Bergeson-Boese & Associates, Inc.
Comprehensive Environmental Services

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CCB# 76509
[illegible]: BERGEBA036PC

January 12, 2005

Cathy Rodda
Department of Environmental Quality
1102 Lincoln Street, Suite 210
Eugene, OR 97401

RE: SITE CHARACTERIZATION

FOR: LANE COUNTY PUBLIC WORKS
1300 WEST 20TH STREET
FLORENCE, OREGON

Dear Cathy:

This letter report presents the results of site investigation activities performed by Bergeson-Boese & Associates, Inc. (BB&A) at the above referenced site. The field investigation activities were performed to characterize the magnitude and extent of residual soil and groundwater impact in the vicinity of the former 1,000 gallon used oil underground storage tank (UST) system.

BACKGROUND

The used oil UST was decommissioned in December 2002 by Lane County Public Works personnel with oversight by BB&A. Confirmation soil samples collected immediately east and south of the concrete tie down pad confirmed the presence of residual diesel and lube oil range total petroleum hydrocarbons (TPH). Waste oil characterization sampling confirmed low levels of volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs) in the soil. No polychlorinated biphenyls (PCBs) or leachable toxic metals were detected at or above the laboratory method reporting limits (MRLs).

Due to the collapse of backfill materials, confirmation soil samples were not collected from the west portion of the UST excavation zone during the decommissioning activities. Confirmation soil samples collected approximately two (2) feet east of the concrete tie down pad defined the lateral extent of residual impact to the east.

Approximately three (3) tons of petroleum contaminated soil (PCS) and the UST were disposed of at the Lane County Solid Waste facility at Short mountain near Goshen, Oregon.

Groundwater which entered the UST excavation zone was sampled for the volatile aromatic hydrocarbons benzene, toluene, ethylbenzene, and xylenes (BTEX) and PAH compounds. No BTEX compounds were detected at or above the laboratory MRLs and low levels of PAH compounds were detected.

Information regarding the UST decommissioning and confirmation soil sampling was presented in documents previously submitted to the Department of Environmental Quality (DEQ). Based upon the results of the confirmation soil and groundwater samples, additional investigative activities were performed to characterize the magnitude and extent of residual TPH impact.

FIELD INVESTIGATION

BB&A collected soil and groundwater samples from four (4) push probes completed at, and adjacent to, the former used oil UST excavation zone. The push probes were completed using truck mounted Geoprobe® push percussion sampling equipment. The locations of the push probes are shown on the Site Plan (Figure 1) included as an attachment this letter report.

Push probe P1 was completed at the location of confirmation soil sample LCPW-PIT-SOUTH-8' to define the vertical extent of the residual soil impact and to collect a representative groundwater sample for laboratory analysis. Push probe P2 was collected at the north edge of the former UST excavation zone. Due to the thickness of the concrete pad (i.e., 16 inches) adjacent to the former UST excavation zone, it was not technically feasible to complete this probe any further north. Push probe P3 was completed approximately five (5) feet south of the former UST excavation zone to define the southern extent of the residual soil impact. Push probe P4 was completed at the west edge of the former UST excavation zone to determine the western extent of the residual soil impact. The eastern extent of the residual soil impact was previously defined during the confirmation soil sampling.

Subsurface materials encountered at each push probe location consisted of fill material underlain by medium sand. Residual soil impact was noted at push probes P1 and P2 Groundwater was encountered at approximately 14 feet below land surface (BLS) at push probe P1. Descriptions of subsurface materials encountered at each push probe location are presented on Push Probe Logs included as attachments to this letter report.

Soil samples were collected at 14 feet BLS at push probe P1 and at eight (8) feet BLS at push probes P2, P3, and P4. The soil samples were analyzed for diesel and lube oil range TPH using Northwest Method NWTPH-Dx. The analytical results are presented in Table 1. A copy of the laboratory report and chain-of-custody record is included as an attachment to this letter report.

Table 1. Soil Sample Results
Push Probes

Units = mg/kg (ppm)
ND = Not detected at or above the laboratory method reporting limit (MRL)

Soil Cleanup Reference Level = Level 2 Numeric Soil Matrix Cleanup Standard from OAR 340-122-0335(2)

SAMPLE I.D.	
LCPW15-P1-14'	ND
LCPW15-P2-8'	940 - DIESEL RANGE 1,900 - LUBE OIL RANGE
LCPW15-P3-8'	ND
LCPW15-P4-8'	ND
SOIL CLEANUP REFERENCE LEVEL	500

The analytical results of the soil samples analyzed for TPH indicate that soil samples collected from push probes P1, P2, and P3 did not contain TPH at or above the laboratory MRLs. The sample collected from push probe P2 contained diesel and lube oil range TPH at concentrations in excess of the Level 2 soil matrix cleanup level from Oregon Administrative Rules (OAR) 340-122-0335(2).

The soil sample results confirm that the vertical extent of the soil impact was defined beneath the former UST excavation zone at 14 feet at push probe P1. The west and south extent of the residual soil impact was defined at eight (8) feet BLS at push probes P3 and P4. The eastern extent of the residual soil impact was defined previously during the confirmation soil sampling.

Residual soil impact in excess of the soil cleanup reference level was present at eight (8) feet BLS at push probe P2. Due to the limitations posed by the thickness of the concrete slab, an additional push probe could not feasibly be completed further north. Using data from the other push probes, an estimated rate of degradation was calculated. The distance of push probe P3 from confirmation soil sample LCPW-PIT-SOUTH-8' is approximately eight (8) feet. The distance of push probe P4 from confirmation soil sample LCPW-PIT-SOUTH-8' is approximately 10 feet. The distance of confirmation soil sample LCPW15-PIT-EAST + 2'-8' from confirmation soil sample LCPW-PIT-SOUTH-8' is approximately 12 feet. The data from these soil sample locations indicates that the residual impact in the former UST excavation zone declined from 710 mg/kg (ppm) for diesel range TPH and 1,700 mg/kg (ppm) for lube oil range TPH to less than the laboratory MRL within eight (8) to 12 feet horizontally. Since the residual TPH impact detected at push probe P2 is similar to the level of impact detected at confirmation soil sample LCPW-PIT-SOUTH-8' and the subsurface materials are similar in nature, it is estimated that the extent of residual soil impact does not extend beyond 12 feet north of the former UST excavation zone. This residual impact is under the thick concrete cover and is not readily accessible to direct dermal contact and/or ingestion.

Based upon the concentrations of residual TPH detected in the soil sample collected from push probe P2, additional analysis was performed on "worse case" sample LCPW15-P2-8' for VOCs using Environmental Protection Agency (EPA) Method 8260B and for PAH compounds using modified EPA Method 8270C SIM. The analytical results of the "worse case" soil sample analysis are presented in Table 2. The analytical results are compared to the most stringent generic risk-based concentrations (RBCs) using an occupational receptor scenario from the DEQ guidance document titled *Risk-Based Decision Making for the Remediation of Petroleum Contaminated Sites* (RBDM Guidance Document) dated September 22, 2003. A copy of the laboratory report is included as an attachment to this letter report.

Table 2. "Worse Case" Soil Sample Results

Units = mg/kg (ppm)
NS = No standard
RBC = Most stringent generic RBCs from Appendix A and Appendix J of the RBDM Guidance Document (September 2003) using occupational and construction/excavation worker receptor scenarios.

Only detected VOCs and PAH compounds are presented in this table. A complete list of VOCs and PAH compounds analyzed is presented in the laboratory report included as an attachment to this letter report. The highest concentration of naphthalene is reported.

PARAMETER	LCPW15-P2-8'	RBC
Diesel Range TPH	940	2,800
Heavy Oil Range TPH	1,900	NS
Benzene	0.015	0.052
Tetrachloroethene	**0.16**	0.037
Toluene	0.046	180
Ethylbenzene	2.5	28,000
Xylenes	20	19,000
Isopropylbenzene	0.39	24,000
n-Propylbenzene	1.2	9,300
1,3,5-Trimethylbenzene	7.2	12
1,2,4-Trimethylbenzene	13	55
tert-Butylbenzene	0.0065	NS
sec-Butylbenzene	0.48	NS
n-Butylbenzene	1.4	NS
p-Isopropyltoluene	0.79	NS
Naphthalene	2	15
Acenaphthene	0.22	16,000
Fluorene	0.34	12,000
Phenanthrene	0.82	NS
Anthracene	0.1	90,000
Fluoranthene	0.2	8,900
Pyrene	0.68	6,700
Benzo(g,h,i)perylene	0.26	NS

The analytical results of the "worse case" soil sample indicates the presence of low levels of VOCs and PAH compounds. Except for the concentration of tetrachloroethene, none of the compounds exceeded the most stringent generic RBCs using occupational and construction/excavation worker receptor scenarios. The residual concentration of tetrachloroethene exceeds the most stringent generic RBC using an occupational receptor scenario. The most stringent generic RBC is for the exposure pathway of leaching to groundwater. Additional assessment of this exposure pathway is addressed in the beneficial groundwater use section of this letter report. The residual concentration of tetrachloroethene does not exceed any other applicable generic RBCs using occupational and construction/excavation worker receptor scenarios.

Groundwater samples were collected for laboratory analysis at push probe P1. The groundwater samples were analyzed for VOCs including aromatic hydrocarbons and chlorinated compounds using EPA Method 8260B and for PAH compounds using modified EPA Method 8270C SIM. The analytical results are presented in Table 3. A copy of the laboratory report and chain-of-custody record is included as an attachment to this letter report.

Table 3. Groundwater Sample Results
Push Probe P1

Units = µg/L (ppb)
ND = Not detected at or above the laboratory MRL

RBC = Most stringent generic RBCs from Appendix A of the RBDM Guidance Document (September 2003)

COMPOUND	LCPW15-P1-H2O	RBCs
VOCs	ND	Various
PAHs	ND	Various

The analytical results of the groundwater samples confirm the absence of VOCs and PAH compounds at or above the laboratory MRL. The representative groundwater results indicate that the residual soil impact associated with the release from the former used oil UST has not adversely impacted the groundwater directly beneath the former UST excavation zone.

BENEFICIAL GROUNDWATER USE

The groundwater sample results confirm that groundwater directly beneath the former UST excavation zone has not been impacted by detectable concentrations of VOCs or PAH compounds associated with used oil. However, the "worse case" soil sample results indicate that the residual concentration of tetrachloroethene exceeds the leaching to groundwater exposure pathway using an occupational receptor scenario. In order to determine if this exposure pathway was appropriate for the site, a beneficial groundwater use evaluation was conducted.

The subject property is developed as a Lane County Public Works facility and is used for occupational purposes. A municipal airport and open park lands are located west and east of the subject property. Single family residential properties are located along 20th Street north and east of the subject property. Residential properties are also located south of the subject property. Potable water is provided to the subject and nearby properties by the City of Florence which obtains its water supply from well fields completed in the dunal aquifer in the Munsell Creek area. The nearest City of Florence Well field is located approximately nine-tenths (0.9) of a mile northeast of the subject property in sand dunes located near Munsell Creek.

According to *U.S. Geological Survey Water-Supply Paper 1539-K* (1963), groundwater in the area flows generally southward parallel to Munsell Creek towards the Siuslaw River. The subject property is located in the northeast quarter of the northeast quarter section of Section 27, Township 18 South, Range 12 West. A query of well logs on file with the Oregon Water Resources Department (WRD) was performed to identify domestic wells within the northeast quarter of Section 27 and the southeast quarter of Section 22. The query did not identify any domestic/irrigation wells within these quarter sections. Given the availability of municipally-supplied potable water and the high capital costs associated with potable water well installation, future development of the shallow groundwater resources for potable water in the vicinity of the subject property is considered unlikely.

CONCLUSIONS AND RECOMMENDATIONS

The absence of detectable contaminants in groundwater, including tetrachloroethene, and the presence of municipally supplied potable water to the subject and nearby properties, indicates that the groundwater ingestion and inhalation exposure pathway is incomplete and the residual soil impact at this site does not appear to pose an unacceptable risk.

Residual soil impact north of the former UST excavation zone under the thick concrete slab is conservatively estimated to be approximately 50 cubic yards.

The findings of this investigation indicate that the residual soil impact is protective of public health, safety, welfare, and the environment. No further remediation or investigative activities are recommended. This report requests that the DEQ review the data presented and, upon concurrence, issue a written determination that "no further action" (NFA) is required for the UST release at the subject property.

LIMITATIONS

Professional services of Bergeson-Boese & Associates, Inc. have been performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental engineering and consulting firms practicing in this or similar localities. No other warranty, express or implied, is made as to the professional conclusions included in this report.

The conclusions presented in this report are based only on data provided by others, the observations made during field investigation, and the results of samples submitted for laboratory analysis. Although subsurface soil and groundwater samples were collected from areas deemed likely to have been impacted by the former used oil UST system, the results of the analyses only indicate the presence or absence of contaminants in the discrete sample locations. The findings of this assessment should not be considered as scientific certainties, but rather as professional opinion based upon selected and limited data.

If you have any questions regarding the information presented in this letter report, please feel free to contact me at your convenience.

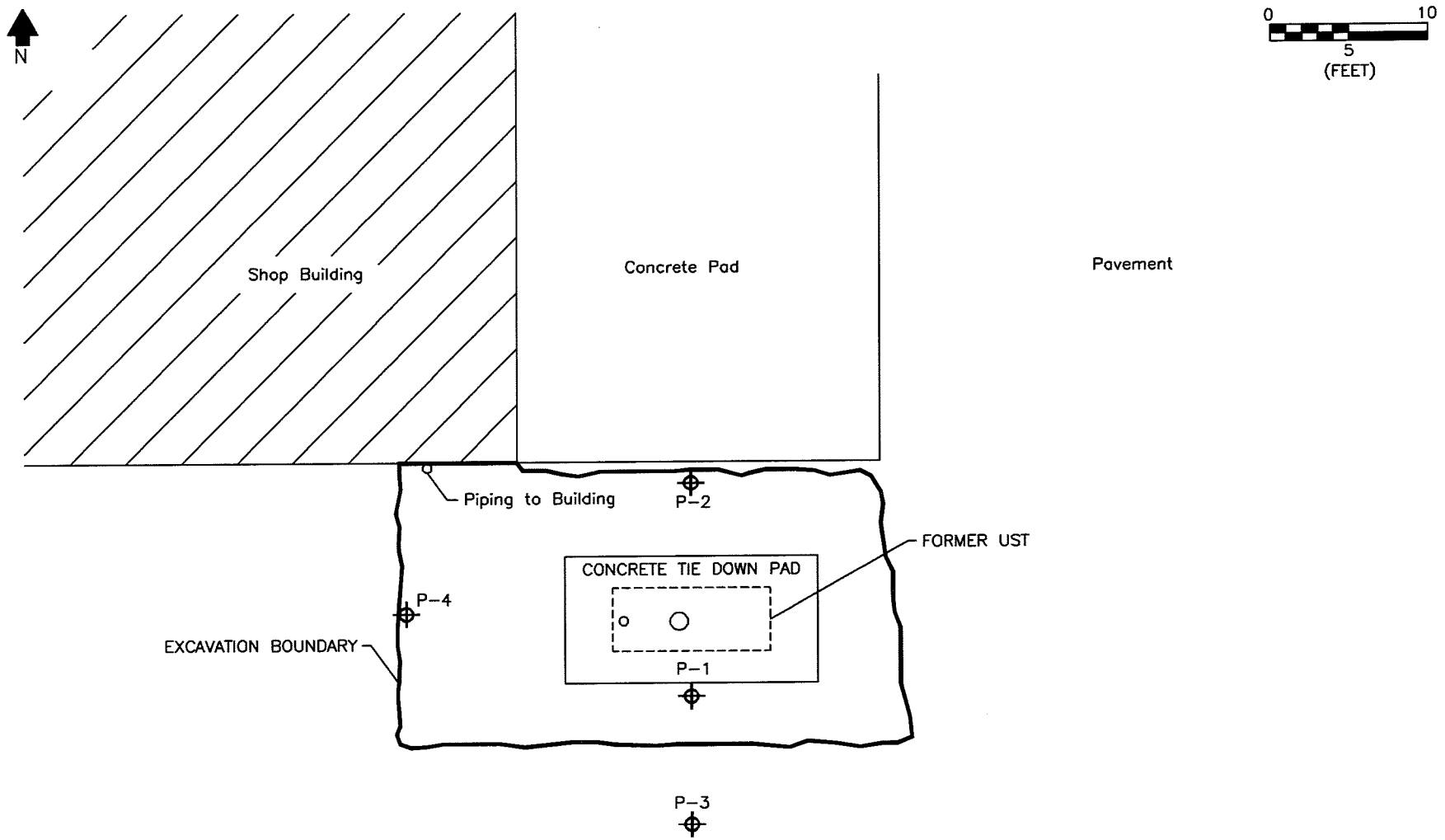
Sincerely,

Bergeson-Boese & Associates, Inc.

Stephen Lawn
Hazardous Materials Specialist

Attachments

cc: Dale Wendt
Support Services Manager
Lane County Department of Public Works
3040 North Delta Highway
Eugene, Oregon 97408-1696



LEGEND

P-3 Push Probe Locaiton and Identification Number

LANE COUNTY PUBLIC WORKS, 1300 W. 20th, Florence, Oregon

SITE PLAN WITH PUSH PROBE LOCATIONS

Bergeson-Boese & Associates, Inc.
Comprehensive Environmental Services
65 Centennial Loop
Eugene, Oregon 97401
(541) 484-9484

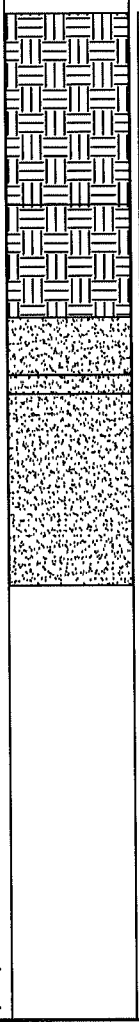
Job Code:	LCPW15ISC.02U
CADD File:	LCPW15.DWG
Scale:	1"=10'
Drawn:	KATHRYN DAVIS
Checked:	STEPHEN LAWN
Date:	02/19/03

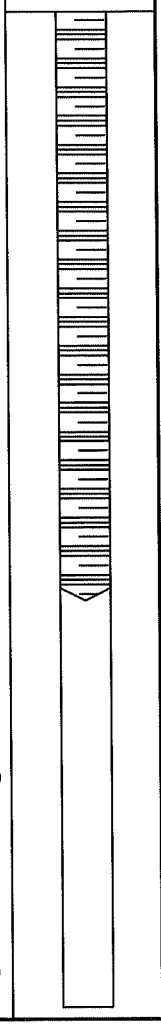
PROBE LOG

PROBE NO.: P-1
PROJECT CODE: LCPW15ISC.02U
CADD FILE: LCPW15-L.DWG
PROJECT: LANE COUNTY PUBLIC WORKS
LOCATION: 1300 W. 20th STREET
FLORENCE, OREGON

TOTAL DEPTH: 15'
SURFACE ELEVATION: N/A
PROBING METHOD: DUAL-TUBE
PROBED BY: PACIFIC NORTHWEST DRILLING
LOGGED BY: STEPHEN LAWN
DATE COMPLETED: 02/18/03

DEPTH (feet)	SAMPLE IDENTIFICATION AND LAB RESULTS	RECOVERY	H_2O LEVEL	LITHOLOGIC DESCRIPTION
0				BACKFILL
5				BACKFILL
				SAND (SW): dk. brown, stained, strong odor
				SAND (SW): brown, odor
10				SAND (SW): brown, wet, odor
			WD	
15				
20				
25				





LEGEND

WD Water Level in borehole during drilling (i.e. first encountered)

NOTES:

NOTE: CLASSIFICATION OF SOILS BASED ON THE UNITED SOILS CLASSIFICATION SYSTEM.

Bergeson-Boese & Associates, Inc.
Environmental Engineering
65 Centennial Loop
Eugene, Oregon 97401
(541) 484-9484

PROBE LOG

PROBE NO.: P-2
PROJECT CODE: LCPW15ISC.02U
CADD FILE: LCPW15-L.DWG
PROJECT: LANE COUNTY PUBLIC WORKS
LOCATION: 1300 W. 20th STREET
FLORENCE, OREGON

TOTAL DEPTH: 9'
SURFACE ELEVATION: N/A
PROBING METHOD: DUAL-TUBE
PROBED BY: PACIFIC NORTHWEST DRILLING
LOGGED BY: STEPHEN LAWN
DATE COMPLETED: 02/18/03

DEPTH (feet)	SAMPLE IDENTIFICATION AND LAB RESULTS	RECOVERY	H_2O LEVEL	LITHOLOGIC DESCRIPTION	LITHOLOGY	DEPTH (feet)	PROBE ABANDONMENT
0				BACKFILL (gravel)		0	
5				SAND (SW): brown, stained, strong odor		5	
10						10	
15						15	
20						20	
25						25	

LEGEND

NOTES:

NOTE: CLASSIFICATION OF SOILS BASED ON THE UNITED SOILS CLASSIFICATION SYSTEM.

Bergeson-Boese & Associates, Inc.
Environmental Engineering
65 Centennial Loop
Eugene, Oregon 97401
(541) 484-9484

PROBE LOG

PROBE NO.: P-3
PROJECT CODE: LCPW15ISC.02U
CADD FILE: LCPW15-L.DWG
PROJECT: LANE COUNTY PUBLIC WORKS
LOCATION: 1300 W. 20th STREET
FLORENCE, OREGON

TOTAL DEPTH: 9'
SURFACE ELEVATION: N/A
PROBING METHOD: DUAL-TUBE
PROBED BY: PACIFIC NORTHWEST DRILLING
LOGGED BY: STEPHEN LAWN
DATE COMPLETED: 02/18/03

DEPTH (feet)	SAMPLE IDENTIFICATION AND LAB RESULTS	RECOVERY	H_2O LEVEL	LITHOLOGIC DESCRIPTION	LITHOLOGY	DEPTH (feet)	PROBE ABANDONMENT
0				- ASPHALT - PRE-PROBE		0	
5				- SAND (SW): brown, no odor		5	
10						10	
15						15	
20						20	
25						25	

LEGEND

NOTES:

NOTE: CLASSIFICATION OF SOILS BASED ON THE UNITED SOILS CLASSIFICATION SYSTEM.

Bergeson-Boese & Associates, Inc.
Environmental Engineering
65 Centennial Loop
Eugene, Oregon 97401
(541) 484-9484

PROBE LOG

PROBE NO.: P-4
PROJECT CODE: LCPW15ISC.02U
CADD FILE: LCPW15-L.DWG
PROJECT: LANE COUNTY PUBLIC WORKS
LOCATION: 1300 W. 20th STREET
FLORENCE, OREGON

TOTAL DEPTH: 9'
SURFACE ELEVATION: N/A
PROBING METHOD: DUAL-TUBE
PROBED BY: PACIFIC NORTHWEST DRILLING
LOGGED BY: STEPHEN LAWN
DATE COMPLETED: 02/18/03

DEPTH (feet)	SAMPLE IDENTIFICATION AND LAB RESULTS	RECOVERY	H_2O LEVEL	LITHOLOGIC DESCRIPTION	LITHOLOGY	DEPTH (feet)	PROBE ABANDONMENT
0				PRE-PROBE		0	
5				SAND (SW): brown, no oder		5	
10						10	
15						15	
20						20	
25						25	

LEGEND

NOTES:

NOTE: CLASSIFICATION OF SOILS BASED ON THE UNITED SOILS CLASSIFICATION SYSTEM.

Bergeson-Boese & Associates, Inc.
Environmental Engineering
65 Centennial Loop
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Pacific Northwest Laboratories

Environmental Analysis

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Wilsonville, Oregon 97070

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www.bergeson-boese.com

February 28, 2003

Lane County Dept. of Public Works
Attn: Dale Wendt
3040 North Delta Highway
Eugene, OR 97408-1696

RE: PNL Report Number: 4648
Client Project Code: LCPW15ISC.02U

Please find enclosed the report prepared for the laboratory analyses you requested.

The samples were received under a chain-of-custody. Soil samples analyzed using NWTPH methods are reported as dry weight. For all other methods results are reported as received. Unused samples are retained for one month.

Please contact us at the above address or phone number to obtain additional sample containers and coolers.

Thank you for selecting Pacific Northwest Laboratories for your analytical needs. We look forward to serving you in the future.

Sincerely,

Pacific Northwest Laboratories

Dennis Dyke, Laboratory Director

Enclosure

Pacific Northwest Laboratories
65 Centennial Loop
Eugene, Oregon 97401
(541) 484-4493 Fax: 484-4188

LABORATORY REPORT

PNL REPORT NUMBER: 4648

CLIENT: Lane County Dept. of Public Works
CLIENT PROJECT CODE: LCPW15ISC.02U
SITE LOCATION: Florence Public Works Facility
1300 West 20th Street
Florence, Oregon

ITEMS ANALYZED: 1 water sample and 4 soil samples

DATE SAMPLES COLLECTED: February 18, 2003
DATE ANALYSIS COMPLETED: February 27, 2003

METHOD: **NWTPH-Dx**
Results and Method Reporting Limits (MRL) presented in mg/kg (ppm)
ND = Compound not detected

	Diesel		Lube Oil	
Sample I.D.	Result	MRL	Result	MRL
LCPW15-P1-14'	ND	25	ND	100
LCPW15-P2-8'	940		1900	
LCPW15-P3-8'	ND	25	ND	100
LCPW15-P4-8'	ND	25	ND	100
LAB BLANK	ND	25	ND	100

Surrogate Recoveries

Sample I.D.	Percent		Acceptance Limits
LCPW15-P1-14'	132	*	50-150
LCPW15-P2-8'	*		
LCPW15-P3-8'	140		
LCPW15-P4-8'	122		
LAB BLANK	103		

Analyst

* Unable to calculate Surrogate Recovery due to analyte concentration.

PNL REPORT NUMBER: 4648

METHOD: **PAH Analysis per OR-DEQ modified EPA method 3510 / 8270C GC/MS/SIM**
Results and Method Reporting Limits (MRL) presented in ug/L (ppb)
ND = Compound not detected

COMPOUND	LCPW15-P1-H2O Result	LCPW15-P1-H2O MRL	LAB BLANK Result	LAB BLANK MRL
Naphthalene	ND	1.0	ND	1.0
Acenaphthylene	ND	0.10	ND	0.10
Acenaphthene	ND	0.10	ND	0.10
Fluorene	ND	0.10	ND	0.10
Phenanthrene	ND	0.10	ND	0.10
Anthracene	ND	0.10	ND	0.10
Fluoranthene	ND	0.10	ND	0.10
Pyrene	ND	0.10	ND	0.10
Benzo(a)anthracene	ND	0.10	ND	0.10
Chrysene	ND	0.10	ND	0.10
Benzo(b)fluoranthene	ND	0.10	ND	0.10
Benzo(k)fluoranthene	ND	0.10	ND	0.10
Benzo(a)pyrene	ND	0.10	ND	0.10
Indeno(1,2,3-cd)pyrene	ND	0.10	ND	0.10
Dibenz(a,h)anthracene	ND	0.10	ND	0.10
Benzo(g,h,i)perylene	ND	0.10	ND	0.10

Surrogate Recoveries (percent)

Sample I.D.	NBZ	FBP	TPH
LCPW15-P1-H2O	60	53	74
LAB BLANK	78	68	80

Analyst

QC Limits

NBZ	=	Nitrobenzene-d5	35-114
FBP	=	2-Flurobiphenyl	43-116
TPH	=	Terphenyl-d14	33-141

PNL REPORT NUMBER: 4648

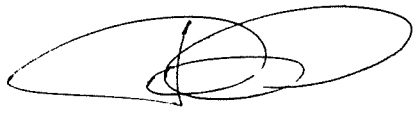
METHOD: **PAH Analysis per OR-DEQ modified EPA method 3550 / 8270C GC/MS/SIM**
Results and Method Reporting Limits (MRL) presented in ug/kg (ppb)
ND = Compound not detected

COMPOUND	LCPW15-P2-8' Result	LCPW15-P2-8' MRL	LAB BLANK Result	LAB BLANK MRL
Naphthalene	440		ND	20
Acenaphthylene	ND	100	ND	20
Acenaphthene	220		ND	20
Fluorene	340		ND	20
Phenanthrene	820		ND	20
Anthracene	100		ND	20
Fluoranthene	200		ND	20
Pyrene	680		ND	20
Benzo(a)anthracene	ND	100	ND	20
Chrysene	ND	100	ND	20
Benzo(b)fluoranthene	ND	100	ND	20
Benzo(k)fluoranthene	ND	100	ND	20
Benzo(a)pyrene	ND	100	ND	20
Indeno(1,2,3-cd)pyrene	ND	100	ND	20
Dibenz(a,h)anthracene	ND	100	ND	20
Benzo(g,h,i)perylene	260		ND	20

Note: Sample reporting limits are elevated due to heavy sample matrix interference.

Surrogate Recoveries (percent)

Sample I.D.	NBZ	FBP	TPH
LCPW15-P2-8'	68	91	134
LAB BLANK	*41	51	72



Analyst

QC Limits

NBZ	=	Nitrobenzene-d5	23-120
FBP	=	2-Flurobiphenyl	30-115
TPH	=	Terphenyl-d14	18-137

PNL REPORT NUMBER: 4648

METHOD: **Volatile Organic Compounds per EPA Method 5030 / 8260B**
Results and Method Reporting Limits (MRL) presented in ug/L (ppb)
ND = Compound not detected

COMPOUND	LCPW15-P1-H2O Result	LCPW15-P1-H2O MRL	LAB BLANK Result	LAB BLANK MRL
Chloromethane	ND	2.0	ND	2.0
Bromomethane	ND	2.0	ND	2.0
Vinyl Chloride	ND	2.0	ND	2.0
Chloroethane	ND	2.0	ND	2.0
Dichlorodifluoromethane	ND	2.0	ND	2.0
Trichlorofluoromethane	ND	2.0	ND	2.0
Iodomethane	ND	5.0	ND	5.0
Methylene Chloride	ND	2.0	ND	2.0
Methyl-tert-butylether (MTBE)	ND	1.0	ND	1.0
1,1-Dichloroethene	ND	1.0	ND	1.0
1,1-Dichloroethane	ND	1.0	ND	1.0
trans-1,2-Dichloroethene	ND	1.0	ND	1.0
cis-1,2-Dichloroethene	ND	1.0	ND	1.0
2,2-Dichloropropane	ND	1.0	ND	1.0
Chloroform	ND	1.0	ND	1.0
Bromochloromethane	ND	1.0	ND	1.0
1,2-Dichloroethane (EDC)	ND	1.0	ND	1.0
1,1-Dichloropropene	ND	1.0	ND	1.0
1,1,1-Trichloroethane	ND	1.0	ND	1.0
Carbon Tetrachloride	ND	1.0	ND	1.0
Dibromomethane	ND	1.0	ND	1.0
Bromodichloromethane	ND	1.0	ND	1.0
1,2-Dichloropropane	ND	1.0	ND	1.0
cis-1,3-Dichloropropene	ND	1.0	ND	1.0
trans-1,3-Dichloropropene	ND	1.0	ND	1.0
Trichloroethene	ND	1.0	ND	1.0
Dibromochloromethane	ND	1.0	ND	1.0
1,1,2-Trichloroethane	ND	1.0	ND	1.0
Benzene	ND	1.0	ND	1.0
1,3-Dichloropropane	ND	1.0	ND	1.0
1,2-Dibromoethane (EDB)	ND	1.0	ND	1.0
Bromoform	ND	1.0	ND	1.0
Tetrachloroethene	ND	1.0	ND	1.0
1,1,1,2-Tetrachloroethane	ND	1.0	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0	ND	1.0
Toluene	ND	1.0	ND	1.0
Chlorobenzene	ND	1.0	ND	1.0
Ethylbenzene	ND	1.0	ND	1.0
Xylenes (total)	ND	1.0	ND	1.0
Styrene	ND	1.0	ND	1.0

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PNL REPORT NUMBER: 4648

METHOD: **Volatile Organic Compounds per EPA Method 5030 / 8260B**
Results and Method Reporting Limits (MRL) presented in ug/L (ppb)
ND = Compound not detected

COMPOUND	LCPW15-P1-H2O Result	LCPW15-P1-H2O MRL	LAB BLANK Result	LAB BLANK MRL
1,3-Dichlorobenzene	ND	1.0	ND	1.0
1,4-Dichlorobenzene	ND	1.0	ND	1.0
1,2-Dichlorobenzene	ND	1.0	ND	1.0
Isopropylbenzene	ND	1.0	ND	1.0
1,2,3-Trichloropropane	ND	1.0	ND	1.0
n-Propylbenzene	ND	1.0	ND	1.0
Bromobenzene	ND	1.0	ND	1.0
2-Chlorotoluene	ND	1.0	ND	1.0
4-Chlorotoluene	ND	1.0	ND	1.0
1,3,5-Trimethylbenzene	ND	1.0	ND	1.0
1,2,4-Trimethylbenzene	ND	1.0	ND	1.0
tert-Butylbenzene	ND	1.0	ND	1.0
sec-Butylbenzene	ND	1.0	ND	1.0
n-Butylbenzene	ND	1.0	ND	1.0
p-Isopropyltoluene	ND	1.0	ND	1.0
1,2-Dibromo-3-chloropropane	ND	1.0	ND	1.0
Hexachlorobutadiene	ND	1.0	ND	1.0
Naphthalene	ND	5.0	ND	5.0
1,2,4-Trichlorobenzene	ND	1.0	ND	1.0
1,2,3-Trichlorobenzene	ND	1.0	ND	1.0

Surrogate Recoveries (percent)

Sample I.D.	DBFM	TOL	BFB
LCPW15-P1-H2O	*95	99	108
LAB BLANK	90	100	107

Analyst

QC Limits

DBFM	= Dibromofluoromethane	76-114
TOL	= Toluene-d8	88-110
BFB	= 4-Bromofluorobenzene	86-115

PNL REPORT NUMBER: 4648

METHOD: **Volatile Organic Compounds per EPA Method 5030 / 8260B**
Results and Method Reporting Limits (MRL) presented in ug/kg (ppb)
ND = Compound not detected

COMPOUND	LCPW15-P2-8' Result	LCPW15-P2-8' MRL	LAB BLANK Result	LAB BLANK MRL
Chloromethane	ND	10	ND	10
Bromomethane	ND	10	ND	10
Vinyl Chloride	ND	10	ND	10
Chloroethane	ND	10	ND	10
Dichlorodifluoromethane	ND	10	ND	10
Trichlorofluoromethane	ND	10	ND	10
Iodomethane	ND	10	ND	10
Methylene Chloride	ND	10	ND	10
Methyl-tert-butylether (MTBE)	ND	5.0	ND	5.0
1,1-Dichloroethene	ND	5.0	ND	5.0
1,1-Dichloroethane	ND	5.0	ND	5.0
trans-1,2-Dichloroethene	ND	5.0	ND	5.0
cis-1,2-Dichloroethene	ND	5.0	ND	5.0
2,2-Dichloropropane	ND	5.0	ND	5.0
Chloroform	ND	5.0	ND	5.0
Bromochloromethane	ND	5.0	ND	5.0
1,2-Dichloroethane (EDC)	ND	5.0	ND	5.0
1,1-Dichloropropene	ND	5.0	ND	5.0
1,1,1-Trichloroethane	ND	5.0	ND	5.0
Carbon Tetrachloride	ND	5.0	ND	5.0
Dibromomethane	ND	5.0	ND	5.0
Bromodichloromethane	ND	5.0	ND	5.0
1,2-Dichloropropane	ND	5.0	ND	5.0
cis-1,3-Dichloropropene	ND	5.0	ND	5.0
trans-1,3-Dichloropropene	ND	5.0	ND	5.0
Trichloroethene	ND	5.0	ND	5.0
Dibromochloromethane	ND	5.0	ND	5.0
1,1,2-Trichloroethane	ND	5.0	ND	5.0
Benzene	15		ND	5.0
1,3-Dichloropropane	ND	5.0	ND	5.0
1,2-Dibromoethane (EDB)	ND	5.0	ND	5.0
Bromoform	ND	5.0	ND	5.0
Tetrachloroethene	160		ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0	ND	5.0
Toluene	46		ND	5.0
Chlorobenzene	ND	5.0	ND	5.0
Ethylbenzene	2500		ND	5.0
Xylenes (total)	20000		ND	5.0
Styrene	ND	5.0	ND	5.0

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PNL REPORT NUMBER: 4648

METHOD: **Volatile Organic Compounds per EPA Method 5030 / 8260B**
Results and Method Reporting Limits (MRL) presented in ug/kg (ppb)
ND = Compound not detected

COMPOUND	LCPW15-P2-8' Result	LCPW15-P2-8' MRL	LAB BLANK Result	LAB BLANK MRL
1,3-Dichlorobenzene	ND	5.0	ND	5.0
1,4-Dichlorobenzene	ND	5.0	ND	5.0
1,2-Dichlorobenzene	ND	5.0	ND	5.0
Isopropylbenzene	390		ND	5.0
1,2,3-Trichloropropane	ND	5.0	ND	5.0
n-Propylbenzene	1200		ND	5.0
Bromobenzene	ND	5.0	ND	5.0
2-Chlorotoluene	ND	5.0	ND	5.0
4-Chlorotoluene	ND	5.0	ND	5.0
1,3,5-Trimethylbenzene	7200		ND	5.0
1,2,4-Trimethylbenzene	13000		ND	5.0
tert-Butylbenzene	6.5		ND	5.0
sec-Butylbenzene	480		ND	5.0
n-Butylbenzene	1400		ND	5.0
p-Isopropyltoluene	790		ND	5.0
1,2-Dibromo-3-chloropropane	ND	5.0	ND	5.0
Hexachlorobutadiene	ND	5.0	ND	5.0
Naphthalene	2000		ND	5.0
1,2,4-Trichlorobenzene	ND	5.0	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0	ND	5.0

Surrogate Recoveries (percent)

Sample I.D.	DBFM	TOL	BFB
LCPW15-P2-8'	*89	81	96
LAB BLANK	89	96	107

Analyst

QC Limits

DBFM	=	Dibromofluoromethane	70-121
TOL	=	Toluene-d8	81-117
BFB	=	4-Bromofluorobenzene	74-121

Pacific Northwest Laboratories

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Eugene, Oregon 97401
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CHAIN OF CUSTODY RECORD

Client/Company: Bergeson-Boese & Assoc.
Project Manager: Stephen Lawn
Project Code: LCPW151SC.02U
Collected By: Stephen Lawn

Site Location: Lane County Public Works
Site Address: Florence, OR
Billing Address:
P.O.No.:
Phone No.:

Lab Project Number: 4648

Samples Refrigerated (Yes) No
Samples in Proper Containers Yes No
RUSH Yes (No)

COMMENTS:

	SAMPLE I.D.	DATE	TIME	MATRIX: SOIL	MATRIX: WATER	MATRIX: OTHER	NUMBER OF CONTAINERS	NWTPH-HCID ODEQ/WDOE	NWTPH-Gasoline-x ODEQ/WDOE	NWTPH-Diesel-x ODEQ/WDOE	RBCA 8260B	BTEX 8021B	Volatile Organics EPA 624/8240/8260	PAH GC/MS SIM ODEQ	BTEX EPA 602/8020	PCBs 608/8080	Flashpoint EPA 1010	Semi-Volatile Organics EPA 625/8270	Lead 7421	TCLP Metals (3)/(8)/1311	pH	REMARKS
1	LCPW15-P1-14'	2-18	*	X						X												lube oil and diesel
2	LCPW15-P1-H2O				X								X	X								
3	LCPW15-P2-8'			X						X												" "
4	LCPW15-P3-8'			X						X												" "
5	LCPW15-P4-8'			X						X												" "
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						

RELINQUISHED BY:	COMPANY	DATE / TIME	RECEIVED BY:	COMPANY	DATE / TIME
Stephen Lawn	BB&A	2-19-03 0910	M. McLean	PNL	2/19/03 0910
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