

October 7, 1993

COPY

2214 North 4th Avenue
PO Box 2601
Tri-Cities Washington 99302509 547-1871
509 547-1673 Facsimile

RE: Petroleum Contaminated Soil Aeration, Lucky's Service, 14579 Alt. Highway 97, Entiat, Washington

Chen-Northern is submitting this letter to update you on the current status of the on-site remediation of approximately 410 cubic yards (yds³) of petroleum contaminated soil (PCS).

To review, field activities for a tank closure and phase II/III environmental assessment were completed on May 18, 1993. Two underground storage tanks were decommissioned and removed from the subject site. Subsequent field observations and laboratory analysis of subsoil located beneath the pump islands revealed petroleum hydrocarbon contamination. This contamination was the apparent result of loose fittings or couplings at the gasoline dispenser. Since a petroleum hydrocarbon release was confirmed, the UST site assessment was upgraded to an independent remedial action project and overexcavating activities were commenced to remove the PCS. After approximately 410 yds³ of gasoline contaminated soil was removed from the subsurface, field observations and laboratory analysis of the excavation zone indicated that the vertical and horizontal extent of contamination had been successfully reached. The PCS was stockpiled on plastic in the adjacent vacant lot for remediation purposes.

The PCS appeared suitable for remediation by landfarming (soil aeration) without presenting a significant health hazard to local residents or endangering water resources. The material was spread out on plastic to a thickness of two to three feet. Laboratory analysis of soil samples collected from the stockpile indicated two constituents exceeded Method A action levels. TPH-G concentrations averaged 580 mg/kg and xylene concentrations averaged 52.5 mg/kg. The highest concentrations found in the stockpile for TPH-G and xylenes were 2700 mg/kg and 280 mg/kg, respectively.

The Chelan-Douglas County Health District was contacted by letter and informed of plans to landfarm this material on-site. The letter, dated June 22, 1993, contained laboratory results and pertinent information pertaining to the remediation phase of this project. The remediation of this material by landfarming has proceeded as planned since May 14, 1993.

An environmental professional from Chen-Northern was mobilized to the subject site to assess the condition of the stockpiled soil on September 3, 1993. The stockpiled soil was surveyed for

soil discoloration and the presence of petroleum odors. Although no soil discoloration was observed, gasoline type odors were detected in several areas to the southwest. The stockpiled soil was randomly sampled to obtain statistical data as prescribed by WDOE guidelines. These samples were collected in laboratory supplied containers, labelled, and placed in a cooler with ice for temporary storage until received by our state accredited laboratory in Billings, Montana. Analytical results are summarized in Table 1.

Table 1
Summary of Analytical Results
Soil Stockpile

Sample No.	Location ¹	Matrix	Analysis	Concentration ²					
				TPH-G ³ (mg/kg)	Benzene (ug/kg)	Ethylbenzene (ug/kg)	Toluene (ug/kg)	Xylenes (ug/kg)	Lead (mg/kg)
93931250P	Stockpile A	Soil	WTPH-G BTEX	290*	<5	19	<5	55	<20
93931255P	Stockpile A	Soil	WTPH-G BTEX	4	<5	<5	<5	<16	N/A
9393105P	Stockpile A	Soil	WTPH-G BTEX	1	<5	<5	<5	<16	N/A
9393110P	Stockpile A	Soil	WTPH-G BTEX	3	<5	<5	<5	<16	<19
9393115P	Stockpile A	Soil	WTPH-G BTEX	1	<5	<5	<5	<16	<18

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) or micrograms per kilogram (ug/kg).

³ TPH-G = Total Petroleum Hydrocarbons as Gasoline.

A < sign indicates concentrations, if present, were below practical detection limits calculated for the analytical method.

A N/A indicates constituent was not analyzed for.

* Exceed Method A Action Levels as established by the WDOE (Appendix 2).

Laboratory results (Table 1) indicated that petroleum hydrocarbon concentrations in soil samples collected from the stockpile were below Method A action levels for all but one sample. Contaminant concentrations exceeded WDOE Method A action levels for TPH-G in sample 93931250P. Table 2 is a summary of statistical data calculated for the soil stockpile.

Table 2
Summary of Analytical Results
Statistical Data of Soil Stockpile¹

Stockpile	Constituent ²	Mean ³	Median ⁴	Standard Deviation ⁵	90% Upper Confidence Level ⁶	WDOE Method A Action Levels
A	TPH-G	60.0 mg/kg	3 mg/kg	130 mg/kg	150 mg/kg	100 mg/kg
A	Benzene	< 5 ug/kg	< 5 ug/kg	< 5 ug/kg	< 5 ug/kg	500 ug/kg
A	Toluene	< 5 ug/kg	< 5 ug/kg	< 5 ug/kg	< 5 ug/kg	40000 ug/kg
A	Ethylbenzene	5.8 ug/kg	< 5 ug/kg	7.4 ug/kg	10.8 ug/kg	20000 ug/kg
A	Xylene	17 ug/kg	< 16 ug/kg	21 ug/kg	32 ug/kg	20000 ug/kg
A	Lead	< 20 mg/kg	< 19 mg/kg	< 20 mg/kg	< 20 mg/kg	250 mg/kg

¹ Statistical data calculated based on Appendix E of Guidance for Remediation of Releases from Underground Storage Tanks.

² TPH-G = Total Petroleum Hydrocarbon as Gasoline

³ Mean (average) of concentrations calculated from information provided by Table 1 and 2.

⁴ Median is the 50th percentile of the data set: half the data lie above the median and half below.

⁵ Standard deviation, or sample standard deviation, is an estimate of the variability among the collected sample data.

⁶ Upper confidence level - i.e. any given sample from this stockpile has a 10% possibility of exceeding this concentration.

The statistical information provided by Table 2 affirmed all targeted contaminants met clean-up standards except for TPH-G. The UCL calculated for TPH-G exceeded the Method A action level of 100 mg/kg.

Although contaminant concentrations have been significantly reduced, one portion of the stockpiled material failed to meet clean-up standards. Mr. Don Geck of Joe Hall Construction removed the remediated material from the contaminated portion of the stockpile in late September. This material was reportedly used as fill. Approximately 100 yds³ of PCS remains for landfarming. Chen-Northern recommends landfarming be continued for an additional four to six months at which time another sampling event may be conducted. A final remedial action report will be required when the stockpiled soil meets clean-up standards.

9406401

WPH Chain of Custody

Laucks
Testing Laboratories, Inc
940 South Hancey St. Seattle Washington 98108 (206) 467-9020

CHAIN OF CUSTODY RECORD

DATE 6/10/94

PAGE 1 OF 1 Lab Number

THIS INFORMATION WILL BE USED FOR REPORTING
Joe Hall Construction

ADDRESS
(509) 697-4858
Don of Kevin
Lucky's Texaco in Entiat, Wa.
SHIP NO
SHIP NAME
(PRINTED NAME)

LAB NO	LAB SA#	SAMPLE NO.	DATE	TIME	LOCATION
		LT-1000	6/10/94		Entiat
		LT-1001	6/10/94		Entiat

TESTING PARAMETERS										NO. OF CONTAINERS	
WTPH-HClD	WTPH-G/BTEX	WTPH-418.1	Modified 8015							10 day (standard)	1
										5 Day	1
										3 Day	
										2 Day	

OBSERVATIONS, COMMENTS,
SPECIAL INSTRUCTIONS

Check off desired business days turnaround.
If no turnaround is requested we will assume 10 business days

DATE	TIME	DATE	TIME
6/10/94		6/10/94	
3:06 PM			

RECEIVED BY	SIGNATURE	PRINTED NAME	COMPANY
Joseph H. Walkenbauer			
Joseph H. Walkenbauer			
Walkenbauer & Assoc.			

DATE	TIME	DATE	TIME

SHIPPED BY
Joseph H. Walkenbauer
DATE
6/10/94
TIME
3:06 PM

RECEIVED BY
DATE
6/10/94
TIME
3:06 PM

SHIPMENT METHOD U.P.S.
SPECIAL SHIPMENT, HANDLING OR STORAGE REQUIREMENTS

INSTRUCTIONS:
1. Shaded areas for lab use only.
2. Complete in ballpoint pen. Draw one line through errors and initial.
3. Be specific in test requests.
4. Check off tests to be performed for each sample.
5. Retain final copy after signing.
6. Provide name and telephone of your contact person.

TOTAL NUMBER OF CONTAINERS: 2

NAME Joe Walkenbauer
TELEPHONE (509) 248-9020

NAME Walkenbauer & Assoc.
ADDRESS P.O. Box 1521
Yakima, Wa. 98907

BILLING INFORMATION, IF DIFFERENT

Laucks

Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

CLIENT: Walkenhauer & Assoc.
P.O. Box 1521
Yakima, WA. 98902

ATTN : Joseph Walkenhauer

Work ID : Lucky's Texaco In Entiat, WA
Taken By : Client
Transported by: UPS
Type : Soil

Certificate of Analysis

Work Order# : 94-06-401

DATE RECEIVED : 06/13/94

DATE OF REPORT: 06/20/94

SAMPLE IDENTIFICATION:

	Sample Description	Collection Date
01	LT-1000	06/10/94
02	LT-1001	06/10/94

FLAGGING:

The flag "U" indicates the analyte of interest was not detected, to the limit of detection indicated.

ATTACHMENTS:

Following presentation of sample results, the following appendices are attached to this report:

Appendix A: Method Blank and Surrogate Recoveries Report

Appendix B: Chain-of-Custody



Laucks Since 1908

Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services


CLIENT : Walkenhauer & Assoc.

Certificate of Analysis

Work Order# : 94-06-401

Unless otherwise instructed all samples will be discarded on 08/11/94

Respectfully submitted,
Laucks Testing Laboratories, Inc.


John M. Buerger



Laucks

Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

Lab Sample ID : 9406401-01
Client Sample ID: LT-1000

Date Collected: 06/10/94
Date Received : 06/13/94

----- WTPH-HCID -----

Preparation Date: 06/13/94
Analysis Date : 06/14/94

	Result	
Gasoline Range Hydrocarbons...	<20	mg/kg AR
Diesel Range Hydrocarbons.....	<50	mg/kg AR
Lube Oil and Related Products.	<100	mg/kg AR

Surrogate recoveries	% Rec	LCL	UCL
Bromofluorobenzene	88	50	150
2-Fluorobiphenyl	93	50	150
p-Terphenyl	94	50	150

Analysis performed in accordance with Washington State
Department of Ecology method WTPH-HCID.

Key: < = Result is less than WTPH-HCID screening level.
 > = Result exceeded WTPH-HCID screening level.
 AR = As received.

If result exceeds the screening level it is recommended that the
appropriate quantitative analysis be performed.



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940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

Lab Sample ID : 9406401-02
Client Sample ID: LT-1001

Date Collected: 06/10/94
Date Received : 06/13/94

----- WTPH-HCID -----

Preparation Date: 06/13/94
Analysis Date : 06/14/94

	Result	
Gasoline Range Hydrocarbons...	<20	mg/kg AR
Diesel Range Hydrocarbons.....	<50	mg/kg AR
Lube Oil and Related Products.	<100	mg/kg AR

Surrogate recoveries	% Rec	LCL	UCL
Bromofluorobenzene	85	50	150
2-Fluorobiphenyl	89	50	150
p-Terphenyl	92	50	150

Analysis performed in accordance with Washington State
Department of Ecology method WTPH-HCID.

Key: < = Result is less than WTPH-HCID screening level.
> = Result exceeded WTPH-HCID screening level.
AR = As received.

If result exceeds the screening level it is recommended that the
appropriate quantitative analysis be performed.

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Chemistry, Microbiology, and Technical Services

APPENDIX A

Method Blank and Method Blank Surrogate Recoveries Report



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Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

Quality Control Report
Multi-Component Method Blanks
Surrogate Recoveries for Work Order 9406401

<u>Blank Name</u>	<u>Test Description</u>	<u>Surrogate Compound</u>	<u>Recov</u>	<u>LCL</u>	<u>UCL</u>
0061394_GSV_S03	WTPH HClD in soil	Bromofluorobenzene	86	50	150
		2-Fluorobiphenyl	91	50	150
		p-Terphenyl	91	50	150

* = Recovery exceeds control limit

Recov = Percent recovery of surrogate compound

LCL = Lower Control Limit

UCL = Upper Control Limit



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