



RIEDEL ENVIRONMENTAL  
SERVICES INC

Northwest/Alaska Region:  
P.O. Box 03096  
Portland, Oregon 97203-0096  
(503) 286-4656  
FAX (503) 283-9703

April 20, 1991

Mr. Doug Miller  
Public Utilities District #2  
Pacific County PUD  
P.O. Box 472  
Raymond, Washington 98577

Dear Doug:

On March 11, 1991, Pacific County Public Utility District #2 (PUD) requested that Riedel Environmental Services, Inc. (RES) obtain water samples from the established temporary monitoring wells on the Public Utility District's Ilwaco, Washington property. The water samples were analyzed for Total Petroleum Hydrocarbons (TPH) and Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX). These analytical methods were used for a comparison to the water sampling performed by RES in December of 1989 to determine if excavation efforts by the Public Utility District produced a decrease in the hydrocarbon constituents in the ground water.

Two water samples were obtained from each of two monitoring wells. Monitoring Well #1 (MW1) which is located at the west side of the old gasoline station building just south of highway 101, appeared to have been disturbed by the excavation performed by the PUD. In addition, the excavation near Monitoring Well #2 (MW2) which is located approximately 15 feet to the south of MW1, damaged the surface monument to the well.

In MW1, ground water was measured at 6 inches below grade with a total well depth of 33 inches. The well was installed to a depth of 7.0 feet in 1989. Since the bailer was unable to descend to a depth greater than 33 inches, RES questions the integrity of the well. The damage to the integrity of the well could be the result of the excavation disturbing the sand pack and/or bending the well casing. Although the well was disturbed and the integrity in question, approximately eight (8) gallons of ground water was bailed from the well and groundwater samples were obtained. Prior to bailing, approximately one 1 inch of product existed on the ground water surface; however, after bailing, this amount decreased significantly.

The ground water level in MW2 was measured at approximately 2.3 feet below grade and only a slight gasoline sheen appeared on the surface of the water. The total well depth was measured to approximately 5.0 feet. The well was installed in 1989 to a depth of 5.0 feet. A total of seven (7) gallons of ground water were bailed from the well and groundwater samples were obtained. The well recharged completely within five (5) minutes of bailing.

Water samples were obtained on March 19, 1991. At least three (3) well volumes of water were bailed from each well in order to obtain a representative ground water sample. The water was bailed using a decontaminated two inch (2") PVC bailer with a new length of line, and the samples were obtained using a decontaminated point source teflon bailer with a flow control valve. Ground water was transferred from the sampling bailer to laboratory supplied containers with as little disturbance as possible. Sample containers were completely filled with zero headspace, minimizing the possibility of hydrocarbon volatilization. Samples were then transported on ice to the contract laboratory following proper Chain-of-Custody procedures. A new length of line was used for each bailer at each well. A new pair of latex gloves was used at each well for bailing and a new pair worn during sampling to avoid cross contamination.



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Decontamination procedures consisted of an Alconox/tap water scrub and a distilled water rinse to remove residual organic material. Decontamination water and bailed ground water was placed in a 30-gallon 17-H drum and labeled to identify the contents and the date. At present, the drum contains approximately 15 gallons of water and remains on site along the west side of the old gasoline station building.

#### ANALYTICAL RESULTS

Ground water samples obtained from the established temporary monitoring wells at the Ilwaco, Washington Public Utilities District property were analyzed by Columbia Analytical Services, Kelso, Washington for Total Petroleum Hydrocarbons (TPH - EPA Method 418.1) and Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX - EPA Method 8020). The following is a summary of the analytical results compared to results of the water samples collected in December 1989 (laboratory report enclosed):

#### **TOTAL PETROLEUM HYDROCARBONS**

##### MW1

##### December 1989

17000 ppb

##### March 1991

4900 ppb

##### MW2

900 ppb

none detected

#### **BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENES**

##### MW1

##### December 1989

##### March 1991

Benzene	3490 ppb	400 ppb
Toluene	14900 ppb	4900 ppb
Ethylbenzene	2420 ppb	1480 ppb
Total Xylenes	13700 ppb	7090 ppb

##### MW2

##### December 1989

##### March 1991

Benzene	78 ppb	none detected
Toluene	9 ppb	none detected
Ethylbenzene	19 ppb	20 ppb
Total Xylenes	122 ppb	103 ppb

none detected - results at or above the reporting limit for the method used.  
ppb - part per billion (ug/liter)

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SUMMARY

Two (2) monitoring wells were installed by RES in December 1989 to determine levels of hydrocarbon contamination in the soil at the PUD Ilwaco, Washington property. This hydrocarbon contamination occurred during removal of underground storage tanks prior to December 1989. Analytical results from soil and groundwater samples, collected by RES at the time of installation of the monitoring wells, indicated high levels of hydrocarbon contamination. Therefore, the PUD excavated contaminated soil in the vicinity of the monitoring wells. On March 19, 1991, RES resampled the two (2) monitoring wells for comparison to the analytical results from ground water samples collected in December 1989. This comparison indicates a decrease in quantity of all analyzed hydrocarbon constituents.

Enclosed please find sections WAC 173-340-704, 705, 706 and 720 of the Washington State Department of Ecology's Model Toxics Control Act Cleanup regulations. These sections outline the groundwater cleanup standards for the State of Washington. It is likely that under Method A, the hydrocarbon constituent cleanup levels appropriate for this site would be at least as stringent as the following:

Total Petroleum Hydrocarbons	1000 ppb
Benzene	5.0 ppb
Toluene	40.0 ppb
Ethylbenzene	30.0 ppb
Total Xylenes	20.0 ppb

RES appreciates the opportunity to assist the Public Utilities District with their environmental concerns. If you should require further environmental assistance, or should you have any questions or comments, please feel free to call me at 1-800-334-0004, extension 406.

Sincerely,

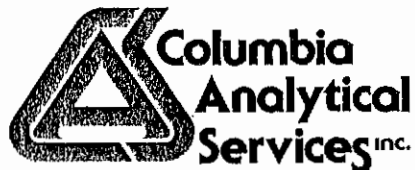


Stacey A. Moore  
Ground Water Services

SM/ko  
Ref:PUD.SAM

Enclosure

cc: G. Opdahl



April 12, 1991

Stacey Moore  
Riedel Environmental Services, Inc.  
P.O. Box 03096  
Portland, OR 97203-0096

Re: Pacific County PUD/Project #2730-1721

Dear Stacey:

Enclosed are the results of the water samples submitted to our lab on March 20, 1991. Preliminary results were transmitted via facsimile on April 10, 1991. For your reference, our service request number for this work is K911511.

All analyses were performed in accordance with the laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

A handwritten signature in cursive script that reads "Colin B. Elliott".

Colin B. Elliott  
Senior Project Chemist

CBE/tlt

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Riedel Environmental Services, Inc.  
Submitted By: Stacey Moore  
Project: Pacific County PUD/#2730-1721  
Sample Matrix: Water

Date Received: 03/20/91  
Date Extracted: 04/10/91  
Date Analyzed: 04/10/91  
Work Order #: K911511

Total Recoverable Petroleum Hydrocarbons  
EPA Method 418.1  
mg/L (ppm)

Sample Name	Lab Code	MRL	Result
PUDMW1	K1511-1	0.5	4.9
PUDMW2	K1511-2	0.5	ND
Method Blank	K1511-MB	0.5	ND

MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

Approved by Colin Elliott Date 4/12/91

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Riedel Environmental Services, Inc.  
Submitted By: Stacey Moore  
Project: Pacific County PUD/#2730-1721  
Sample Matrix: Water

Date Received: 03/20/91  
Work Order #: K911511

BTEX  
EPA Methods 5030/8020

Sample Name:	PUDMW1	PUDMW2
Lab Code:	K1511-1	K1511-2
Date Analyzed:	03/25/91	03/27/91

Analytes	Units	MRL		
Benzene	$\mu\text{g/L}$ (ppb)	0.5	400	ND
Toluene	$\mu\text{g/L}$ (ppb)	1	4,900	ND
Ethylbenzene	$\mu\text{g/L}$ (ppb)	1	1,480	20
Total Xylenes	$\mu\text{g/L}$ (ppb)	1	7,090	103

MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

Approved by

*Colin Elliott*

Date

*4/12/91*

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Riedel Environmental Services, Inc.  
Submitted By: Stacey Moore  
Project: Pacific County PUD/#2730-1721  
Sample Matrix: Water

Date Received: 03/20/91  
Work Order #: K911511

BTEX  
EPA Methods 5030/8020

Sample Name:  
Lab Code:  
Date Analyzed:

Method Blank  
K1511-MB1  
03/25/91

Method Blank  
K1511-MB2  
03/27/91

Analytes	Units	MRL		
Benzene	$\mu\text{g/L}$ (ppb)	0.5	ND	ND
Toluene	$\mu\text{g/L}$ (ppb)	1	ND	ND
Ethylbenzene	$\mu\text{g/L}$ (ppb)	1	ND	ND
Total Xylenes	$\mu\text{g/L}$ (ppb)	1	ND	ND

MRL Method Reporting Limit  
ND None Detected at or above the method reporting limit

Approved by

*Colin Elliott*

Date

*4/12/91*

**APPENDIX A**  
**LABORATORY QC RESULTS**



COLUMBIA ANALYTICAL SERVICES, INC.

Client: Riedel Environmental Services, Inc.  
Submitted By: Stacey Moore  
Project: Pacific County PUD/#2730-1721  
Sample Matrix: Water

Date Received: 03/20/91  
Date Analyzed: 03/25,27/91  
Work Order #: K911511

QA/QC Report  
Surrogate Recovery Summary  
BTEX  
EPA Methods 5030/8020

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
PUDMW1	K1511-1	104
PUDMW2	K1511-2	87.8
Method Blank	K1511-MB1	80.5
Method Blank	K1511-MB2	97.7

CAS Acceptance Criteria 60-120

Approved by

*Colin Elliott*

Date

*4/12/91*

PROJECT NAME

NO. NO.

PACIFIC COUNTY PUD

4130-1721

SAMPLERS: (Signature)

*Steven A Mon*

STAT. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CON. TAINERS
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PUD MW1 3/19/11 1400 ✓ PUD Monitoring Well 1, Ilwaco 4

PUD MW2 3/19/11 1430 ✓ PUD Monitoring Well 2, Ilwaco 4

REMARKS

water

water

BACK EPA 8020 (TPH) EPA 418.1

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
<i>Steven A Mon</i>	3-20-91 16:18	<i>Mike Custer</i>	3-20-91 19:00	<i>Mike Custer</i>	3-20-91 19:00	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Date/Time	Remarks	
		<i>of Bruno</i>		3/20/91 19:00		

"Imagining a cleaner world"

Spot Samples:  
☐ Accepted ☐ Declined



RIEDEL  
ENVIRONMENTAL SERVICES, INC.

Signature