toxicity;
D.W. = Dangerous Waste; PAH = Polycyclic Aromatic Hydrocarbons;
D.O.E. = Department of Ecology;
l.t. = less than
B = Benzene; E = Ethylbenzene; T = Toluene; X = Xylenes - total unless otherwise specified
TPH = total petroleum hydrocarbons; EDB = Ethylene dibromide
ND = Not Detected

ATTACHMENT 4

PERMANENT CLOSURE NOTICE

NOTICE OF PERMANENT CLOSURE OF UNDERGROUND STORAGE TANK(S)

Site Owner/Operator: Forest Park Associates
Site Address: 17171 Bothell Way N.E., Suite 15, Seattle, WA 98155
Telephone: (206) 367-6617

Site Notification Number (If known; this is assigned by Ecology): _____
Tank has been registered with Ecology (__); tank was not registered (X).

Local closure permit (if any) obtained from: Lake Forest Park Building Dept.
(Always contact local authorities regarding permit requirements.)

Tank closure performed by: Tank Removal: O'Sullivan Construction 206-682-2440
Company/Individual: Remediation: Ecova Corporation 206-883-1900
Telephone: (___)_____ **Date of Tank Closure:** 6-19-90
Method of Closure: (X) **Removal** (___) **In-Place Closure**
If closed in place, type of fill material used: _____

If removed, how will the tank(s) be disposed of? (X) **Scrap** (___) **Landfill**
(___) **Other method (please specify:** _____
Disposal Location: Northwest Enviro Service, Inc. 206-622-1090

Tank(s) Closed

Tank ID Number	Age	Size	Last Material Stored
_____	Not Known	500 Gallon	No. 2 Fuel Oil
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Will the tanks be replaced by new underground tanks? (___) **Yes** (X) **No**
(NOTE: If YES, you need to submit a notification form for the new tanks.)

Was a site assessment completed? (X) **Yes** (__) **No** **If so, was contamination found?** (X) **Yes** (__) **No** A quantity of contaminated soil was disposed at Cedar Hills Landfill.
(NOTE: The appropriate regional office of the Washington Department of Ecology should be contacted for assistance if contamination is found (see attached map). Records of the site closure must also be maintained at the site and must be available upon an inspector's request for at least three years after closure.)

Inspecting Agency: Lake Forest Park Building Department **Inspector Name:** _____
(NOTE: This is generally the local fire department or agency enforcing the Uniform Fire Code; in some cases (usually involving contamination) it may be Ecology. In some instances there may be no inspecting agency.)

Signature: Donald M. Lance, Jr. **Date:** 7-26-90
Title: Project Manager-Ecova Corporation

Please return the completed form to:

Storage Tank Unit
Department of Ecology
M/S PV-11
Olympia, WA 98504-8711