

Request For Assistance Form

and the approximate date? 10/2/97

Please submit the following with this form to the appropriate Ecology Office (see back of form)

☒ Site Summary (ECY 020-73)	☐ Any other existing reports on this site
A check or money order for \$500 made out to "Department of Ecology"	
Applicant completes this section:	
Applicant Name: MARTY CREMER Phone: (508) 248-1517	Applicant Address: 5528 NW DEWEY AVE Site Location: 1300 W. 12th St. PORTLAND, OR 97210 TOWN OF OREGON
Site Name:	Alternate Name: Tosco Bulk Plant 1785 Site Owner Name: Tosco Distribution Company Phone: (503) 906-7506
Site Owner Address: 9645 SOUTH F.E. SEARLES RD. SEASIDE, CA 90670	☒

I, MARTIN GRATER, request the assistance of the Department of Ecology. With this Application I have enclosed \$500. I understand that this payment is the equivalent of approximately eight (8) hours of staff review and/or assistance on the cleanup of my contaminated site; actual charges will depend on specific staff and charge-out rates of that staff; if total charges are greater than \$500, I will be billed for and I agree to pay the remainder; and any excess payments will be refunded to me.

Signature of Applicant

Date _____

<i>For Office Use Only</i>					
Date	Hours	Rate	Stat Name		
Date	Hours	Rate	Stat Name		
Date	Hours	Rate	Stat Name		
Date	Hours	Rate	Stat Name		
For FISCAL USE ONLY Amount Date Pd Rec # 173-02-94-005000-5000 <u>LUST/NON-LUST OFFICE</u>					
LUST/Non-LUST LUST - 30 Non-LUST - 20 NWRO - 40 SWRO - 80 ERO - 60 GRO - 70 IND - 80 HDOR - 90					

Site Summary

This summary is a required component of your request for assistance under the Voluntary Cleanup Program

Which of the following apply? ☒ Requesting assistance on a planned cleanup.

☐ Requesting assistance on an ongoing cleanup.

☐ Requesting review of a completed cleanup.

Note: If you submitted your Request for Assistance (BCY 020-74) previously without a Site Summary (this form) or this is a revised Site Summary, please provide this completed form to Ecology at least five (5) working days prior to the meeting/site visit/documentation review (whichever comes first).

A) Site Identification:

Name of Site: INMAN OIL COMPANY
Alternate Name(s) for Site: TOSCO Bulk Plant 1785

Street Address of Site: 1300 W. 13TH STREET
City: VERMILION State: WA Zip: _____

County: _____ UBI Number: _____
Mailing Address (if different from above): _____

City: _____ State: _____ Zip: _____

Township _____ Range _____ Section _____ Quarter-Quarter _____
Latitude: _____ Degree _____ Minute _____ Second _____
Longitude: _____ Degree _____ Minute _____ Second _____

Method Used to calculate Lat/Long: _____
How large (in Acres) is the site? _____

Please attach two maps to this form.

1) An area map, showing general location of the site in relation to surrounding bodies of water, cities, highways, and streets. (Please mark site location.)

2) A site diagram showing surrounding cross-streets, labeled building outlines, sampling and well locations, etc..

B) Person/Organization making request for Assistance/Review:

Name: MARTY CRAMER
Firm: TOSCO DISTRIBUTION COMPANY
Street Address: 5528 NW DOANE AVE
City: PORTLAND State: OR Zip: 97210
Telephone Number: (503) 248-1517 Extension: N/A
Fax Number: (503) 248-1592 E-Mail Address: LMCDMARC@ATTN.76PRODUCTS.COM

Remediation:

Has any site cleanup work been done at the site? Yes No X In-progress

If yes, please continue to answer the remaining questions in this section to the best of your ability.

When was the cleanup work done? _____

Were results reported to Ecology? Yes _____ No _____ Date _____

Describe: (list reports in "E" below)

Does contamination remain on-site after cleanup activities? Yes _____ No _____

If yes, describe: (list reports in "E" below)

For each contaminant listed in Part C Release Information (above), please describe the quantity of the contaminant (in pounds) which was removed or treated as a result of the cleanup activities:

Contaminant	Class	Pounds of Contaminant:	for Office Use
		Incinerated	Washed
		Removed	Treated
		Contained	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

As a result of the cleanup:

How many acres of land were returned to *unrestricted* use? _____

How many acres of land were returned to *restricted* use? _____

How many cubic feet of contaminated soil was remediated or contained? _____

How many gallons of contaminated groundwater was remediated or contained? _____

How many people are now at reduced risk as a result of the cleanup action? _____

How many pounds of potential pollution was prevented as a result of the cleanup action? _____

Sl. No.	Particulars	Amount	Sl. No.	Particulars	Amount
1	...	...	1	...	...
2	...	...	2	...	...
3	...	...	3	...	...
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Sl. No.	Particulars	Amount	Sl. No.	Particulars	Amount
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86	...	...	86	...	...

[illegible]

Is additional information concerning the contaminants treated or removed, or cleanup or remediation methods used available in a database? Yes No X If yes, what program software is used? _____ Is a copy included for our use? Yes _____ No X

F) Property Type: Commercial Industrial Residential X

Property currently being used? X Yes No No
Plans for change in use? Yes X No No If yes,

(G) Standard Industrial Classification (SIC) Codes:

5171, 29927

Does the facility have a

Complete this table for ALL tanks, whether underground (UST) or aboveground (AST),

(* Unleaded, leaded, bunker-C, waste oil, heating oil, aviation fuel, other (identity))
(** Tank status: Left in Place, Removed, Closed in Place)

encountered?

[illegible]

157

(Please photocopy and attach copies if additional owners and/or operators are known.)

(Please photocopy and attach copies if additional owners and/or operators are known.)

K) Other Involved Parties:
(Please photocopy and attach copies if additional parties are involved)

1) Environmental Consultant: _____
Representing: _____
Firm: _____
Street Address: _____
City: _____ State: _____ Zip: _____
Telephone Number: () _____ Extension: _____
Fax Number: () _____ E-Mail Address: _____

2) Site Control Person if other than Owner/Operator. (This must be a person who is on-site during normal working hours and is authorized to answer questions about the site, or a person who is available during normal business hours and has knowledge about the site and the remediations)

Name: Dennis McArthur
Relation to site/owner/operator: Operator
Firm: Imperial Co.
Street Address: 1300 W. 12th St.
City: Vancouver State: WA Zip: _____
Telephone Number: (360) 695-7600 Extension: N/A
Fax Number: () _____
Dates of Involvement with site: 1970 to present

3) Name: _____
Relation to site/owner/operator: _____
Firm: _____
Street Address: _____
City: _____ State: _____ Zip: _____
Telephone Number: () _____ Extension: _____
Fax Number: () _____
Dates of Involvement with site: _____ to _____

4) Name: _____
Relation to site/owner/operator: _____
Firm: _____
Street Address: _____
City: _____ State: _____ Zip: _____
Telephone Number: () _____ Extension: _____
Fax Number: () _____
Dates of Involvement with site: _____ to _____

WELL LOGS

APPENDIX B

EXPLORATORY BORING LOG

MW-4

Boring Number:

Sheet:

1 OF 2

Total Depth:

50 FEET

Date Started/Completed: SEPTEMBER 20, 1999

Ground Level Elevation: ---

Measuring Point Elevation: 100.00 FEET (LOCAL DATUM)

Static Water Level: 56.45 FEET (LOCAL DATUM) Date: 9/22/99

Northings: --- Eastings: ---

Project Name: EMERALD PETROLEUM

Project Number: 275 3454 003

Location: INMAN OIL COMPANY

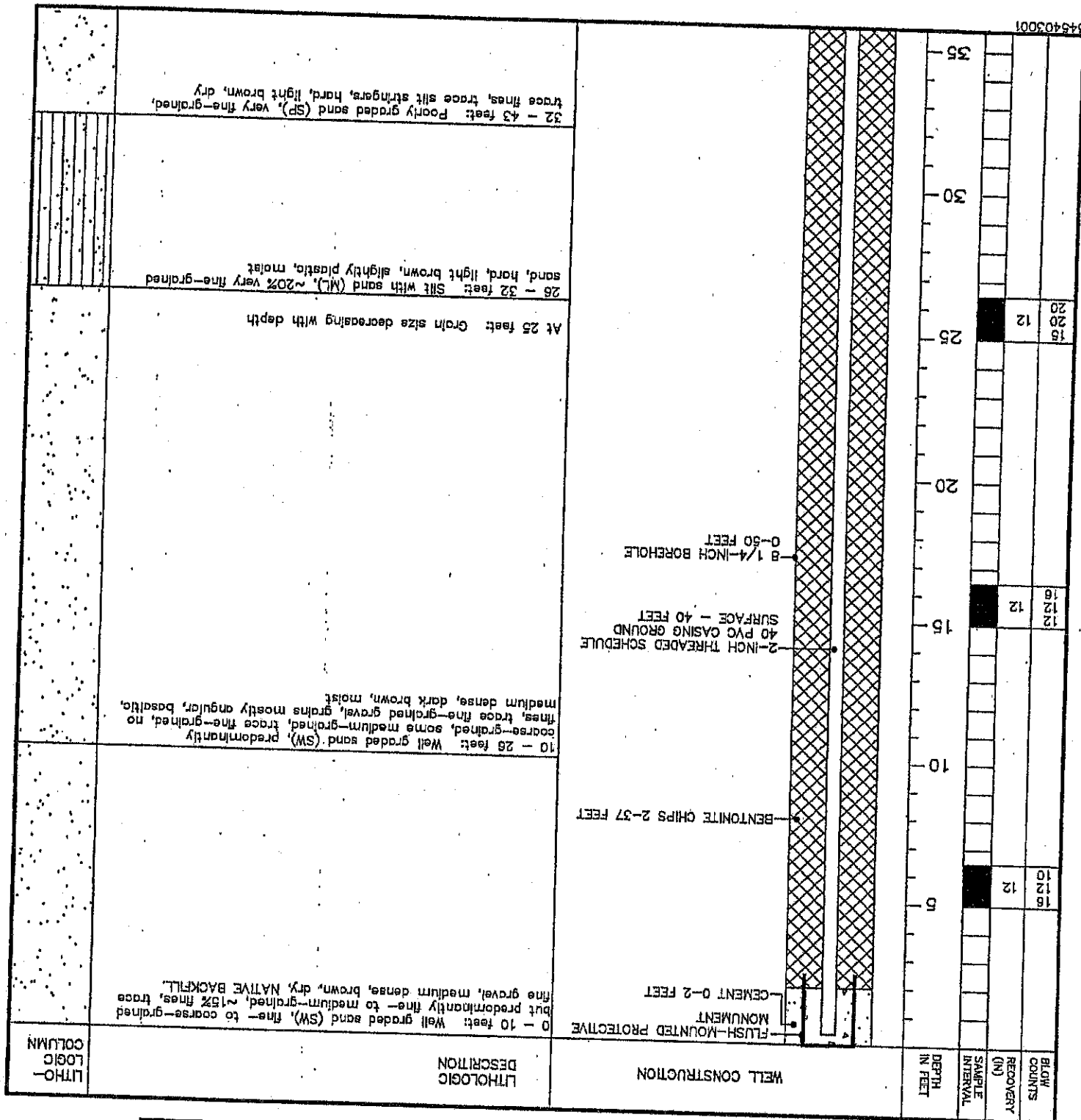
PMX Representative: ANNE ACKERMAN

Drilled By: CASCADE DRILLING

Drill Method: HOLLOW - STEM AUGER

Soil Sample Method: SPLIT-SPOON

Groundwater Sample Method: N/A

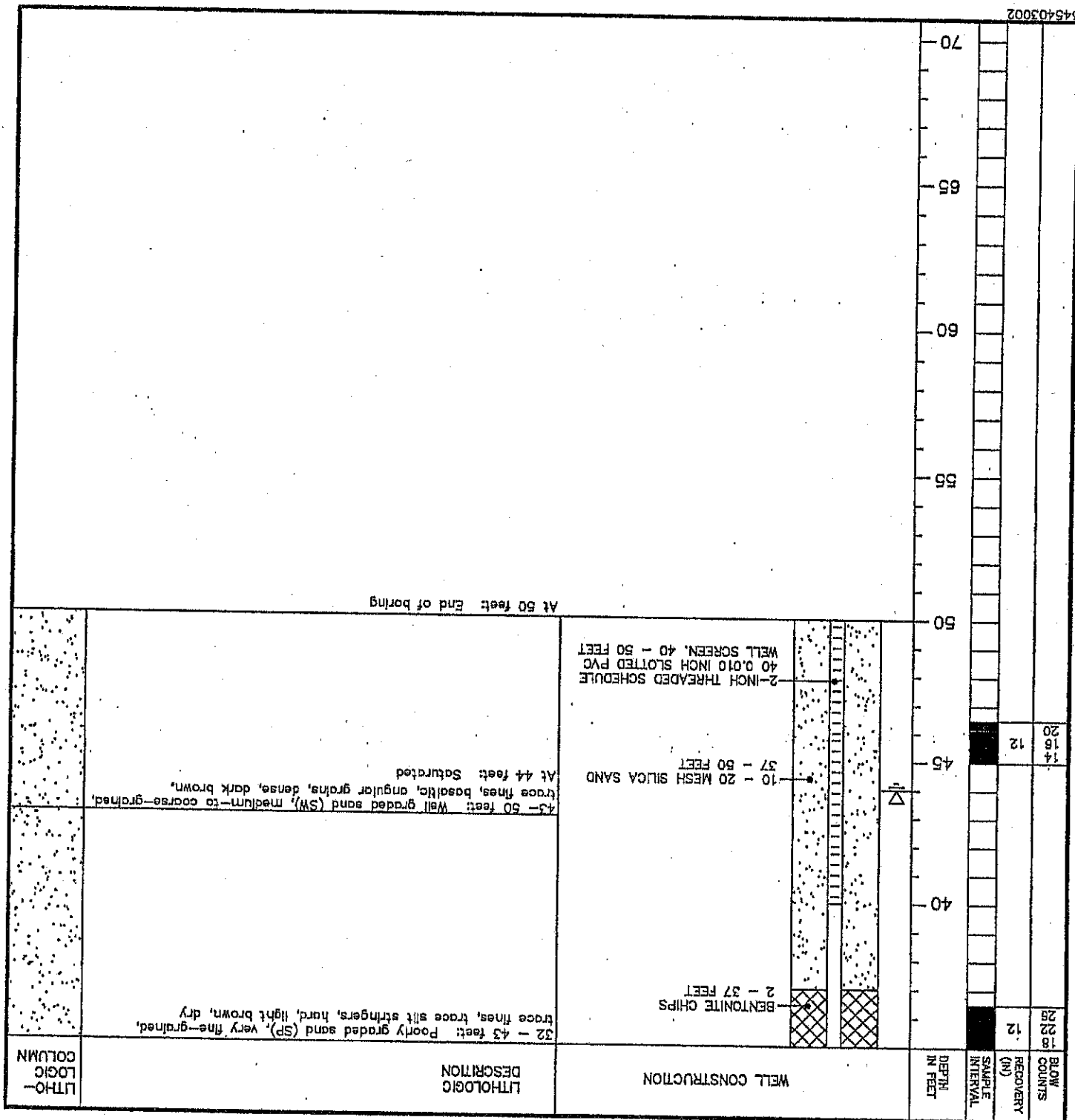


EXPLORATORY BORING LOG

Parametrix, Inc.

Project Name: EMERALD PETROLEUM
 Project Number: 275 3454 003
 Location: INMAN OIL COMPANY
 PMX Representative: ANNE ACKERMAN
 Drilled By: CASCADE DRILLING
 Drill Method: HOLLOW - STEM AUGER
 Soil Sample Method: SPLIT-SPOON
 Groundwater Sample Method: N/A

Boring Number: MW-4
 Sheet: 2 OF 2
 Total Depth: 50 FEET
 Date Started/Completed: SEPTEMBER 20, 1999
 Ground Level Elevation: _____
 Measuring Point Elevation: 100.00 FEET (LOCAL DATUM)
 Static Water Level: 58.45 FEET (LOCAL DATUM) Date: 9/22/99
 Northings: _____ Eastings: _____



345403002

EXPLORATORY BORING LOG

MW-5

Boring Number:

Sheet: 1 OF 2

Total Depth: 50 FEET

Date Started/Completed: SEPTEMBER 20, 1999

Ground Level Elevation: ---

Measuring Point Elevation: 100.67 FEET (LOCAL DATUM)

Static Water Level: 56.44 FEET (LOCAL DATUM) Date: 9/22/99

North: --- Easting: ---

Project Name: EMERALD PETROLEUM

Project Number: 275 3454 003

Location: INMAN OIL COMPANY

PMX Representative: ANNE ACKERMAN

Drilled By: CASCADE DRILLING

Drill Method: HOLLOW - STEM AUGER

Soil Sample Method: SPLIT-SPOON

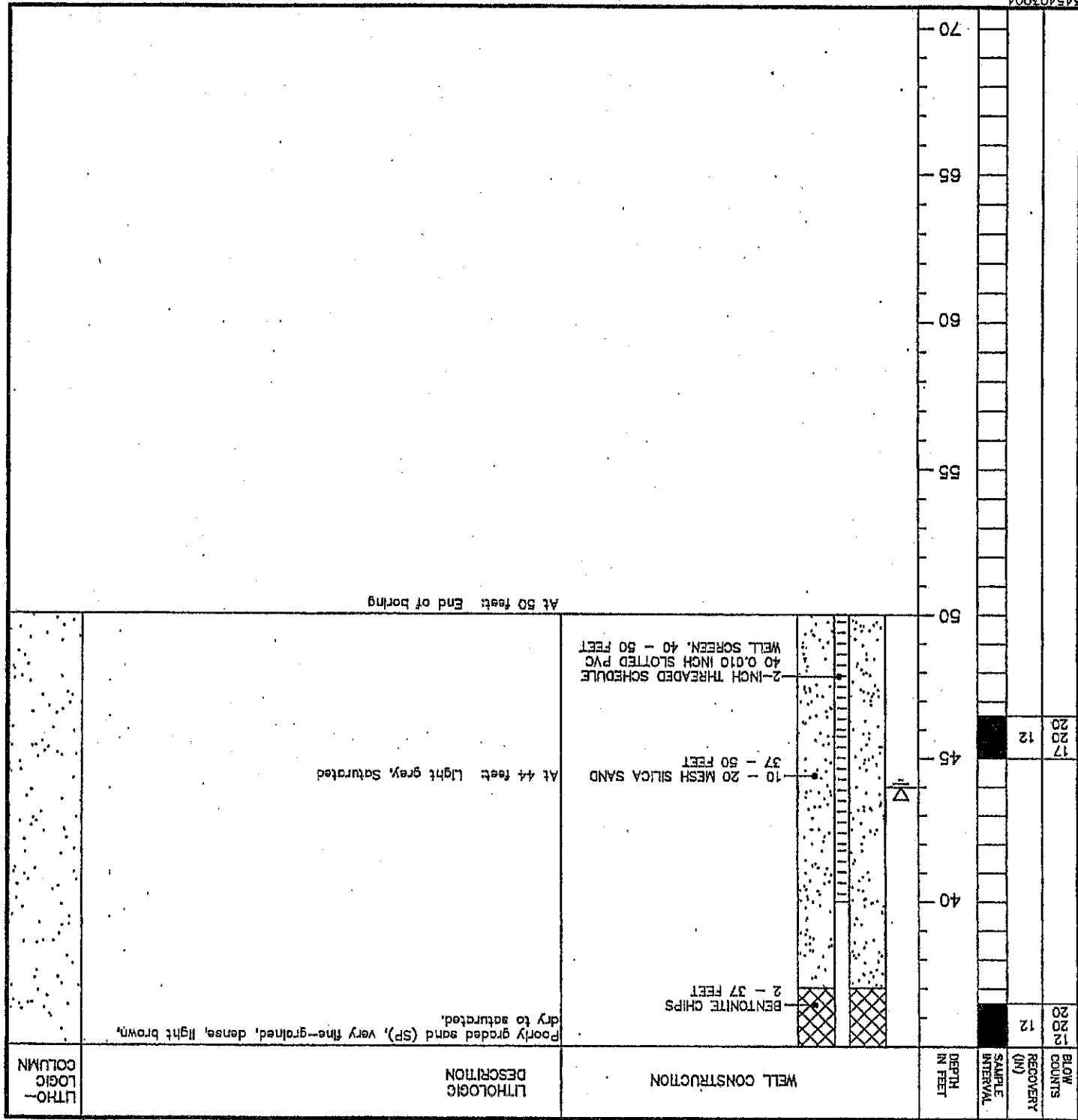
Groundwater Sample Method: N/A

BLOW COUNTS	RECOVERY (%)	SAMPLE INTERVAL	DEPTH IN FEET	WELL CONSTRUCTION	LITHOLOGIC DESCRIPTION	LITHO- LOGIC COLUMN
20	12	19	5	FLUSH-MOUNTED PROTECTIVE MONUMENT CEMENT 0-2 FEET	0 - 10 feet: Well graded sand with silt (SW), fine to coarse-grained, fairly even grain size distribution, ~20% fines, dense, light brown, dry	
12	12	17	10	BENTONITE CHIPS 2-37 FEET	10 - 20 feet: Well graded sand (SW), medium to coarse-grained, trace fine-grained gravel, mostly basaltic grains, dense, moist	
12	12	16	15	2-INCH THREADED SCHEDULE 40 PVC CASING GROUND SURFACE - 40 FEET	20 - 50 feet: Poorly graded sand (SP), very fine-grained, dense, light brown, dry to saturated	
12	12	20	25	8 1/4-INCH BOREHOLE 0-50 FEET		
12	12	26	30			
12	12	28	35			

345403003

EXPLORATORY BORING LOG

Project Name: EMERALD PETROLEUM		Boring Number: MW-5	
Project Number: 275 3454 003		Sheet: 2 OF 2	
Location: INMAN OIL COMPANY		Total Depth: 50 FEET	
PMX Representative: ANNE ACKERMAN		Date Started/Completed: SEPTEMBER 20, 1999	
Drilled By: CASCADE DRILLING		Ground Level Elevation: -----	
Drill Method: HOLLOW - STEM AUGER		Measuring Point Elevation: 100.67 FEET (LOCAL DATUM)	
Soil Sample Method: SPLIT-SPOON		Static Water Level: 58.44 FEET (LOCAL DATUM)	
Groundwater Sample Method: N/A		9/22/99	
Northing: -----		Easting: -----	



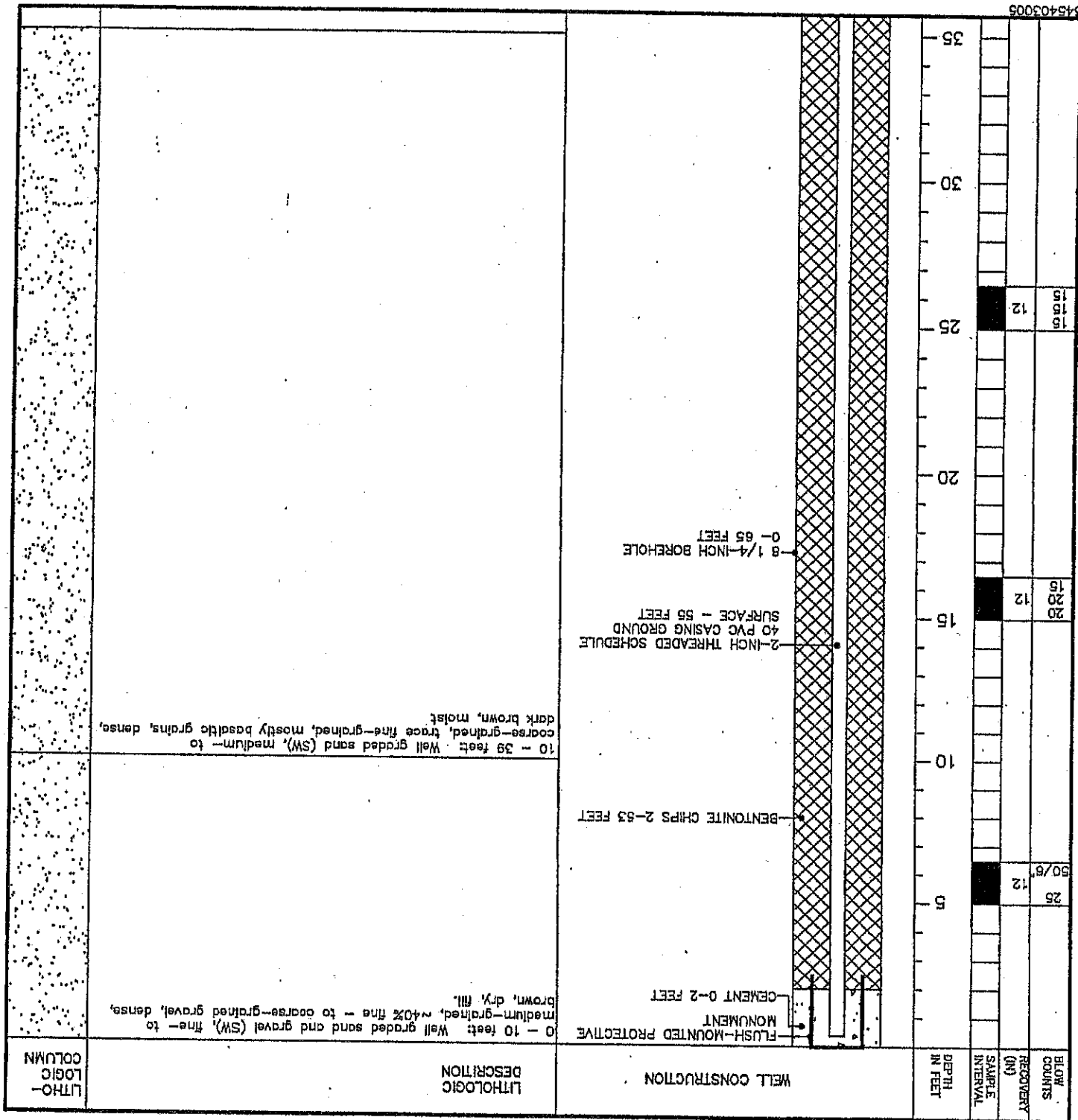
EXPLORATORY BORING LOG

Parametrix, Inc.

Boring Number: **MW-6**

Sheet: 1 OF 2
Total Depth: 65 FEET
Date Started/Completed: SEPTEMBER 21, 1999
Ground Level Elevation: ---
Measuring Point Elevation: 114.39 FEET (LOCAL DATUM)
Static Water Level: 56.44 FEET (LOCAL DATUM) Date: 9/22/99
Northing: --- Easting: ---

Project Name: EMERALD PETROLEUM
Project Number: 275 3454 003
Location: INMAN OIL COMPANY
PMX Representative: ANNE ACKERMAN
Drilled By: CASCADE DRILLING
Drill Method: HOLLOW - STEM AUGER
Soil Sample Method: SPLIT-SPOON
Groundwater Sample Method: N/A



345403005

EXPLORATORY BORING LOG

MW-6

Boring Number:

2 OF 2

Sheet:

65 FEET

Total Depth:

Date Started/Completed: SEPTEMBER 21, 1999

Ground Level Elevation: ---

Measuring Point Elevation: 114.39 FEET (LOCAL DATUM)

Static Water Level: 56.44 FEET (LOCAL DATUM) Date: 9/22/99

Northings: --- Eastings: ---

Project Name: EMERALD PETROLEUM

Project Number: 275 3454 003

Location: INMAN OIL COMPANY

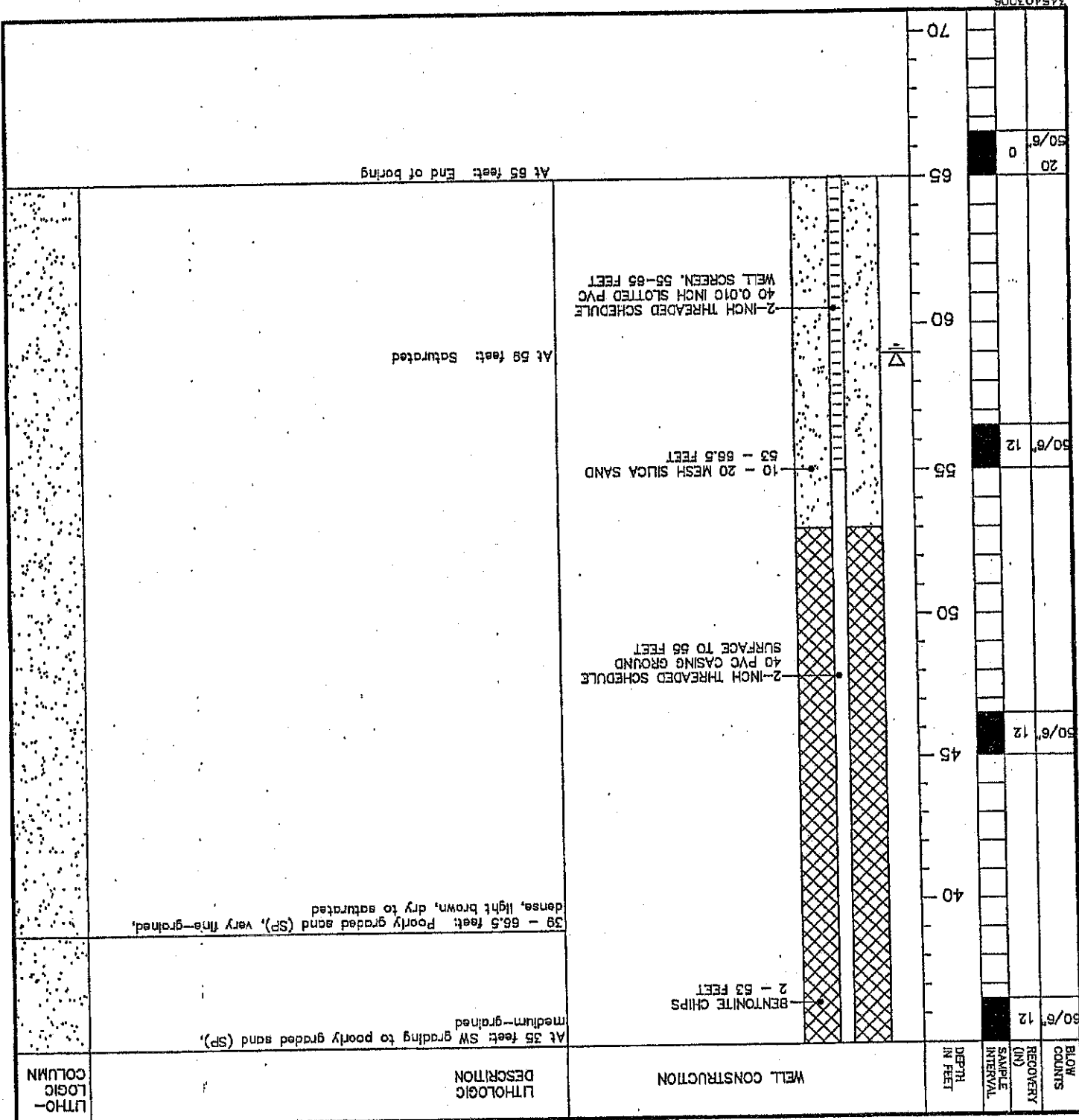
PMX Representative: ANNE ACKERMAN

Drilled By: CASCADE DRILLING

Drill Method: HOLLOW -- STEM AUGER

Soil Sample Method: SPLIT-SPOON

Groundwater Sample Method: N/A



LABORATORY DOCUMENTATION

APPENDIX C



Seattle 18939 120th Avenue NE, Suite 101, Bothell, WA 98011-9508
 Spokane East 11115 Montgomery, Suite B, Spokane, WA 99208-4776
 Portland 8405 SW Nimbus Avenue, Beaverton, OR 97008-7132
 Bend 20382 Empire Avenue, Suite F-1, Bend, OR 97701-5711
 541.383.9310 fax 541.382.7585

Parametrix, Inc.-(PMX)
 700 NE Multnomah, Suite 1160
 Portland, OR 97232
 Project: Emerald Petroleum
 Project Number: N/A
 Project Manager: Anne Ackerman

Sampled: 9/8/99 to 9/10/99
 Received: 9/10/99
 Reported: 10/26/99 14:27

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
--------------------	--------------------------	---------------	--------------

PMX-1,4'	P909205-01	Soil	9/8/99
PMX-2,7'	P909205-06	Soil	9/8/99
PMX-3,2'	P909205-08	Soil	9/8/99
PMX-3,10'	P909205-10	Soil	9/8/99
PMX-4,12'	P909205-13	Soil	9/8/99
PMX-5,10'	P909205-16	Soil	9/8/99
PMX-6,14'	P909205-20	Soil	9/8/99
PMX-7,10'	P909205-23	Soil	9/9/99
PMX-8,5'	P909205-26	Soil	9/9/99
PMX-8,12'	P909205-29	Soil	9/9/99
PMX-9,2'	P909205-30	Soil	9/9/99
PMX-9,12'	P909205-33	Soil	9/9/99
PMX-10,9'	P909205-36	Soil	9/9/99
PMX-10,12'	P909205-37	Soil	9/9/99
PMX-11,12'	P909205-42	Soil	9/9/99
PMX-12,2'	P909205-43	Soil	9/9/99
PMX-13,10'	P909205-49	Soil	9/10/99
PMX-14,3'	P909205-51	Soil	9/10/99
PMX-15,3'	P909205-52	Soil	9/10/99
PMX-16,6'	P909205-54	Soil	9/10/99

North Creek Analytical - Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document.
 This analytical report must be reproduced in its entirety

Philip Nerenberg, Laboratory Manager
Philip Nerenberg

North Creek Analytical, Inc.
 Environmental Laboratory Network



Seattle 1899 120th Avenue NE, Suite 101, Bothell, WA 98011-9508
 425.420.9200 fax 425.420.9210
 East 1116 Montgomery, Suite B, Spokane, WA 99206-4776
 509.924.9200 fax 509.924.9290
 Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
 503.506.9200 fax 503.506.9210
 Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
 541.883.9310 fax 541.882.7598

Parametrix, Inc.-(PMX)
 700 NE Multnomah, Suite 1160
 Portland, OR 97232

Project: Emerald Petroleum
 Project Number: N/A
 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99
 Received: 9/10/99
 Reported: 10/26/99 14:27

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
PMX-16,10'	P909205-55	Soil	9/10/99
PMX-17,6'	P909205-57	Soil	9/10/99
PMX-18,6'	P909205-60	Soil	9/10/99
PMX-19,2'	P909205-62	Soil	9/10/99
PMX-20,6'	P909205-66	Soil	9/10/99

North Creek Analytical - Portland

Handwritten signature

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network

The results in this report apply to the samples analyzed in accordance with the chain of custody document.
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Seattle 18939 120th Avenue NE, Suite 101, Bothell, WA 98011-9508
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 Portland 8406 SW Nimbus Avenue, Beaverton, OR 97008-7132
 Bend 20832 Empire Avenue, Suite F-1, Bend, OR 97701-5711
 541.383.8310 fax 541.882.7588

Parametrix, Inc.-(PMX) Project: Emerald Petroleum
 700 NE Multnomah, Suite 1160 Project Number: N/A
 Portland, OR 97232 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Gasoline Hydrocarbons per NW TPH-Gx Method
 North Creek Analytical - Portland

Analyte	Batch	Date	Date	Surrogate	Reporting	Limit	Result	Units	Notes*
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PMX-14'	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	P909205-01	50.0-150	7.15	mg/kg dry	
	Surrogate: 4-BFB	"	"	"			96.7	%	

PMX-2.7'	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	P909205-06	50.0-150	5.27	mg/kg dry	
	Surrogate: 4-BFB	"	"	"			88.8	%	

PMX-3.2'	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	P909205-08	50.0-150	6.28	mg/kg dry	
	Surrogate: 4-BFB	"	"	"			100	%	

PMX-3.10'	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	P909205-10	50.0-150	4.06	mg/kg dry	
	Surrogate: 4-BFB	"	"	"			79.7	%	

PMX-4.12'	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	P909205-13	50.0-150	4.57	mg/kg dry	
	Surrogate: 4-BFB	"	"	"			70.7	%	

PMX-5.10'	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	P909205-16	50.0-150	3.97	mg/kg dry	
	Surrogate: 4-BFB	"	"	"			85.3	%	

PMX-6.14'	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	P909205-20	50.0-150	3.42	mg/kg dry	
	Surrogate: 4-BFB	"	"	"			88.8	%	

PMX-7.10'	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	P909205-23	50.0-150	3.81	mg/kg dry	
	Surrogate: 4-BFB	"	"	"			81.6	%	

PMX-8.5'	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	P909205-26	50.0-150	3.99	mg/kg dry	
	Surrogate: 4-BFB	"	"	"			91.8	%	

PMX-8.12'	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	P909205-29	50.0-150	4.24	mg/kg dry	
	Surrogate: 4-BFB	"	"	"			92.9	%	

North Creek Analytical - Portland

*Refer to end of report for text of notes and definitions.

Phillip Nerenberg, Laboratory Manager

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Parametrix, Inc. (PMX) Project: Emerald Petroleum
 700 NE Multnomah, Suite 1160 Project Number: N/A
 Portland, OR 97232 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Gasoline Hydrocarbons per NW TPH-Gx Method
 North Creek Analytical - Portland

Analyte	Batch	Date	Prepared	Date	Analyzed	Surrogate	Reporting	Limit	Result	Units	Notes
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PMX-9.2	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	"	50.0-150	Soil	mg/kg dry	9.01	98.7	%
Surrogate: 4-BFB											
P909205-30											

PMX-9.12	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	"	50.0-150	Soil	mg/kg dry	3.90	88.0	%
Surrogate: 4-BFB											
P909205-33											

PMX-10.9	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	"	50.0-150	Soil	mg/kg dry	3.54	86.6	%
Surrogate: 4-BFB											
P909205-36											

PMX-10.12	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	"	50.0-150	Soil	mg/kg dry	4.20	93.2	%
Surrogate: 4-BFB											
P909205-37											

PMX-11.12	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	"	50.0-150	Soil	mg/kg dry	4.55	86.6	%
Surrogate: 4-BFB											
P909205-42											

PMX-12.2	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	"	50.0-150	Soil	mg/kg dry	6.86	92.5	%
Surrogate: 4-BFB											
P909205-43											

PMX-13.10	Gasoline Range Hydrocarbons	0990344	9/13/99	9/15/99	"	50.0-150	Soil	mg/kg dry	7.23	94.3	%
Surrogate: 4-BFB											
P909205-49											

PMX-14.3	Gasoline Range Hydrocarbons	0990344	9/13/99	9/16/99	"	50.0-150	Soil	mg/kg dry	ND	66.8	%
Surrogate: 4-BFB											
P909205-51											

PMX-15.3	Gasoline Range Hydrocarbons	0990345	9/13/99	9/14/99	"	50.0-150	Soil	mg/kg dry	ND	84.6	%
Surrogate: 4-BFB											
P909205-52											

PMX-16.6	Gasoline Range Hydrocarbons	0990345	9/13/99	9/14/99	"	50.0-150	Soil	mg/kg dry	6.49	86.6	%
Surrogate: 4-BFB											
P909205-54											

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Parametrix, Inc.-(PMX)
 Project: Emerald Petroleum
 Sampled: 9/8/99 to 9/10/99
 Project Number: N/A
 Received: 9/10/99
 Reported: 10/26/99 14:27
 Project Manager: Anne Ackerman
 Portland, OR 97232

Gasoline Hydrocarbons per NW TPH-Gx Method North Creek Analytical - Portland

Analyte	Batch	Date	Date	Analyzed	Surrogate	Reporting	Limit	Result	Units	Notes*
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PMX-16.10	Gasoline Range Hydrocarbons	0990345	9/13/99	9/14/99	P909205-55	50.0-150	ND	2.50	mg/kg dry	84.8
	Surrogate: 4-BFB	"	"	"					%	
PMX-17.6	Gasoline Range Hydrocarbons	0990345	9/13/99	9/14/99	P909205-57	50.0-150	12.8	2.50	mg/kg dry	78.0
	Surrogate: 4-BFB	"	"	"					%	
PMX-18.6	Gasoline Range Hydrocarbons	0990345	9/13/99	9/14/99	P909205-60	50.0-150	ND	2.50	mg/kg dry	81.7
	Surrogate: 4-BFB	"	"	"					%	
PMX-19.2	Gasoline Range Hydrocarbons	0990345	9/13/99	9/14/99	P909205-62	50.0-150	ND	2.50	mg/kg dry	89.4
	Surrogate: 4-BFB	"	"	"					%	
PMX-20.6	Gasoline Range Hydrocarbons	0990345	9/13/99	9/14/99	P909205-66	50.0-150	ND	2.50	mg/kg dry	86.6
	Surrogate: 4-BFB	"	"	"					%	

North Creek Analytical - Portland

*Refer to end of report for text of notes and definitions.



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Parametrix, Inc. (PMX) Project: Emerald Petroleum
 700 NE Multnomah, Suite 1160 Project Number: N/A
 Portland, OR 97232 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99-14:27

Diesel and Heavy Range Hydrocarbons per NWTPH-DX Method North Creek Analytical - Portland

Analyte	Batch	Date	Date	Surrogate	Limit	Result	Units	Notes*
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PMX-1.4f	Diesel Range Organics	0990406	9/14/99	9/15/99	25.0	89.7	mg/kg dry	1
	Heavy Oil Range Hydrocarbons	"	"	"	50.0	295	"	
	Surrogate: 1-Chlorooctadecane	"	"	"	50.0-150	95.0	%	

PMX-2.7f	Diesel Range Organics	0990406	9/14/99	9/15/99	25.0	ND	mg/kg dry	
	Heavy Oil Range Hydrocarbons	"	"	"	50.0	ND	"	
	Surrogate: 1-Chlorooctadecane	"	"	"	50.0-150	105	%	

PMX-3.2f	Diesel Range Organics	0990406	9/14/99	9/15/99	250	1560	mg/kg dry	
	Heavy Oil Range Hydrocarbons	"	"	"	500	1560	"	
	Surrogate: 1-Chlorooctadecane	"	"	"	50.0-150	74.4	%	

PMX-3.10f	Diesel Range Organics	0990406	9/14/99	9/15/99	25.0	ND	mg/kg dry	
	Heavy Oil Range Hydrocarbons	"	"	"	50.0	ND	"	
	Surrogate: 1-Chlorooctadecane	"	"	"	50.0-150	100	%	

PMX-4.12f	Diesel Range Organics	0990406	9/14/99	9/15/99	25.0	ND	mg/kg dry	
	Heavy Oil Range Hydrocarbons	"	"	"	50.0	ND	"	
	Surrogate: 1-Chlorooctadecane	"	"	"	50.0-150	98.0	%	

PMX-5.10f	Diesel Range Organics	0990406	9/14/99	9/15/99	25.0	ND	mg/kg dry	
	Heavy Oil Range Hydrocarbons	"	"	"	50.0	ND	"	
	Surrogate: 1-Chlorooctadecane	"	"	"	50.0-150	114	%	

PMX-6.14f	Diesel Range Organics	0990406	9/14/99	9/15/99	25.0	ND	mg/kg dry	
	Heavy Oil Range Hydrocarbons	"	"	"	50.0	ND	"	
	Surrogate: 1-Chlorooctadecane	"	"	"	50.0-150	119	%	

PMX-7.10f	Diesel Range Organics	0990406	9/14/99	9/15/99	25.0	ND	mg/kg dry	
	Heavy Oil Range Hydrocarbons	"	"	"	50.0	ND	"	
	Surrogate: 1-Chlorooctadecane	"	"	"	50.0-150	122	%	

North Creek Analytical - Portland

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Parametrix, Inc.-(PMX)
 700 NE Multnomah, Suite 1160
 Portland, OR 97232
 Project: Emerald Petroleum
 Project Number: N/A
 Project Manager: Anne Ackerman
 Reported: 10/26/99 14:27
 Received: 9/10/99
 Sampled: 9/8/99 to 9/10/99

Diesel and Heavy Range Hydrocarbons per NWTPH-DX Method North Creek Analytical - Portland

Analyte	Batch	Date	Prepared	Date	Analyzed	Surrogate	Reporting	Limit	Result	Units	Note
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PMX-8.5 Diesel Range Organics 0990406 9/14/99 9/15/99 25.0 ND mg/kg dry Soil ND 127 %

Surrogate: 1-Chlorooctadecane " " " " " " " " " " " "

PMX-8.12 Diesel Range Organics 0990406 9/14/99 9/15/99 25.0 ND mg/kg dry Soil ND 120 %

Surrogate: 1-Chlorooctadecane " " " " " " " " " " " "

PMX-9.2 Diesel Range Organics 0990406 9/14/99 9/15/99 250 ND mg/kg dry Soil ND 2230 %

Surrogate: 1-Chlorooctadecane " " " " " " " " " " " "

PMX-9.12 Diesel Range Organics 0990406 9/14/99 9/15/99 25.0 ND mg/kg dry Soil ND 104 %

Surrogate: 1-Chlorooctadecane " " " " " " " " " " " "

PMX-10.9 Diesel Range Organics 0990406 9/14/99 9/15/99 25.0 ND mg/kg dry Soil ND 97.5 %

Surrogate: 1-Chlorooctadecane " " " " " " " " " " " "

PMX-10.12 Diesel Range Organics 0990423 9/15/99 9/16/99 25.0 ND mg/kg dry Soil ND 123 %

Surrogate: 1-Chlorooctadecane " " " " " " " " " " " "

PMX-11.12 Diesel Range Organics 0990423 9/15/99 9/16/99 25.0 ND mg/kg dry Soil ND 107 %

Surrogate: 1-Chlorooctadecane " " " " " " " " " " " "

PMX-12.2 Diesel Range Organics 0990423 9/15/99 9/16/99 25.0 ND mg/kg dry Soil ND 98.5 %

Surrogate: 1-Chlorooctadecane " " " " " " " " " " " "

Heavy Oil Range Hydrocarbons " " " " " " " " " " " "

Heavy Oil Range Hydrocarbons " " " " " " " " " " " "

Heavy Oil Range Hydrocarbons " " " " " " " " " " " "

Heavy Oil Range Hydrocarbons " " " " " " " " " " " "

Surrogate: 1-Chlorooctadecane " " " " " " " " " " " "

North Creek Analytical - Portland

*Refer to end of report for text of notes and definition



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Parameter, Inc.-(PMX)
 700 NE Multnomah, Suite 1160
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Project: Emerald Petroleum
 Project Number: N/A
 Project Manager: Anne Ackerman

Sampled: 9/8/99 to 9/10/99
 Received: 9/10/99
 Reported: 10/26/99 14:27

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method , North Creek Analytical - Portland

Analyte	Batch	Date	Date	Surrogate	Limit	Reporting	Units	Notes*
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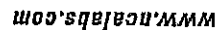
PMX-13.10L	Diesel Range Organics	0990423	9/15/99	9/16/99	25.0	147	mg/kg dry	1
	Heavy Oil Range Hydrocarbons				50.0	405	"	
	Surrogate: 1-Chlorooctadecane					131	%	
PMX-14.3L	Diesel Range Organics	0990423	9/15/99	9/16/99	25.0	37.8	mg/kg dry	1
	Heavy Oil Range Hydrocarbons				50.0	ND	"	
	Surrogate: 1-Chlorooctadecane					107	%	
PMX-15.3L	Diesel Range Organics	0990423	9/15/99	9/16/99	25.0	ND	mg/kg dry	
	Heavy Oil Range Hydrocarbons				50.0	ND	"	
	Surrogate: 1-Chlorooctadecane					127	%	
PMX-16.6L	Diesel Range Organics	0990423	9/15/99	9/16/99	250	1170	mg/kg dry	1
	Heavy Oil Range Hydrocarbons				500	2300	"	
	Surrogate: 1-Chlorooctadecane					77.1	%	
PMX-16.10L	Diesel Range Organics	0990423	9/15/99	9/16/99	25.0	52.5	mg/kg dry	1
	Heavy Oil Range Hydrocarbons				50.0	109	"	
	Surrogate: 1-Chlorooctadecane					128	%	
PMX-17.6L	Diesel Range Organics	0990423	9/15/99	9/16/99	250	2720	mg/kg dry	1
	Heavy Oil Range Hydrocarbons				500	7630	"	
	Surrogate: 1-Chlorooctadecane					150	%	
PMX-18.6L	Diesel Range Organics	0990423	9/15/99	9/16/99	25.0	41.1	mg/kg dry	1
	Heavy Oil Range Hydrocarbons				50.0	97.3	"	
	Surrogate: 1-Chlorooctadecane					111	%	
PMX-19.2L	Diesel Range Organics	0990423	9/15/99	9/16/99	25.0	26.0	mg/kg dry	
	Heavy Oil Range Hydrocarbons				50.0	ND	"	
	Surrogate: 1-Chlorooctadecane					116	%	

North Creek Analytical - Portland

*Refer to end of report for text of notes and definitions.

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network



Parametrix, Inc.-(PMX)	Project: Emerald Petroleum	Sampled: 9/8/99 to 9/10/99
700 NE Multnomah, Suite 1160	Project Number: N/A	Received: 9/10/99
Portland, OR 97232	Project Manager: Anne Ackerman	Reported: 10/26/99 14:27

Analyte	Batch	Date	Date	Surrogate	Reporting Limit	Result	Units	Notes*
PMX-20.6 Diesel Range Organics Heavy Oil Range Hydrocarbons Surrogate: 1-Chlorooctadecane	0990423	9/15/99	"	P909205-66	ND	25.0	mg/kg dry	"
	"	"	"	"	ND	50.0	"	"
	"	"	"	"	50.0-150	107	%	"

Surrogate: 1-Chlorooctadecane

107 %

%

20

*Refer to end of report for text of notes and definitions.

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Parametrix, Inc.-(PMX)
 700 NE Multnomah, Suite 1160
 Portland, OR 97232

Project: Emerald Petroleum
 Project Number: N/A
 Project Manager: Anne Ackerman
 Reported: 9/10/99
 Received: 9/10/99
 Sampled: 9/8/99 to 9/10/99

Total Metals per EPA 6000/7000 Series Methods
 North Creek Analytical - Portland

Analyte	Batch	Date	Prepared	Date	Analyzed	Specific	Reporting	Limit	Result	Units	Notes*
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PMX-1.4	Lead	0990367	9/13/99	9/14/99	EPA 6010A	P909205-01	Soil	mg/kg dry	503	ND	
PMX-2.7	Lead	0990367	9/13/99	9/14/99	EPA 6010A	P909205-06	Soil	mg/kg dry	174	ND	
PMX-3.2	Lead	0990367	9/13/99	9/14/99	EPA 6010A	P909205-08	Soil	mg/kg dry	174	ND	
PMX-3.10	Lead	0990367	9/13/99	9/14/99	EPA 6010A	P909205-10	Soil	mg/kg dry	174	ND	
PMX-4.12	Lead	0990367	9/13/99	9/14/99	EPA 6010A	P909205-13	Soil	mg/kg dry	174	ND	
PMX-5.10	Lead	0990367	9/13/99	9/14/99	EPA 6010A	P909205-16	Soil	mg/kg dry	174	ND	
PMX-6.14	Lead	0990367	9/13/99	9/14/99	EPA 6010A	P909205-20	Soil	mg/kg dry	174	ND	
PMX-7.10	Lead	0990367	9/13/99	9/14/99	EPA 6010A	P909205-23	Soil	mg/kg dry	174	ND	
PMX-8.5	Lead	0990367	9/13/99	9/14/99	EPA 6010A	P909205-26	Soil	mg/kg dry	174	ND	
PMX-8.12	Lead	0990367	9/13/99	9/14/99	EPA 6010A	P909205-29	Soil	mg/kg dry	174	ND	
PMX-9.2	Lead	0990367	9/13/99	9/14/99	EPA 6010A	P909205-30	Soil	mg/kg dry	174	ND	
PMX-9.12	Lead	0990367	9/13/99	9/14/99	EPA 6010A	P909205-33	Soil	mg/kg dry	174	ND	
PMX-10.9	Lead	0990368	9/13/99	9/14/99	EPA 6010A	P909205-36	Soil	mg/kg dry	174	ND	

North Creek Analytical - Portland

*Refer to end of report for text of notes and definitions.

Philip Nerenberg, Laboratory Manager

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Parametrix, Inc. (PMX)
 700 NE Multnomah, Suite 1160
 Portland, OR 97232

Project: Emerald Petroleum
 Project Number: N/A
 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99
 Received: 9/10/99
 Reported: 10/26/99 14:27

Total Metals per EPA 6000/7000 Series Methods North Creek Analytical - Portland

Analyte	Batch	Date	Date	Specific	Reporting	Limit	Result	Units	Notes*
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PMX-10.12	Lead	0990368	9/13/99	9/14/99	EPA 6010A	10.0	11.0	mg/kg dry	Soil
PMX-11.12	Lead	0990368	9/13/99	9/14/99	EPA 6010A	10.0	ND	mg/kg dry	Soil
PMX-12.2	Lead	0990368	9/13/99	9/14/99	EPA 6010A	10.0	17.4	mg/kg dry	Soil
PMX-13.10	Lead	0990368	9/13/99	9/14/99	EPA 6010A	10.0	19.3	mg/kg dry	Soil
PMX-14.3	Lead	0990368	9/13/99	9/14/99	EPA 6010A	10.0	154	mg/kg dry	Soil
PMX-15.3	Lead	0990368	9/13/99	9/14/99	EPA 6010A	10.0	154	mg/kg dry	Soil
PMX-16.6	Lead	0990368	9/13/99	9/14/99	EPA 6010A	10.0	17.3	mg/kg dry	Soil
PMX-16.10	Lead	0990368	9/13/99	9/14/99	EPA 6010A	10.0	14.3	mg/kg dry	Soil
PMX-17.6	Lead	0990368	9/13/99	9/14/99	EPA 6010A	10.0	378	mg/kg dry	Soil
PMX-18.6	Lead	0990368	9/13/99	9/14/99	EPA 6010A	10.0	17.7	mg/kg dry	Soil
PMX-19.2	Lead	0990368	9/13/99	9/14/99	EPA 6010A	10.0	53.5	mg/kg dry	Soil
PMX-20.6	Lead	0990368	9/13/99	9/14/99	EPA 6010A	10.0	ND	mg/kg dry	Soil

North Creek Analytical - Portland

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network



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Parameter, Inc.-(PMX) Project: Emerald Petroleum
 700 NE Multnomah, Suite 1160 Project Number: N/A
 Portland, OR 97232 Project Manager: Arne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Phenols per EPA Method 8041 North Creek Analytical - Portland

Analyte	Batch	Date	Prepared	Date	Analyzed	Surrogate	Reporting	Limit	Result	Units	Notes*
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PMX-1.4	4-Chloro-3-methylphenol	0990559	9/21/99	9/29/99	10.0	ND	mg/kg dry	10.0	ND	Soil	2
								20.0	ND		
PMX-3.2	4-Chloro-3-methylphenol	0990559	9/21/99	9/29/99	40.0	ND	mg/kg dry	40.0	ND	Soil	2
								80.0	ND		
PMX-3.2	Cresols				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,4-Dichlorophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,6-Dichlorophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,4-Dimethylphenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	4,6-Dinitro-2-methylphenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,4-Dinitrophenol				100	ND		100	ND		
								40.0	ND		
PMX-3.2	Dinoseb				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2-Nitrophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	4-Nitrophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	Pentachlorophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	Phenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,3,4,6-Tetrachlorophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,4,5-Trichlorophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,4,6-Trichlorophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	Surrogate: 2-Fluorophenol				70.0-130	NR	%	70.0-130	NR		
								70.0-130	NR		

PMX-3.2	4-Chloro-3-methylphenol	0990559	9/21/99	9/29/99	40.0	ND	mg/kg dry	40.0	ND	Soil	2
								80.0	ND		
PMX-3.2	Cresols				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,4-Dichlorophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,6-Dichlorophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,4-Dimethylphenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	4,6-Dinitro-2-methylphenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,4-Dinitrophenol				100	ND		100	ND		
								40.0	ND		
PMX-3.2	Dinoseb				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2-Nitrophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	4-Nitrophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	Pentachlorophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	Phenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,3,4,6-Tetrachlorophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,4,5-Trichlorophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	2,4,6-Trichlorophenol				40.0	ND		40.0	ND		
								40.0	ND		
PMX-3.2	Surrogate: 2-Fluorophenol				70.0-130	NR	%	70.0-130	NR		
								70.0-130	NR		



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Phenols per EPA Method 8041
 North Creek Analytical - Portland

Parameter: Inc.-(PMX) 700 NE Multnomah, Suite 1160 Portland, OR 97232
 Project: Emerald Petroleum Project Number: N/A Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Analyte	Batch	Date	Prepared	Date	Analyzed	Surrogate	Reporting	Result	Units	Notes*
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RMX-9.2	0990559	9/21/99	9/29/99			P909205-30	25.0	ND	mg/kg dry	2
4-Chloro-3-methylphenol	"	"	"	"	"		25.0	ND	"	
2-Chlorophenol	"	"	"	"	"		50.0	ND	"	
Cresols	"	"	"	"	"		25.0	ND	"	
2,4-Dichlorophenol	"	"	"	"	"		25.0	ND	"	
2,6-Dichlorophenol	"	"	"	"	"		25.0	ND	"	
2,4-Dimethylphenol	"	"	"	"	"		25.0	ND	"	
4,6-Dinitro-2-methylphenol	"	"	"	"	"		62.5	ND	"	
2,4-Dinitrophenol	"	"	"	"	"		25.0	ND	"	
Dinoseb	"	"	"	"	"		25.0	ND	"	
2-Nitrophenol	"	"	"	"	"		25.0	ND	"	
4-Nitrophenol	"	"	"	"	"		25.0	ND	"	
Pentachlorophenol	"	"	"	"	"		25.0	ND	"	
Phenol	"	"	"	"	"		25.0	ND	"	
2,3,4,6-Tetrachlorophenol	"	"	"	"	"		25.0	ND	"	
2,4,5-Trichlorophenol	"	"	"	"	"		25.0	ND	"	
2,4,6-Trichlorophenol	"	"	"	"	"		25.0	ND	"	
Surrogate: 2-Fluorophenol	"	"	"	"	"	70.0-130		NR	%	3
Surrogate: 2,4,6-Tribromophenol	"	"	"	"	"	70.0-130		NR	"	3

North Creek Analytical - Portland

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network

*Refer to end of report for text of notes and definitions



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Parametrix, Inc. (PMX) Project: Emerald Petroleum
 700 NE Multnomah, Suite 1160 Project Number: N/A
 Portland, OR 97232 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Phenols per EPA Method 8041
North Creek Analytical - Portland

Analyte	Batch	Date	Prepared	Date	Analyzed	Surrogate	Reporting	Limit	Result	Units	Notes*
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PMX-14.3'	0990559	9/21/99	9/29/99			P909205-51	Soil	1.00	ND	mg/kg dry	4
4-Chloro-3-methylphenol	"	"	"	"	"	"	"	1.00	ND	"	
2-Chlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
Cresols	"	"	"	"	"	"	"	2.00	ND	"	
2,4-Dichlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
2,6-Dichlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
2,4-Dimethylphenol	"	"	"	"	"	"	"	1.00	ND	"	
4,6-Dinitro-2-methylphenol	"	"	"	"	"	"	"	1.00	ND	"	
2,4-Dinitrophenol	"	"	"	"	"	"	"	2.50	ND	"	
Dinoseb	"	"	"	"	"	"	"	1.00	ND	"	
2-Nitrophenol	"	"	"	"	"	"	"	1.00	ND	"	
4-Nitrophenol	"	"	"	"	"	"	"	1.00	ND	"	
Pentachlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
Phenol	"	"	"	"	"	"	"	1.00	ND	"	
2,3,4,6-Tetrachlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
2,4,5-Trichlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
2,4,6-Trichlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
Surrogate: 2-Fluorophenol	"	"	"	"	"	70.0-130	"	50.5	48.6	%	5
Surrogate: 2,4,6-Tribromophenol	"	"	"	"	"	70.0-130	"	"	"	"	5
4-Chloro-3-methylphenol	1090046	10/4/99	10/12/99	"	"	"	"	1.00	ND	mg/kg dry	
2-Chlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
Cresols	"	"	"	"	"	"	"	2.00	ND	"	
2,4-Dichlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
2,6-Dichlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
2,4-Dimethylphenol	"	"	"	"	"	"	"	1.00	ND	"	
4,6-Dinitro-2-methylphenol	"	"	"	"	"	"	"	1.00	ND	"	
2,4-Dinitrophenol	"	"	"	"	"	"	"	2.50	ND	"	
Dinoseb	"	"	"	"	"	"	"	1.00	ND	"	
2-Nitrophenol	"	"	"	"	"	"	"	1.00	ND	"	
4-Nitrophenol	"	"	"	"	"	"	"	1.00	ND	"	
Pentachlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
Phenol	"	"	"	"	"	"	"	1.00	ND	"	
2,3,4,6-Tetrachlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
2,4,5-Trichlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
2,4,6-Trichlorophenol	"	"	"	"	"	"	"	1.00	ND	"	
Surrogate: 2-Fluorophenol	"	"	"	"	"	70.0-130	"	91.6	90.2	%	
Surrogate: 2,4,6-Tribromophenol	"	"	"	"	"	70.0-130	"	"	"	"	

North Creek Analytical - Portland

*Refer to end of report for text of notes and definitions.

Phillip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



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Parametrix, Inc.-(PMX) Project: Emerald Petroleum Project Number: N/A
 700 NE Multnomah, Suite 1160 Project Manager: Anne Ackerman
 Portland, OR 97232
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Phenols per EPA Method 8041
 North Creek Analytical - Portland

Analyte	Batch	Date	Prepared	Date	Surrogate	Reporting	Result	Units	Notes
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PMX-18.6	0990559	9/21/99	9/29/99	P909205-60	Soil	1.00	ND	mg/kg dry	4
4-Chloro-3-methylphenol	"	"	"	"	ND	1.00	ND	"	"
2-Chlorophenol	"	"	"	"	ND	2.00	ND	"	"
Cresols	"	"	"	"	ND	1.00	ND	"	"
2,4-Dichlorophenol	"	"	"	"	ND	1.00	ND	"	"
2,6-Dichlorophenol	"	"	"	"	ND	1.00	ND	"	"
2,4-Dimethylphenol	"	"	"	"	ND	1.00	ND	"	"
4,6-Dinitro-2-methylphenol	"	"	"	"	ND	1.00	ND	"	"
2,4-Dinitrophenol	"	"	"	"	ND	2.50	ND	"	"
Dinoseb	"	"	"	"	ND	1.00	ND	"	"
2-Nitrophenol	"	"	"	"	ND	1.00	ND	"	"
4-Nitrophenol	"	"	"	"	ND	1.00	ND	"	"
Pentachlorophenol	"	"	"	"	ND	1.00	ND	"	"
Phenol	"	"	"	"	ND	1.00	ND	"	"
2,3,4,6-Tetrachlorophenol	"	"	"	"	ND	1.00	ND	"	"
2,4,5-Trichlorophenol	"	"	"	"	ND	1.00	ND	"	"
2,4,6-Trichlorophenol	"	"	"	"	ND	1.00	ND	"	"
Surrogate: 2-Fluorophenol	"	"	"	"	ND	70.0-130	43.9	%	5
Surrogate: 2,4,6-Tribromophenol	"	"	"	"	ND	70.0-130	47.2	%	5
4-Chloro-3-methylphenol	1090046	10/4/99	10/12/99	"	ND	2.00	ND	mg/kg dry	"
2-Chlorophenol	"	"	"	"	ND	2.00	ND	"	"
Cresols	"	"	"	"	ND	4.00	ND	"	"
2,4-Dichlorophenol	"	"	"	"	ND	2.00	ND	"	"
2,6-Dichlorophenol	"	"	"	"	ND	2.00	ND	"	"
2,4-Dimethylphenol	"	"	"	"	ND	2.00	ND	"	"
4,6-Dinitro-2-methylphenol	"	"	"	"	ND	2.00	ND	"	"
2,4-Dinitrophenol	"	"	"	"	ND	5.00	ND	"	"
Dinoseb	"	"	"	"	ND	2.00	ND	"	"
2-Nitrophenol	"	"	"	"	ND	2.00	ND	"	"
4-Nitrophenol	"	"	"	"	ND	2.00	ND	"	"
Pentachlorophenol	"	"	"	"	ND	2.00	ND	"	"
Phenol	"	"	"	"	ND	2.00	ND	"	"
2,3,4,6-Tetrachlorophenol	"	"	"	"	ND	2.00	ND	"	"
2,4,5-Trichlorophenol	"	"	"	"	ND	2.00	ND	"	"
2,4,6-Trichlorophenol	"	"	"	"	ND	2.00	ND	"	"
Surrogate: 2-Fluorophenol	"	"	"	"	ND	70.0-130	66.4	%	5
Surrogate: 2,4,6-Tribromophenol	"	"	"	"	ND	70.0-130	83.9	%	5

North Creek Analytical - Portland

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network

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Parametric, Inc. (PMX)
700 NE Multnomah, Suite 1160
Portland, OR 97232
Project: Emerald Petroleum
Project Number: N/A
Project Manager: Anne Ackerman
Sampled: 9/8/99 to 9/10/99
Received: 9/10/99
Reported: 10/26/99 14:27

Polychlorinated Biphenyls per EPA Method 8082
North Creek Analytical - Portland

Analyte	Batch	Date	Date	Surrogate	Reporting	Result	Units	Notes*
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PMX-14	Aroclor 1016	0990521	9/17/99	9/21/99	67.0	134	ND	ug/kg dry
	Aroclor 1221	"	"	"	67.0	134	ND	"
	Aroclor 1232	"	"	"	67.0	67.0	ND	"
	Aroclor 1242	"	"	"	67.0	67.0	ND	"
	Aroclor 1248	"	"	"	67.0	67.0	ND	"
	Aroclor 1254	"	"	"	67.0	67.0	ND	"
	Aroclor 1260	"	"	"	67.0	67.0	ND	"
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	"	"	"	63.0-119	82.6	%	"
Surrogate: Decachlorobiphenyl	"	"	"	"	52.0-131	96.2	"	"
PMX-3.2	Aroclor 1016	0990521	9/17/99	9/21/99	67.0	134	ND	ug/kg dry
	Aroclor 1221	"	"	"	67.0	134	ND	"
	Aroclor 1232	"	"	"	67.0	67.0	ND	"
	Aroclor 1242	"	"	"	67.0	67.0	ND	"
	Aroclor 1248	"	"	"	67.0	67.0	ND	"
	Aroclor 1254	"	"	"	67.0	67.0	ND	"
	Aroclor 1260	"	"	"	67.0	67.0	ND	"
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	"	"	"	63.0-119	82.6	%	"
Surrogate: Decachlorobiphenyl	"	"	"	"	52.0-131	96.2	"	"
PMX-9.2	Aroclor 1016	0990521	9/17/99	9/21/99	67.0	134	ND	ug/kg dry
	Aroclor 1221	"	"	"	67.0	134	ND	"
	Aroclor 1232	"	"	"	67.0	67.0	ND	"
	Aroclor 1242	"	"	"	67.0	67.0	ND	"
	Aroclor 1248	"	"	"	67.0	67.0	ND	"
	Aroclor 1254	"	"	"	67.0	67.0	ND	"
	Aroclor 1260	"	"	"	67.0	67.0	ND	"
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	"	"	"	63.0-119	82.6	%	"
Surrogate: Decachlorobiphenyl	"	"	"	"	52.0-131	95.9	"	"
PMX-14.3	Aroclor 1016	0990521	9/17/99	9/20/99	67.0	134	ND	ug/kg dry
	Aroclor 1221	"	"	"	67.0	134	ND	"
	Aroclor 1232	"	"	"	67.0	67.0	ND	"
	Aroclor 1242	"	"	"	67.0	67.0	ND	"
	Aroclor 1248	"	"	"	67.0	67.0	ND	"
	Aroclor 1254	"	"	"	67.0	67.0	ND	"
	Aroclor 1260	"	"	"	67.0	67.0	ND	"
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	"	"	"	63.0-119	62.8	%	"
Surrogate: Decachlorobiphenyl	"	"	"	"	52.0-131	84.7	"	"
PMX-14.3	Aroclor 1016	0990521	9/17/99	9/20/99	67.0	134	ND	ug/kg dry
	Aroclor 1221	"	"	"	67.0	134	ND	"
	Aroclor 1232	"	"	"	67.0	67.0	ND	"
	Aroclor 1242	"	"	"	67.0	67.0	ND	"
	Aroclor 1248	"	"	"	67.0	67.0	ND	"
	Aroclor 1254	"	"	"	67.0	67.0	ND	"
	Aroclor 1260	"	"	"	67.0	67.0	ND	"
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	"	"	"	63.0-119	62.8	%	"
Surrogate: Decachlorobiphenyl	"	"	"	"	52.0-131	84.7	"	"

North Creek Analytical - Portland

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



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Parametrix, Inc. (PMX) Project: Emerald Petroleum
 700 NE Multnomah, Suite 1160 Project Number: N/A
 Portland, OR 97232 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Polychlorinated Biphenyls per EPA Method 8082
 North Creek Analytical - Portland

Analyte	Batch	Date	Prepared	Analyzed	Surrogate	Reporting	Limit	Result	Units	Notes
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PMX-14.3' (continued)

Aroclor 1254	0990521	9/17/99	9/20/99	67.0	ND	ug/kg dry	Soil	97.8	%	
Aroclor 1260	"	"	"	63.0-119	52.0-131	95.9	"			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene										
Surrogate: Decachlorobiphenyl										

P909205-51

Aroclor 1016	0990521	9/17/99	9/20/99	67.0	ND	ug/kg dry	Soil	95.3	%	
Aroclor 1221	"	"	"	134	ND					
Aroclor 1232	"	"	"	67.0	ND					
Aroclor 1242	"	"	"	67.0	ND					
Aroclor 1248	"	"	"	67.0	ND					
Aroclor 1254	"	"	"	67.0	ND					
Aroclor 1260	"	"	"	67.0	ND					
Surrogate: 2,4,5,6-Tetrachloro-m-xylene										
Surrogate: Decachlorobiphenyl										

P909205-60

PMX-18.6'

North Creek Analytical - Portland

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network

*Refer to end of report for text of notes and definitions



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Parametrix, Inc.-(PMX)
700 NE Multnomah, Suite 1160
Portland, OR 97232
Project: Emerald Petroleum
Project Number: N/A
Project Manager: Anne Ackerman
Sampled: 9/8/99 to 9/10/99
Received: 9/10/99
Reported: 10/26/99 14:27

Volatile Organic Compounds per EPA Method 8260B North Creek Analytical - Portland

Analyte	Batch	Date	Date	Surrogate	Reporting	Result	Units	Notes
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PMX-16.6	0990326	9/12/99	9/13/99		2500	ND	ug/kg dry soil	
Acetone						ND		
Benzene					100	ND		
Bromobenzene					100	ND		
Bromochloromethane					100	ND		
Bromodichloromethane					100	ND		
Bromoform					100	ND		
Bromomethane					1000	ND		
2-Butanone					2500	ND		
n-Butylbenzene					100	ND		
sec-Butylbenzene					100	ND		
tert-Butylbenzene					100	ND		
Carbon disulfide					1000	ND		
Carbon tetrachloride					200	ND		
Chlorobenzene					100	ND		
Chloroethane					200	ND		
Chloroform					100	ND		
Chloromethane					500	ND		
2-Chlorotoluene					100	ND		
4-Chlorotoluene					100	ND		
1,2-Dibromo-3-chloropropane					100	ND		
Dibromochloromethane					100	ND		
Dibromomethane					100	ND		
1,2-Dibromoethane					100	ND		
1,2-Dichlorobenzene					100	ND		
1,3-Dichlorobenzene					100	ND		
1,4-Dichlorobenzene					100	ND		
Dichlorodifluoromethane					500	ND		
1,1-Dichloroethane					100	ND		
1,2-Dichloroethane					100	ND		
1,1-Dichloroethene					100	ND		
cis-1,2-Dichloroethene					100	ND		
trans-1,2-Dichloroethene					100	ND		
1,2-Dichloropropane					100	ND		
1,3-Dichloropropane					100	ND		
2,2-Dichloropropane					100	ND		
1,1-Dichloropropane					100	ND		
cis-1,3-Dichloropropene					100	ND		
trans-1,3-Dichloropropene					100	ND		

North Creek Analytical - Portland

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



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Parametrix, Inc.-(PMX) 700 NE Multnomah, Suite 1160, Portland, OR 97232
 Project: Emerald Petroleum Project Number: N/A
 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Volatile Organic Compounds per EPA Method 8260B North Creek Analytical - Portland

Analyte	Batch	Date	Prepared	Date	Analyzed	Surrogate	Limit	Reporting	Result	Units	Notes*
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PMX-16.6' (continued)	0990326	9/12/99		9/13/99		P909205-54			100	ND	ug/kg dry
Ethylbenzene									200	ND	
Hexachlorobutadiene									1000	ND	
2-Hexanone									100	ND	
Isopropylbenzene									100	ND	
p-Isopropyltoluene									100	ND	
4-Methyl-2-pentanone									500	ND	
Methylene chloride									500	ND	
Naphthalene									100	ND	
n-Propylbenzene									100	ND	
Styrene									100	ND	
1,1,1,2-Tetrachloroethane									100	ND	
1,1,2,2-Tetrachloroethane									100	ND	
Tetrachloroethene									100	ND	
Toluene									100	ND	
1,2,3-Trichlorobenzene									100	ND	
1,2,4-Trichlorobenzene									100	ND	
1,1,1-Trichloroethane									100	ND	
1,1,2-Trichloroethane									100	ND	
Trichloroethene									100	ND	
Trichlorodifluoromethane									100	ND	
1,2,3-Trichloropropene									100	ND	
1,2,4-Trimethylbenzene									100	ND	
1,3,5-Trimethylbenzene									100	ND	
Vinyl chloride									100	ND	
o-Xylene									100	ND	
m,p-Xylene									200	ND	
Surrogate: 4-BFB									95.3	%	
Surrogate: 1,2-DCA-d4									118	"	
Surrogate: Dibromofluoromethane									104	"	
Surrogate: Toluene-d8									94.4	"	
									70.0-130		
									65.0-135		
									65.0-130		
									70.0-120		

North Creek Analytical - Portland

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Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network

*Refer to end of report for text of notes and definitions.



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Parameter, Inc.-(PMX)
700 NE Multnomah, Suite 1160
Portland, OR 97232
Project: Emerald Petroleum
Project Number: N/A
Anne Ackerman
Sampled: 9/8/99 to 9/10/99
Received: 9/10/99
Reported: 10/26/99 14:27

Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland

Analyte	Batch	Date	Date	Analyzed	Surrogate	Reporting	Result	Units	Notes*
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PMX-16.101	0990326	9/12/99	9/13/99	P209205-55	Soil	2500	ND	ug/kg dry	
Acetone	"	"	"	"	"	100	ND	"	
Benzene	"	"	"	"	"	100	ND	"	
Bromobenzene	"	"	"	"	"	100	ND	"	
Bromochloromethane	"	"	"	"	"	100	ND	"	
Bromodichloromethane	"	"	"	"	"	100	ND	"	
Bromofrom	"	"	"	"	"	100	ND	"	
Bromomethane	"	"	"	"	"	1000	ND	"	
2-Butanone	"	"	"	"	"	2500	ND	"	
n-Butylbenzene	"	"	"	"	"	100	ND	"	
sec-Butylbenzene	"	"	"	"	"	100	ND	"	
tert-Butylbenzene	"	"	"	"	"	100	ND	"	
Carbon disulfide	"	"	"	"	"	1000	ND	"	
Carbon tetrachloride	"	"	"	"	"	200	ND	"	
Chlorobenzene	"	"	"	"	"	100	ND	"	
Chloroethane	"	"	"	"	"	200	ND	"	
Chloroform	"	"	"	"	"	100	ND	"	
Chloromethane	"	"	"	"	"	500	ND	"	
2-Chlorotoluene	"	"	"	"	"	100	ND	"	
4-Chlorotoluene	"	"	"	"	"	100	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"	"	"	100	ND	"	
Dibromochloromethane	"	"	"	"	"	100	ND	"	
1,2-Dibromomethane	"	"	"	"	"	100	ND	"	
Dibromomethane	"	"	"	"	"	100	ND	"	
1,2-Dichlorobenzene	"	"	"	"	"	100	ND	"	
1,3-Dichlorobenzene	"	"	"	"	"	100	ND	"	
1,4-Dichlorobenzene	"	"	"	"	"	100	ND	"	
Dichlorodifluoromethane	"	"	"	"	"	500	ND	"	
1,1-Dichloroethane	"	"	"	"	"	100	ND	"	
1,2-Dichloroethane	"	"	"	"	"	100	ND	"	
cis-1,2-Dichloroethene	"	"	"	"	"	100	ND	"	
trans-1,2-Dichloroethene	"	"	"	"	"	100	ND	"	
1,2-Dichloropropane	"	"	"	"	"	100	ND	"	
1,3-Dichloropropane	"	"	"	"	"	100	ND	"	
2,2-Dichloropropane	"	"	"	"	"	100	ND	"	
1,1-Dichloropropane	"	"	"	"	"	100	ND	"	
cis-1,3-Dichloropropene	"	"	"	"	"	100	ND	"	
trans-1,3-Dichloropropene	"	"	"	"	"	100	ND	"	

North Creek Analytical - Portland

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

*Refer to end of report for text of notes and definitions.



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Parameter, Inc.-(PMX) 700 NE Multnomah, Suite 1160 Portland, OR 97232
 Project: Emerald Petroleum Project Number: N/A Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Volatile Organic Compounds per EPA Method 8260B
 North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
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PMX-16,10' (continued)
 Ethylbenzene 0990326 9/12/99 9/13/99 100 ND ug/kg dry Soil
 Hexachlorobutadiene " " " " 1000 ND
 2-Hexanone " " " " 100 ND
 Isopropylbenzene " " " " 100 ND
 p-Isopropyltoluene " " " " 500 ND
 4-Methyl-2-pentanone " " " " 500 ND
 Methylene chloride " " " " 100 ND
 Naphthalene " " " " 100 ND
 n-Propylbenzene " " " " 100 ND
 Styrene " " " " 100 ND
 1,1,1,2-Tetrachloroethane " " " " 100 ND
 1,1,2,2-Tetrachloroethane " " " " 100 ND
 Tetrahydroethene " " " " 100 ND
 Toluene " " " " 100 ND
 1,2,3-Trichlorobenzene " " " " 100 ND
 1,2,4-Trichlorobenzene " " " " 100 ND
 1,1,1-Trichloroethane " " " " 100 ND
 1,1,2-Trichloroethane " " " " 100 ND
 Trichloroethene " " " " 100 ND
 Trichlorofluoromethane " " " " 100 ND
 1,2,3-Trichloropropene " " " " 100 ND
 1,2,4-Trimethylbenzene " " " " 100 ND
 1,3,5-Trimethylbenzene " " " " 100 ND
 Vinyl chloride " " " " 100 ND
 o-Xylene " " " " 100 ND
 m,p-Xylene " " " " 200 ND

Surrogate: 4-BFB " " " 70.0-130
 Surrogate: 1,2-DCA-d4 " " " 65.0-135
 Surrogate: Dibromofluoromethane " " " 65.0-130
 Surrogate: Toluene-d8 " " " 70.0-120
 92.1 " " " 103
 90.7 % " " " 117

North Creek Analytical - Portland

Philip Nerenberg, Laboratory Manager

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 541.383.9310 fax 541.382.7588

Parameter, Inc.-(PMX) Project: Emerald Petroleum
 700 NE Multnomah, Suite 1160 Project Number: N/A
 Portland, OR 97232 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Volatile Organic Compounds per EPA Method 8260B North Creek Analytical - Portland

Analyte	Batch	Date	Prepared	Date	Analyzed	Surrogate	Limit	Reporting	Result	Units	Notes*
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PMX-17.6 Acetone 0990326 9/12/99 9/14/99 2500 ND ug/kg dry Soil

trans-1,3-Dichloropropene	"	"	"	"	"	"	100	ND	"	"	"
cis-1,3-Dichloropropene	"	"	"	"	"	"	100	ND	"	"	"
1,1-Dichloropropene	"	"	"	"	"	"	100	ND	"	"	"
2,2-Dichloropropene	"	"	"	"	"	"	100	ND	"	"	"
1,3-Dichloropropene	"	"	"	"	"	"	100	ND	"	"	"
1,2-Dichloropropene	"	"	"	"	"	"	100	ND	"	"	"
trans-1,2-Dichloroethene	"	"	"	"	"	"	100	ND	"	"	"
cis-1,2-Dichloroethene	"	"	"	"	"	"	100	ND	"	"	"
1,1-Dichloroethene	"	"	"	"	"	"	100	ND	"	"	"
1,2-Dichloroethane	"	"	"	"	"	"	100	ND	"	"	"
1,1-Dichloroethane	"	"	"	"	"	"	100	ND	"	"	"
Dichlorodifluoromethane	"	"	"	"	"	"	500	ND	"	"	"
1,4-Dichlorobenzene	"	"	"	"	"	"	100	ND	"	"	"
1,3-Dichlorobenzene	"	"	"	"	"	"	100	ND	"	"	"
1,2-Dichlorobenzene	"	"	"	"	"	"	100	ND	"	"	"
Dibromomethane	"	"	"	"	"	"	100	ND	"	"	"
1,2-Dibromomethane	"	"	"	"	"	"	100	ND	"	"	"
Dibromochloromethane	"	"	"	"	"	"	100	ND	"	"	"
1,2-Dibromo-3-chloropropane	"	"	"	"	"	"	100	ND	"	"	"
4-Chlorotoluene	"	"	"	"	"	"	100	ND	"	"	"
2-Chlorotoluene	"	"	"	"	"	"	100	ND	"	"	"
Chloromethane	"	"	"	"	"	"	500	ND	"	"	"
Chloroform	"	"	"	"	"	"	100	ND	"	"	"
Chloroethane	"	"	"	"	"	"	200	ND	"	"	"
Chlorobenzene	"	"	"	"	"	"	100	ND	"	"	"
Carbon tetrachloride	"	"	"	"	"	"	200	ND	"	"	"
Carbon disulfide	"	"	"	"	"	"	1000	ND	"	"	"
tert-Butylbenzene	"	"	"	"	"	"	100	ND	"	"	"
sec-Butylbenzene	"	"	"	"	"	"	100	ND	"	"	"
n-Butylbenzene	"	"	"	"	"	"	100	ND	"	"	"
2-Butanone	"	"	"	"	"	"	2500	ND	"	"	"
Bromomethane	"	"	"	"	"	"	1000	ND	"	"	"
Bromoform	"	"	"	"	"	"	100	ND	"	"	"
Bromodichloromethane	"	"	"	"	"	"	100	ND	"	"	"
Bromochloromethane	"	"	"	"	"	"	100	ND	"	"	"
Bromobenzene	"	"	"	"	"	"	100	ND	"	"	"
Benzene	"	"	"	"	"	"	100	ND	"	"	"
Acetone	"	"	"	"	"	"	2500	ND	"	"	"

P909205-57

North Creek Analytical - Portland

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network

*Refer to end of report for text of notes and definitions.



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Parametrix, Inc.-(PMX) 700 NE Multnomah, Suite 1160 Portland, OR 97232
 Project: Emerald Petroleum Project Number: N/A
 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Volatile Organic Compounds per EPA Method 8260B North Creek Analytical - Portland

Analyte	Batch	Date	Prepared	Analyzed	Surrogate	Reporting Limit	Result	Units	Notes*
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PMX-17.6 (continued)	0990326	9/12/99		9/14/99	P909205-57	100	ND	ug/kg dry	
Ethylbenzene						200	ND		
Hexachlorobutadiene						1000	ND		
2-Hexanone						100	ND		
Isopropylbenzene						100	ND		
p-Isopropyltoluene						500	ND		
4-Methyl-2-pentanone						100	ND		
Methylene chloride						100	ND		
Naphthalene						100	ND		
n-Propylbenzene						100	ND		
Styrene						100	ND		
1,1,1,2-Tetrachloroethane						100	ND		
1,1,2,2-Tetrachloroethane						100	ND		
Tetrachloroethene						100	ND		
Toluene						100	ND		
1,2,3-Trichlorobenzene						100	ND		
1,2,4-Trichlorobenzene						100	ND		
1,1,1-Trichloroethane						100	ND		
1,1,2-Trichloroethane						100	ND		
Trichloroethene						100	ND		
Trichlorofluoromethane						100	ND		
1,2,3-Trichloropropane						100	ND		
1,2,4-Trimethylbenzene						100	ND		
1,3,5-Trimethylbenzene						100	ND		
Vinyl chloride						100	ND		
o-Xylene						200	ND		
m,p-Xylene						90.4	90.4	%	
Surrogate: 4-BFB							113		
Surrogate: 1,2-DCA-d4							104		
Surrogate: Dibromofluoromethane							88.5		
Surrogate: Toluene-d8									

North Creek Analytical - Portland

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network

*Refer to end of report for text of notes and definitions



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Sampled: 9/8/99 to 9/10/99
Received: 9/10/99
Reported: 10/26/99 14:27
Project: Emerald Petroleum
Project Number: N/A
Project Manager: Anne Ackerman
Parametrix, Inc. (PMX)
700 NE Multnomah, Suite 1160
Portland, OR 97232

Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland

Analyte	Batch	Date	Prepared	Analized	Surrogate	Reporting	Result	Units	Notes
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PMX-18.6	0990326	9/12/99	9/13/99	P909205-60	2500	ND	ug/kg dry	Soil	
Acetone	"	"	"	"	100	ND	"	"	
Benzene	"	"	"	"	100	ND	"	"	
Bromobenzene	"	"	"	"	100	ND	"	"	
Bromochloromethane	"	"	"	"	100	ND	"	"	
Bromodichloromethane	"	"	"	"	100	ND	"	"	
Bromofom	"	"	"	"	100	ND	"	"	
Bromomethane	"	"	"	"	1000	ND	"	"	
2-Butanone	"	"	"	"	2500	ND	"	"	
n-Butylbenzene	"	"	"	"	100	ND	"	"	
sec-Butylbenzene	"	"	"	"	100	ND	"	"	
tert-Butylbenzene	"	"	"	"	100	ND	"	"	
Carbon disulfide	"	"	"	"	1000	ND	"	"	
Carbon tetrachloride	"	"	"	"	200	ND	"	"	
Chlorobenzene	"	"	"	"	100	ND	"	"	
Chloroethane	"	"	"	"	200	ND	"	"	
Chloroform	"	"	"	"	100	ND	"	"	
Chloromethane	"	"	"	"	500	ND	"	"	
2-Chlorotoluene	"	"	"	"	100	ND	"	"	
4-Chlorotoluene	"	"	"	"	100	ND	"	"	
1,2-Dibromo-3-chloropropane	"	"	"	"	100	ND	"	"	
Dibromochloromethane	"	"	"	"	100	ND	"	"	
1,2-Dibromomethane	"	"	"	"	100	ND	"	"	
Dibromomethane	"	"	"	"	100	ND	"	"	
1,2-Dichlorobenzene	"	"	"	"	100	ND	"	"	
1,3-Dichlorobenzene	"	"	"	"	100	ND	"	"	
1,4-Dichlorobenzene	"	"	"	"	100	ND	"	"	
Dichlorodifluoromethane	"	"	"	"	500	ND	"	"	
1,1-Dichloroethane	"	"	"	"	100	ND	"	"	
1,2-Dichloroethane	"	"	"	"	100	ND	"	"	
1,1-Dichloroethene	"	"	"	"	100	ND	"	"	
cis-1,2-Dichloroethene	"	"	"	"	100	ND	"	"	
trans-1,2-Dichloroethene	"	"	"	"	100	ND	"	"	
1,2-Dichloropropane	"	"	"	"	100	ND	"	"	
1,3-Dichloropropane	"	"	"	"	100	ND	"	"	
2,2-Dichloropropane	"	"	"	"	100	ND	"	"	
1,1-Dichloropropane	"	"	"	"	100	ND	"	"	
cis-1,3-Dichloropropene	"	"	"	"	100	ND	"	"	
trans-1,3-Dichloropropene	"	"	"	"	100	ND	"	"	

North Creek Analytical - Portland

*Refer to end of report for text of notes and definitions

Philip Merenberg, Laboratory Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



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Sampled: 9/8/99 to 9/10/99
Received: 9/10/99
Reported: 10/26/99 14:27
Project: Emerald Petroleum
Project Number: N/A
Project Manager: Anne Ackerman
Parametrix, Inc.-(PMX)
700 NE Multnomah, Suite 1160
Portland, OR 97232

Volatile Organic Compounds per EPA Method 8260B
North Creek Analytical - Portland

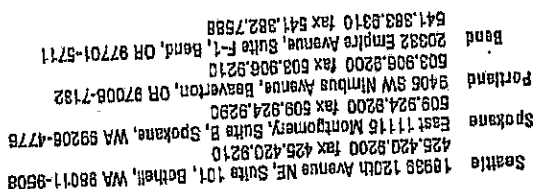
Analyte	Batch	Date	Date	Surrogate	Reporting	Result	Units	Note
	Number	Prepared	Analyzed	Limits	Limit			

PMX-18.6 (continued)
Ethylbenzene 0990326 9/12/99 9/13/99
Hexachlorobutadiene
2-Hexanone
Isopropylbenzene
p-Isopropyltoluene
4-Methyl-2-pentanone
Methylcyclohexane
Naphthalene
n-Propylbenzene
Styrene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethene
Toluene
1,2,3-Trichlorobenzene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene
Trichlorofluoromethane
1,2,3-Trichloropropane
1,2,4-Trichlorobenzene
1,3,5-Trimethylbenzene
Vinyl chloride
o-Xylene
m,p-Xylene

Surrogate: 4-BFB	"	"	"	70.0-130	94.0	%		
Surrogate: 1,2-DCA-d4	"	"	"	65.0-135	119	"		
Surrogate: Dibromofluoromethane	"	"	"	65.0-130	105	"		
Surrogate: Toluene-d8	"	"	"	70.0-120	94.9	"		

North Creek Analytical - Portland

* Refer to end of report for text of notes and definition



Project:	Emerald Petroleum
Project Number:	N/A
Project Manager:	Anne Ackerman

Notes	Units	Result	Reporting Limit	Surrogate Limits	Date Analyzed	Date Prepared	Batch Number	Analyte
2	Soil							

[illegible]

Philip Nerenberg, Laboratory Manager

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Parametrix, Inc. (PMX)
 700 NE Multnomah, Suite 1160
 Portland, OR 97232
 Project: Emerald Petroleum
 Project Number: N/A
 Project Manager: Anne Ackerman
 Reported: 10/26/99 14:27
 Received: 9/10/99
 Sampled: 9/8/99 to 9/10/99

Polynuclear Aromatic Compounds per EPA 8270M-SIM
 North Creek Analytical - Portland

Analyte	Batch	Date	Prepared	Date	Analyzed	Surrogate	Reporting	Result	Units	Notes*
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PMX-3.2 (continued)										
Surrogate: Nitrobenzene-d5	0990497	9/17/99	10/18/99	50.0-132	150	%	108			6
Surrogate: p-Terphenyl-d14				58.0-143						
PMX-9.2										
Acenaphthene	0990497	9/17/99	10/17/99	26.8	26.8	ug/kg dry	26.8			2
Acenaphthylene				26.8	26.8		26.8			
Anthracene				26.8	26.8		26.8			
Benzo (a) anthracene				67.0	67.0		67.0			
Benzo (a) pyrene				10/12/99	67.0		67.0			
Benzo (b) fluoranthene					67.0		67.0			
Benzo (ghi) perylene					67.0		67.0			
Benzo (k) fluoranthene				10/17/99	26.8		71.8			
Chrysene				10/12/99	67.0		ND			
Dibenzo (a,h) anthracene				10/17/99	26.8		ND			
Fluoranthene				10/17/99	26.8		ND			
Fluorene				10/12/99	67.0		ND			
Indeno (1,2,3-cd) pyrene				10/17/99	26.8		82.8			B,8
Naphthalene					26.8		54.2			
Phenanthrene					26.8		59.8			
Pyrene					48.0-138	%	94.5			
Surrogate: 2-Fluorobiphenyl				50.0-132	109		109			
Surrogate: Nitrobenzene-d5				58.0-143	132		132			
Surrogate: p-Terphenyl-d14										
PMX-14.3										
Acenaphthene	0990497	9/17/99	10/14/99	13.4	13.4	ug/kg dry	13.4			
Acenaphthylene				13.4	13.4		13.4			
Anthracene				13.4	13.4		13.4			
Benzo (a) anthracene				13.4	13.4		13.4			
Benzo (a) pyrene				13.4	13.4		13.4			
Benzo (b) fluoranthene				13.4	13.4		13.4			
Benzo (ghi) perylene				13.4	13.4		13.4			
Benzo (k) fluoranthene				13.4	13.4		13.4			
Chrysene				13.4	13.4		13.4			
Dibenzo (a,h) anthracene				13.4	13.4		13.4			
Fluoranthene				13.4	13.4		13.4			
Fluorene				13.4	13.4		13.4			
Indeno (1,2,3-cd) pyrene				13.4	13.4		13.4			

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Parametrix, Inc. (PMX) 700 NE Multnomah, Suite 1160 Portland, OR 97232
 Project: Emerald Petroleum
 Project Number: N/A
 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99
 Received: 9/10/99
 Reported: 10/26/99 14:27

Polynuclear Aromatic Compounds per EPA 8270M-SIM North Creek Analytical - Portland

Analyte	Batch	Date	Date	Surrogate	Reporting	Result	Units	Notes*
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PMX-14.3 (continued)	0990497	9/17/99	10/14/99	P909205-51	Soil	43.2	ug/kg dry	B,9
						13.4		
						ND		
						18.7		
						87.5	%	
						106		
						89.1		
Surrogate: 2-Fluorobiphenyl						48.0-138		
Surrogate: Nitrobenzene-d5						50.0-132		
Surrogate: p-Terphenyl-d14						58.0-143		

PMX-18.6	0990497	9/17/99	10/14/99	P909205-60	Soil	13.4	ug/kg dry	B,9
						ND		
						13.4		
						ND		
						13.4		
						ND		
						13.4		
						ND		
						13.4		
						ND		
Acenaphthene						13.4		
Acenaphthylene						13.4		
Anthracene						13.4		
Benzo (a) anthracene						13.4		
Benzo (a) pyrene						13.4		
Benzo (b) fluoranthene						13.4		
Benzo (ghi) perylene						13.4		
Benzo (k) fluoranthene						13.4		
Chrysene						13.4		
Dibenzo (a,h) anthracene						13.4		
Fluoranthene						13.4		
Fluorene						13.4		
Indeno (1,2,3-cd) pyrene						13.4		
Naphthalene						13.4		
Phenanthrene						13.4		
Pyrene						13.4		
Surrogate: 2-Fluorobiphenyl						48.0-138		
Surrogate: Nitrobenzene-d5						50.0-132		
Surrogate: p-Terphenyl-d14						58.0-143		

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* Refer to end of report for text of notes and definitions.



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Parametrix, Inc.-(PMX) 700 NE Multnomah, Suite 1160
 Project: Emerald Petroleum Project Number: N/A
 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99
 Received: 9/10/99
 Reported: 10/26/99 14:27

Dry Weight Determination
North Creek Analytical - Portland

Sample Name	Lab ID	Matrix	Result	Units
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PMX-1,4'	P909205-01	Soil	96.5	%
PMX-2,7'	P909205-06	Soil	93.3	%
PMX-3,2'	P909205-08	Soil	90.7	%
PMX-3,10'	P909205-10	Soil	93.9	%
PMX-4,12'	P909205-13	Soil	81.9	%
PMX-5,10'	P909205-16	Soil	91.7	%
PMX-6,14'	P909205-20	Soil	95.2	%
PMX-7,10'	P909205-23	Soil	93.0	%
PMX-8,5'	P909205-26	Soil	95.2	%
PMX-8,12'	P909205-29	Soil	93.1	%
PMX-9,2'	P909205-30	Soil	91.0	%
PMX-9,12'	P909205-33	Soil	93.6	%
PMX-10,9'	P909205-36	Soil	95.7	%
PMX-10,12'	P909205-37	Soil	94.7	%
PMX-11,12'	P909205-42	Soil	92.8	%
PMX-12,2'	P909205-43	Soil	85.3	%
PMX-13,10'	P909205-49	Soil	92.0	%
PMX-14,3'	P909205-51	Soil	90.7	%
PMX-15,3'	P909205-52	Soil	94.0	%

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Parametrix, Inc.-(PMX) Project: Emerald Petroleum
 700 NE Multnomah, Suite 1160 Project Number: N/A
 Portland, OR 97232 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Dry Weight Determination
North Creek Analytical - Portland

Sample Name	Lab ID	Matrix	Result	Units
PMX-16,6	P909205-54	Soil	93.3	%
PMX-16,10	P909205-55	Soil	92.5	%
PMX-17,6	P909205-57	Soil	91.7	%
PMX-18,6	P909205-60	Soil	92.5	%
PMX-19,2	P909205-62	Soil	94.3	%
PMX-20,6	P909205-66	Soil	94.1	%

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Parametrix, Inc.-(PMIX) Project: Emerald Petroleum
 700 NE Multnomah, Suite 1160 Project Number: N/A
 Portland, OR 97232 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Gasoline Hydrocarbons Per EPA Method 821.0
 North Creek Analytical - Portland
 Extraction Method: EPA 5030

Analyte	Date	Spike	Sample	QC	Units	Reporting Limit	Recovery	% Limit	% Notes
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Batch: 0990344 Date Prepared: 9/13/99 Extraction Method: EPA 5030
 Blank Gasoline Range Hydrocarbons 9/15/99 5.00 3.21 4.48 2.50 89.6
 Surrogate: 4-BFB

LCS 0990344-BL1 9/15/99 62.5 72.5 5.00 116 100
 Gasoline Range Hydrocarbons 9/15/99 5.00 7.15 5.91 5.29 102
 Surrogate: 4-BFB

Duplicate 0990344-DUP1 P909205-01 9/15/99 5.18 5.91 5.29 50.0 19.0
 Gasoline Range Hydrocarbons 9/15/99 5.18 7.15 5.91 5.29 102
 Surrogate: 4-BFB

Duplicate 0990344-DUP2 P909205-06 9/15/99 5.36 3.17 4.95 50.0 49.8
 Gasoline Range Hydrocarbons 9/15/99 5.36 5.27 3.17 4.95 92.4
 Surrogate: 4-BFB

Batch: 0990345 Date Prepared: 9/13/99 Extraction Method: EPA 5030
 Blank Gasoline Range Hydrocarbons 9/14/99 5.00 ND 4.55 2.50 91.0
 Surrogate: 4-BFB

LCS 0990345-BL1 9/14/99 62.5 70.5 5.10 113 102
 Gasoline Range Hydrocarbons 9/14/99 5.00 5.10 5.10 5.10 102
 Surrogate: 4-BFB

Duplicate 0990345-DUP1 P909205-52 9/14/99 5.32 ND 4.38 50.0-150 82.3 50.0
 Gasoline Range Hydrocarbons 9/14/99 5.32 ND 4.38 50.0-150 82.3 50.0
 Surrogate: 4-BFB

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* Refer to end of report for text of notes and definitions.

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Parametrix, Inc. (PMX) Project: Emerald Petroleum
 700 NE Multnomah, Suite 1160 Project Number: N/A
 Portland, OR 97232 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Diesel and Heavy Range Hydrocarbons (PMX) Control
 North Creek Analytical - Portland

Analyte	Date	Spike	Sample	QC	Units	Reporting Limit	Recovery	% RPD	% Notes
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Blank	Date Prepared: 9/14/99								
Diesel Range Organics	9/14/99	ND	ND	ND	mg/kg dry	25.0			
Heavy Oil Range Hydrocarbons		ND	ND	ND		50.0			
Surrogate: 1-Chlorooctadecane		5.00		5.93		50.0-150		119	
ICS	0990406-BS1	126	125	125	mg/kg dry	50.0-150		99.2	
Diesel Range Organics	9/14/99	51.4	54.3	54.3		50.0-150		106	
Heavy Oil Range Hydrocarbons		5.00		4.93		50.0-150		98.6	
Surrogate: 1-Chlorooctadecane		"		"		50.0-150		104	
Duplicate	0990406-DUP1	9/15/99	ND	ND	mg/kg dry	50.0			
Diesel Range Organics	9/15/99	ND	ND	ND		50.0			
Heavy Oil Range Hydrocarbons		ND	ND	ND		50.0			
Surrogate: 1-Chlorooctadecane		6.17		6.39		50.0-150		104	
Duplicate	0990406-DUP2	9/15/99	ND	ND	mg/kg dry	50.0			
Diesel Range Organics	9/15/99	ND	ND	ND		50.0			
Heavy Oil Range Hydrocarbons		ND	ND	ND		50.0			
Surrogate: 1-Chlorooctadecane		5.36		5.41		50.0-150		101	
Blank	Date Prepared: 9/15/99								
0990423-BLK1									
Diesel Range Organics	9/15/99	ND	ND	ND	mg/kg dry	25.0			
Heavy Oil Range Hydrocarbons		ND	ND	ND		50.0			
Surrogate: 1-Chlorooctadecane		5.00		6.08		50.0-150		122	
ICS	0990423-BS1	126	128	128	mg/kg dry	50.0-150		102	
Diesel Range Organics	9/16/99	51.4	54.8	54.8		50.0-150		107	
Heavy Oil Range Hydrocarbons		5.00		5.20		50.0-150		104	
Surrogate: 1-Chlorooctadecane		"		"		50.0-150		104	
Duplicate	0990423-DUP1	9/16/99	ND	ND	mg/kg dry	50.0			
Diesel Range Organics	9/16/99	ND	ND	ND		50.0			
Heavy Oil Range Hydrocarbons		66.2	66.2	66.2		50.0			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	
Duplicate	0990423-DUP2	9/16/99	52.5	52.5	mg/kg dry	42.5			
Diesel Range Organics	9/16/99	52.5	52.5	52.5		42.5			
Surrogate: 1-Chlorooctadecane		5.28		6.07		50.0-150		115	



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 Bend 20392 Empire Avenue, Suite F-1, Bend, OR 97701-5711
 641.383.5310 fax 541.382.7688

Parametrix, Inc.-(PMX)
 700 NE Multnomah, Suite 1160
 Portland, OR 97232
 Project: Emerald Petroleum
 Project Number: N/A
 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99
 Received: 9/10/99
 Reported: 10/26/99 14:27

Diesel and Heavy Range Hydrocarbons per NW/PH-DX Method/Quality Control
 North Creek Analytical - Portland

Analyte	Date	Spike	Level	Sample	Result	QC	Reporting Limit	Recovery	% Limit	% Notes
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Duplicate (continued)	0990423-DUP2	P909205-55	109	96.5	6.57	"	50.0-150	121	50.0	12.2
Heavy Oil Range Hydrocarbons	9/16/99						mg/kg dry			
Surrogate: 1-Chlorodecane										

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*Refer to end of report for text of notes and definitions

Phillip Nerenberg, Laboratory Manager
 North Creek Analytical, Inc.
 Environmental Laboratory Network



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Parametrix, Inc.-(PMX)
 700 NE Multnomah, Suite 1160
 Portland, OR 97232
 Project: Emerald Petroleum
 Project Number: N/A
 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99
 Received: 9/10/99
 Reported: 10/26/99 14:27

Total Metals per EPA 6000/7000 Series Methods/Quality Control
 North Creek Analytical - Portland

Analyte	Date	Spike	Sample	QC	Reporting Limit	Recovery	% Limit	% Notes
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Batch: 0990367
 Date Prepared: 9/13/99
 Extraction Method: EPA 3050

Blank
 Lead 9/14/99 ND mg/kg dry 10.0
 LCS 9/14/99 100 mg/kg dry 99.0
 Duplicate 9/14/99 100 mg/kg dry 99.0

Lead 9/14/99 503 mg/kg dry 40.0 134
 Duplicate 9/14/99 503 mg/kg dry 100
 Matrix Spike 9/14/99 98.7 503 mg/kg dry 178
 Lead 9/14/99 503 mg/kg dry 75.0-125 NR

Matrix Spike 9/14/99 104 273 mg/kg dry 292
 Lead 9/14/99 18.3 mg/kg dry 75.0-125

Batch: 0990368
 Date Prepared: 9/13/99
 Extraction Method: EPA 3050

Blank
 Lead 9/14/99 ND mg/kg dry 10.0
 LCS 9/14/99 100 mg/kg dry 80.0-120
 Duplicate 9/14/99 100 mg/kg dry 40.0

Lead 9/14/99 503 mg/kg dry 100
 Matrix Spike 9/14/99 98.7 503 mg/kg dry 178
 Lead 9/14/99 503 mg/kg dry 75.0-125 NR

Matrix Spike 9/14/99 104 273 mg/kg dry 292
 Lead 9/14/99 18.3 mg/kg dry 75.0-125

Batch: 0990368
 Date Prepared: 9/13/99
 Extraction Method: EPA 3050

Blank
 Lead 9/14/99 ND mg/kg dry 10.0
 LCS 9/14/99 100 mg/kg dry 80.0-120
 Duplicate 9/14/99 100 mg/kg dry 40.0

Lead 9/14/99 503 mg/kg dry 100
 Matrix Spike 9/14/99 98.7 503 mg/kg dry 178
 Lead 9/14/99 503 mg/kg dry 75.0-125 NR

Matrix Spike 9/14/99 104 273 mg/kg dry 292
 Lead 9/14/99 18.3 mg/kg dry 75.0-125

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North Creek Analytical - Portland

*Refer to end of report for text of notes and definitions.

Analyte	Date	Spike	Level	Sample Result	QC Result	Units	Reporting Limit	Recovery	% Limit	% RPD	% Notes
Batch: 0990559	Date Prepared: 9/21/99	Extraction Method: EPA 3550									
Blank											
4-Chloro-3-methylphenol	9/28/99	ND		mg/kg dry	1.00						
2-Chlorophenol		ND			1.00						
Cresols		ND			2.00						
2,4-Dichlorophenol		ND			1.00						
2,6-Dichlorophenol		ND			1.00						
2,4-Dimethylphenol		ND			1.00						
4,6-Dinitro-2-methylphenol		ND			1.00						
2,4-Dinitrophenol		ND			2.50						
Dinoseb		ND			1.00						
2-Nitrophenol		ND			1.00						
4-Nitrophenol		ND			1.00						
Pentachlorophenol		ND			1.00						
Phenol		ND			1.00						
2,3,4,6-Tetrachlorophenol		ND			1.00						
2,4,5-Trichlorophenol		ND			1.00						
2,4,6-Trichlorophenol		ND			1.00						
Surrogate: 2-Fluorophenol		3.33			3.60	"					
Surrogate: 2,4,6-Tribromophenol		"			3.50	"					
ICS	0990559-BSI	9/28/99	3.33	3.29	3.27	mg/kg dry	70.0-130	98.8			
4-Chloro-3-methylphenol		"	3.33	3.33	3.29		70.0-130	98.2			
2-Chlorophenol		"	3.33	3.33	3.27		70.0-130	98.8			
4-Nitrophenol		"	3.33	3.33	3.29		70.0-130	98.8			
Pentachlorophenol		"	3.33	3.33	2.76		70.0-130	82.9			
Phenol		"	3.33	3.37	3.37		70.0-130	101			
Surrogate: 2-Fluorophenol		"	3.33	3.32	3.32		70.0-130	99.7			
Surrogate: 2,4,6-Tribromophenol		"	3.33	3.28	3.28		70.0-130	98.5			
Batch: 1090046	Date Prepared: 10/4/99	Extraction Method: EPA 3550									
Blank											
4-Chloro-3-methylphenol	10/12/99	ND		mg/kg dry	1.00						
2-Chlorophenol		ND			1.00						
Cresols		ND			2.00						
2,4-Dichlorophenol		ND			1.00						
2,6-Dichlorophenol		ND			1.00						
2,4-Dimethylphenol		ND			1.00						
4,6-Dinitro-2-methylphenol		ND			1.00						

Parametrix, Inc.-(PMX)	Project: Emerald Petroleum	Sampled: 9/8/99 to 9/10/99
700 NE Multnomah, Suite 1160	Project Number: N/A	Received: 9/10/99
Portland, OR 97232	Project Manager: Anne Ackerman	Reported: 10/26/99 14:27

Parametrix, Inc.-(PMX)
700 NE Multnomah, Suite 1160
Portland, OR 97232

Project: Emerald Petroleum

Project Number: N/A

Project Manager: Anne Ackerman

Portland, OR 97232

Reported: 10/26/99 14:27

Received: 9/10/99

Reported: 10/26/99 14:27

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Blank (continued)	1090046-BLK1	10/12/99	mg/kg dry
2,4-Dinitrophenol	ND	2.50	"
Dinoseb	ND	1.00	"
2-Nitrophenol	ND	1.00	"
4-Nitrophenol	ND	1.00	"
Pentachlorophenol	ND	1.00	"
Phenol	ND	1.00	"
2,3,4,5-Tetrachlorophenol	ND	1.00	"
2,4,5-Trichlorophenol	ND	1.00	"
2,4,6-Trichlorophenol	ND	1.00	"
Surrogate: 2-Fluorophenol	3.33	3.00	"
Surrogate: 2,4,6-Tribromophenol	3.33	2.68	"
LCS	1090046-BST	10/12/99	mg/kg dry
4-Chloro-3-methylphenol	3.33	3.28	"
2-Chlorophenol	3.33	3.18	"
4-Nitrophenol	3.33	3.26	"
Pentachlorophenol	3.33	2.41	"
Phenol	3.33	3.24	"
Surrogate: 2-Fluorophenol	3.33	3.11	"
Surrogate: 2,4,6-Tribromophenol	3.33	2.81	"
Matrix Spike Dup	1090046-MSD1	P909205-51	mg/kg dry
4-Chloro-3-methylphenol	3.68	3.58	"
2-Chlorophenol	3.68	3.27	"
4-Nitrophenol	3.68	3.40	"
Pentachlorophenol	3.68	2.65	"
Phenol	3.68	3.37	"
Surrogate: 2-Fluorophenol	3.68	3.17	"
Surrogate: 2,4,6-Tribromophenol	3.68	3.09	"
Matrix Spike Dup	1090046-MSD1	P909205-51	mg/kg dry
4-Chloro-3-methylphenol	3.68	3.97	"
2-Chlorophenol	3.68	3.75	"
4-Nitrophenol	3.68	3.64	"
Pentachlorophenol	3.68	2.69	"
Phenol	3.68	3.86	"
Surrogate: 2-Fluorophenol	3.68	3.75	"
Surrogate: 2,4,6-Tribromophenol	3.68	3.56	"

Analyte	Date	Spike	Level	Result	QC	Units	Reporting Limit	Recovery Limit	% Limit	RPD	% Notes
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L. Hendrix per EPA Method 8071 Quality Control

Parsons, Inc. (FMA)	Project: Emerald Petroleum	Sampled: 9/8/99 to 9/10/99
700 NE Multnomah, Suite 1160	Project Number: N/A	Received: 9/10/99
Portland, OR 97232	Project Manager: Anne Ackerman	Reported: 10/26/99 14:27

Seaside	18383 120TH AVENUE NE, SUITE 101, Bothell, WA 98011-9508
Spokane	East 11115 Montgomery, Suite B, Spokane, WA 99206-4778
Portland	609,924,9200 fax 609,924,9250 6945 SW Nimbus Avenue, Beaverton, OR 97008-7192
Bend	603,908,9200 fax 603,908,9210 20332 Emporia Avenue, Suite F-1, Bend, OR 97701-6711
	541.383.9310 fax 541.382.7588

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 503.908.9200 fax 503.908.9210
 Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
 541.383.9310 fax 541.382.7588

Parametrix, Inc.-(PMX) 700 NE Multnomah, Suite 1160 Portland, OR 97232
 Project: Emerald Petroleum Project Number: N/A
 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

For information Biphennyls per EPA Method 8082/Quality Control
 North Creek Analytical - Portland

Analyte	Date	Spike	Sample	QC	Units	Reporting Limit	Recovery	% Limit	% Notes
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Batch: 0990521	Date Prepared: 9/17/99	Extraction Method: EPA 3550							
Blank	9/20/99	ND	ug/kg dry	67.0	134	67.0			
Aroclor 1221		ND							
Aroclor 1232		ND							
Aroclor 1242		ND							
Aroclor 1248		ND							
Aroclor 1254		ND							
Aroclor 1260		ND							
Surrogate: 2,4,5,6-Tetrachloro-m-xylene		33.3		35.3	63.0-119	67.0			
Surrogate: Decachlorobiphenyl		33.3		31.9	52.0-131	106			
LCS	0990521-BS1								
Aroclor 1016	9/20/99	333	ug/kg dry	288	57.0-132	86.5			
Aroclor 1260		333		308	60.0-136	92.5			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene		33.3		29.1	63.0-119	87.4			
Surrogate: Decachlorobiphenyl		33.3		27.3	52.0-131	82.0			
Matrix Spike	0990521-MS1								
Aroclor 1016	9/20/99	368	ug/kg dry	310	57.0-132	84.2			
Aroclor 1260		368		360	60.0-136	97.8			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene		36.8		29.0	63.0-119	78.8			
Surrogate: Decachlorobiphenyl		36.8		28.1	52.0-131	76.4			
Matrix Spike Dup	0990521-MSD1								
Aroclor 1016	9/20/99	368	ug/kg dry	315	57.0-132	85.6			
Aroclor 1260		368		363	60.0-136	98.6			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene		36.8		34.7	63.0-119	94.3			
Surrogate: Decachlorobiphenyl		36.8		33.3	52.0-131	90.5			

North Creek Analytical - Portland
 *Refer to end of report for text of notes and definitions.

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network

Philip Nerenberg, Laboratory Manager

No

North Creek Analytical - Portland

**Refer to end of report for text of notes and definitions*

Analyte	Date	Spike	Level	Sample	QC	Result	Units	Recovery Limits	% Limit	% RPD	% Notes
Batch: 0990326	Date Prepared: 9/12/99										
Blank	0990326-BL.K1										
Acetone	9/15/99	ND	ug/kg dry	2500	100	ND	"	100	100	100	
Benzene	"	ND	"	100	100	ND	"	100	100	100	
Bromobenzene	"	ND	"	100	100	ND	"	100	100	100	
Bromochloromethane	"	ND	"	100	100	ND	"	100	100	100	
Bromodichloromethane	"	ND	"	100	100	ND	"	100	100	100	
Bromomethane	"	ND	"	100	100	ND	"	100	100	100	
2-Butanone	"	ND	"	2500	100	ND	"	100	100	100	
n-Butylbenzene	"	ND	"	100	100	ND	"	100	100	100	
sec-Butylbenzene	"	ND	"	100	100	ND	"	100	100	100	
tert-Butylbenzene	"	ND	"	100	100	ND	"	100	100	100	
Carbon disulfide	"	ND	"	100	100	ND	"	100	100	100	
Carbon tetrachloride	"	ND	"	200	100	ND	"	100	100	100	
Chlorobenzene	"	ND	"	100	100	ND	"	100	100	100	
Chloroethane	"	ND	"	200	100	ND	"	100	100	100	
Chloroform	"	ND	"	100	100	ND	"	100	100	100	
Chloromethane	"	ND	"	500	100	ND	"	100	100	100	
2-Chlorotoluene	"	ND	"	100	100	ND	"	100	100	100	
4-Chlorotoluene	"	ND	"	100	100	ND	"	100	100	100	
1,2-Dibromo-3-chloropropane	"	ND	"	100	100	ND	"	100	100	100	
Dibromochloromethane	"	ND	"	100	100	ND	"	100	100	100	
1,2-Dibromomethane	"	ND	"	100	100	ND	"	100	100	100	
Dibromomethane	"	ND	"	100	100	ND	"	100	100	100	
1,2-Dichlorobenzene	"	ND	"	100	100	ND	"	100	100	100	
1,3-Dichlorobenzene	"	ND	"	100	100	ND	"	100	100	100	
1,4-Dichlorobenzene	"	ND	"	100	100	ND	"	100	100	100	
Dichlorodifluoromethane	"	ND	"	500	100	ND	"	100	100	100	
1,1-Dichloroethane	"	ND	"	100	100	ND	"	100	100	100	
1,2-Dichloroethane	"	ND	"	100	100	ND	"	100	100	100	
cis-1,2-Dichloroethane	"	ND	"	100	100	ND	"	100	100	100	
trans-1,2-Dichloroethane	"	ND	"	100	100	ND	"	100	100	100	
1,2-Dichloropropane	"	ND	"	100	100	ND	"	100	100	100	
1,3-Dichloropropane	"	ND	"	100	100	ND	"	100	100	100	
2,2-Dichloropropane	"	ND	"	100	100	ND	"	100	100	100	
1,1-Dichloropropene	"	ND	"	100	100	ND	"	100	100	100	
cis-1,3-Dichloropropene	"	ND	"	100	100	ND	"	100	100	100	

Extraction Method: MeOH Extraction

Parametrix, Inc.-(P/MX)	Project: Emerald Petroleum	Project Number: N/A	Project Manager: Anne Ackerman	Reported: 10/26/99 14:27
700 NE Multnomah, Suite 1160				Received: 9/10/99
Portland, OR 97232				Sampled: 9/8/99 to 9/10/99



City	Address	Phone	Fax
Spokane	East 1115 Montgomery, Suite B	509.924.8200	509.924.8200
Spokane	18389 120th Avenue NE	425.450.8210	425.450.8200
Spokane	18389 120th Avenue NE, Suite 101	509.924.4500	509.924.4500
Portland	9405 SW Nimbus Avenue, Bayswater	503.906.9210	503.906.9210
Band	20322 Empire Avenue, Suite F-1, Band, OR 97701-5711	541.883.9810	541.882.7588



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 Portland 8405 SW Nimbus Avenue, Beaverton, OR 97008-7132
 Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
 541.383.9310 Fax 541.382.7588

Parametrix, Inc. (PMX) 700 NE Multnomah, Suite 1160 Portland, OR 97232
 Project: Emerald Petroleum Project Number: N/A
 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Volatile Organic Compounds per EPA Method 8260B/Quality Control
 North Creek Analytical - Portland

Analyte	Date	Spike	Sample	QC	Units	Reporting Limit	Recovery	% Limit	% Notes
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Blank (continued) 0990326-BLK1 9/15/99 ND ug/kg dry

trans-1,3-Dichloropropene	9/15/99	ND	ND	ND	100	100	100	100	100
Ethylbenzene	9/15/99	ND	ND	ND	100	100	100	100	100
Hexachlorobutadiene	9/15/99	ND	ND	ND	100	100	100	100	100
2-Hexanone	9/15/99	ND	ND	ND	1000	1000	1000	1000	1000
Isopropylbenzene	9/15/99	ND	ND	ND	100	100	100	100	100
p-Isopropyltoluene	9/15/99	ND	ND	ND	100	100	100	100	100
4-Methyl-2-pentanone	9/15/99	ND	ND	ND	500	500	500	500	500
Naphthalene	9/15/99	ND	ND	ND	100	100	100	100	100
Methylene chloride	9/15/99	ND	ND	ND	500	500	500	500	500
Styrene	9/15/99	ND	ND	ND	100	100	100	100	100
1,1,1,2-Tetrachloroethane	9/15/99	ND	ND	ND	100	100	100	100	100
1,1,2,2-Tetrachloroethane	9/15/99	ND	ND	ND	100	100	100	100	100
Toluene	9/15/99	ND	ND	ND	100	100	100	100	100
1,2,3-Trichlorobenzene	9/15/99	ND	ND	ND	100	100	100	100	100
1,2,4-Trichlorobenzene	9/15/99	ND	ND	ND	100	100	100	100	100
1,1,1-Trichloroethane	9/15/99	ND	ND	ND	100	100	100	100	100
1,1,2-Trichloroethane	9/15/99	ND	ND	ND	100	100	100	100	100
Trichloroethene	9/15/99	ND	ND	ND	100	100	100	100	100
Trichlorofluoromethane	9/15/99	ND	ND	ND	100	100	100	100	100
1,2,3-Trichloropropane	9/15/99	ND	ND	ND	100	100	100	100	100
1,2,4-Trichlorobenzene	9/15/99	ND	ND	ND	100	100	100	100	100
1,3,5-Trimethylbenzene	9/15/99	ND	ND	ND	100	100	100	100	100
Vinyl chloride	9/15/99	ND	ND	ND	100	100	100	100	100
o-Xylene	9/15/99	ND	ND	ND	100	100	100	100	100
m,p-Xylene	9/15/99	ND	ND	ND	200	200	200	200	200
Surrogate: 4-BFB	9/15/99	2000	1580	1580	70.0-130	79.0	70.0-130	79.0	79.0
Surrogate: 1,2-DCA-d4	9/15/99	2000	2190	2190	65.0-135	110	65.0-135	110	110
Surrogate: Dibromofluoromethane	9/15/99	2000	2070	2070	65.0-130	104	65.0-130	104	104
Surrogate: Toluene-d8	9/15/99	2000	1960	1960	70.0-120	98.0	70.0-120	98.0	98.0

ICS	9/12/99	2500	2610	2610	80.0-135	104	80.0-135	104	104
Benzene	9/12/99	2500	2450	2450	80.0-135	98.0	80.0-135	98.0	98.0
Chlorobenzene	9/12/99	2500	2340	2340	60.0-150	93.6	60.0-150	93.6	93.6
1,1-Dichloroethene	9/12/99	2500	2480	2480	80.0-130	99.2	80.0-130	99.2	99.2
Toluene	9/12/99	2500	2420	2420	70.0-135	96.8	70.0-135	96.8	96.8

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*Refer to end of report for text of notes and definitions.

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



Seattle 18939 120th Avenue NE, Suite 101, Bothell, WA 98011-9508
Spokane East 11116 Montgomery, Suite B, Spokane, WA 99208-4776
Portland 509.924.9200 fax 509.924.9290
6406 SW Nimbus Avenue, Beaverton, OR 97008-7192
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7598

Parametrix, Inc.-(PMX) Project: Emerald Petroleum
700 NE Multnomah, Suite 1160 Project Number: N/A
Portland, OR 97232 Project Manager: Anne Ackerman
Sampled: 9/8/99 to 9/10/99
Received: 9/10/99
Reported: 10/26/99 14:27

Volatile Organic Compounds per EPA Method 8260B (Quality Control)

North Creek Analytical - Portland

Analyte	Date	Spike	Sample	QC	Units	Reporting Limit	Recovery	% RPD	% Limit	% Note
---------	------	-------	--------	----	-------	-----------------	----------	-------	---------	--------

LCS (continued)	0990326-BS1	2000	2230	2230	ug/kg dry	70.0-130	112	132	122	116
Surrogate: 4-BFB	9/12/99	2000	2230	2230	ug/kg dry	70.0-130	112	132	122	116
Surrogate: 1,2-DCA-d4	"	2000	2640	2640	"	65.0-135	132			
Surrogate: Dibromofluoromethane	"	2000	2440	2440	"	65.0-130	122			
Surrogate: Toluene-d8	"	2000	2310	2310	"	70.0-120	116			

Matrix Spike	0990326-MS1	3440	3420	3420	ug/kg dry	60.0-135	99.4	93.6	86.6	93.9
Benzenes	9/12/99	3440	ND	3420	ug/kg dry	60.0-135	99.4	93.6	86.6	93.9
Chlorobenzenes	"	3440	ND	3220	"	65.0-125	93.6			
1,1-Dichloroethene	"	3440	ND	2980	"	60.0-135	86.6			
Toluene	"	3440	ND	3230	"	60.0-125	93.9			
Trichloroethene	"	3440	ND	3090	"	60.0-125	89.8			
Surrogate: 4-BFB	"	2750	2680	2680	"	70.0-130	97.5			
Surrogate: 1,2-DCA-d4	"	2750	3260	3260	"	65.0-135	119			
Surrogate: Dibromofluoromethane	"	2750	2980	2980	"	65.0-130	108			
Surrogate: Toluene-d8	"	2750	2830	2830	"	70.0-120	103			

Matrix Spike Dup	0990326-MSD1	3440	3450	3450	ug/kg dry	60.0-135	100	25.0	0.602	1.59
Benzenes	9/12/99	3440	ND	3450	ug/kg dry	60.0-135	100	25.0	0.602	1.59
Chlorobenzenes	"	3440	ND	3270	"	65.0-125	95.1	25.0		4.95
1,1-Dichloroethene	"	3440	ND	3130	"	60.0-135	91.0	25.0		2.42
Toluene	"	3440	ND	3310	"	60.0-125	96.2	25.0		4.46
Trichloroethene	"	3440	ND	3230	"	60.0-125	93.9	25.0		
Surrogate: 4-BFB	"	2750	2640	2640	"	70.0-130	96.0			
Surrogate: 1,2-DCA-d4	"	2750	3290	3290	"	65.0-135	120			
Surrogate: Dibromofluoromethane	"	2750	3020	3020	"	65.0-130	110			
Surrogate: Toluene-d8	"	2750	2870	2870	"	70.0-120	104			

North Creek Analytical - Portland

*Refer to end of report for text of notes and definition

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
Environmental Laboratory Network



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 541.383.9310 fax 541.382.7588

Parametrix, Inc.-(PMX) Project: Emerald Petroleum Project Number: N/A
 700 NE Multnomah, Suite 1160 Project Manager: Anne Ackerman
 Portland, OR 97232
 Sampled: 9/8/99 to 9/10/99 Received: 9/10/99 Reported: 10/26/99 14:27

Notes and Definitions

Note

- B Analyte detected in the method blank. Contamination was traced back to a bad lot of acetone used for extraction.
- 1 The detected hydrocarbons appear to be due to the overlap of the heavy oil as well as weathered diesel
- 2 Reporting limits raised due to dilution necessary for analysis.
- 3 The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
- 4 This surrogate recovers for this sample were below control limits. The sample was re-extracted out of hold time, and the results, which confirm the original analysis, are listed below the original set.
- 5 This surrogate recovery is outside of NCA established control limits.
- 6 This surrogate recovery is above control limits. Since no analytes were detected, data quality is not affected.
- 7 Surrogate recovery is out of control limits. QA criteria are met when one surrogate is within control limits.
- 8 Estimated concentration of this analyte due to solvent contamination is 43 ppb.
- 9 Estimated concentration of this analyte due to solvent contamination is 21 ppb.
- 10 RPD is not applicable for analyte concentrations less than 5 times the MRL.
- 11 The RPD is above the control limit due to a non-homogeneous sample matrix.
- 12 The spike recovery for this QC sample is outside of established control limits due to a non-homogeneous matrix in the native sample.
- 13 MS/MSD not available due to dilution necessary to analyze the native sample.

North Creek Analytical - Portland

Philip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network



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 Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
 541.383.9310 fax 541.382.7598

Parametrix, Inc.-(PMX)
 700 NE Multnomah, Suite 1160
 Portland, OR 97232
 Project: Emerald Petroleum
 Project Number: N/A
 Project Manager: Anne Ackerman
 Sampled: 9/8/99 to 9/10/99
 Received: 9/10/99
 Reported: 10/26/99 14:27

Notes and Definitions

#	Note
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical - Portland

PN

Phillip Nerenberg, Laboratory Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network

COPY

CHAIN OF CUSTODY REPORT

Work Order #

P909205

REPORT TO:

Baronick
Ave Alderman

ATTENTION:

Ave Alderman

ADDRESS:

700 NE Multnomah Hill Co

Booth OR 97122

PHONE:

233 2400

FAX:

233 4825

PROJECT NAME:

Everald Refinery

PROJECT NUMBER:

SAMPLED BY:

Alderman

CLIENT SAMPLE IDENTIFICATION

SAMPLING DATE/TIME

NCA SAMPLE ID (Laboratory Use Only)

PWX-1, 4'

9/8/99 1015

X X X

MATRIX (W, S, A, O)

OF CONTAINERS

COMMENTS

Please hold unused sample volume in all samples

PWX-1, 7'

9/8/99 1050

S

1

PWX-1, 11'

9/8/99 1055

S

1

PWX-1, 15'

9/8/99 1100

S

1

PWX-2, 3'

9/8/99 1215

S

1

PWX-2, 7'

9/8/99 1220

X X X

S

1

PWX-2, 11'

9/8/99 1225

S

1

PWX-3, 2'

9/8/99 1300

X X X

S

1

PWX-3, 5'

9/8/99 1305

S

1

PWX-3, 10'

9/8/99 1310

X X X

S

1

SEE INQUIRIES BY SIGNATURE

DATE

9/10/99

RECEIVED BY SIGNATURE

Kee Morgan

DATE

9/10/99

PRINT NAME

Ave Alderman

FIRM

Baronick

TIME

1535

PRINT NAME

Eve Morgan

FIRM

NCH

TIME

1540

RELINQUISHED BY SIGNATURE

DATE

RECEIVED BY SIGNATURE

DATE

PRINT NAME

FIRM

TIME

PRINT NAME

FIRM

TIME

ADDITIONAL REMARKS:

FIRM

TIME

PRINT NAME

FIRM

TIME



9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2207

100

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

1

LINE

19

1



**NORTH
CREEK
ANALYTICAL**
Environmental Laboratory Services

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2892
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2702

COPY

Work Order #

1904205

REPORT TO:

Paranetrix

ATTENTION:

Steve Acherman

ADDRESS:

700 NE Multnomah #1160
Portland OR 97232

PHONE:

233 2400 FAX 233 4825

PROJECT NAME:

Emmell Refuel

PROJECT NUMBER:

SAMPLED BY:

Acherman

CLIENT SAMPLE
IDENTIFICATION

SAMPLING
DATE/TIME

NCA SAMPLE ID
(Laboratory Use Only)

ANALYST
REQUEST

WITH-9
WITH-4 to
total 10
VOCs

NCA QUOTE #

MATRIX (W, S, A, O) CONTAINERS COMMENTS

PMX-7, 2'

9/9/99 920

S

1

Please hold

PMX-7, 3'

9/9/99 925

S

1

unused ref

PMX-7, 10'

9/9/99 930

S

1

on all sample

PMX-7, 12'

9/9/99 935

S

1

for possible

PMX-8, 2'

9/9/99 1015

S

1

additional

PMX-8, 5'

9/9/99 1020

S

1

analyses

PMX-8, 8'

9/9/99 1025

S

1

(HCB, HHT, phthal)

PMX-8, 10'

9/9/99 1030

S

1

PMX-8, 12'

9/9/99 1035

S

1

PMX-9, 2'

9/9/99 1115

S

1

RECEIVED BY:

Steve Acherman

DATE:

9/10/99

RECEIVED BY:

Joe M...

DATE:

9/10/99

PRINT NAME:

Paranetrix

FIRM:

Paranetrix

DATE:

9/35

PRINT NAME:

Eric Mors

FIRM:

NZA

DATE:

15/99

ADDITIONAL REMARKS:

FIRM:

DATE:

PRINT NAME:

FIRM:

DATE:



CHAIN OF CUSTODY REPORT

COPY

Work Order #

P909205

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-2200 FAX 485-9922
Easi 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9200
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9220 FAX 644-2200

REPORT TO:			INVOICE TO:		
ATTENTION: <u>Parametric</u>			ATTENTION: <u>Same</u>		
ADDRESS: <u>700 NE Multnomah #1160</u>			ADDRESS:		
PHONE: <u>233 2400 FAX 233 4825</u>			P.O. NUMBER:		
PROJECT NAME: <u>Everald Refractor</u>			ANALYSIS REQUEST:		
PROJECT NUMBER:			NCA QUOTE #:		
SAMPLED BY: <u>Adlerman</u>			DATE: <u>9/10/99</u>		
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	☒ WTPH-g ☒ WTPH-d + o ☒ total Pb ☒ VOCs		
1. PMX-9, 6'	9/9/99 1120				
2. PMX-9, 9'	9/9/99 1125				
3. PMX-9, 12'	9/9/99 1130		X	X	
4. PMX-10, 2'	9/9/99 1150				
5. PMX-10, 6'	9/9/99 1155				
6. PMX-10, 9'	9/9/99 1200		X	X	
7. PMX-10, 12'	9/9/99 1205		X	X	
8. PMX-10, 15'	9/9/99 1210				
9. PMX-11, 2'	9/9/99 1250				
10. PMX-11, 6'	9/9/99 1255				
RECEIVED BY: <u>Adlerman</u>			DATE: <u>9/10/99</u>		
PRINT NAME: <u>Parametric</u>			TIME: <u>1535</u>		
FIRM: <u>Parametric</u>			DATE: <u>9/10/99</u>		
RECEIVED BY: <u>Everald</u>			DATE: <u>9/10/99</u>		
PRINT NAME: <u>Everald</u>			TIME: <u>1535</u>		
FIRM: <u>Everald</u>			DATE: <u>9/10/99</u>		
RECEIVED BY: <u>Adlerman</u>			DATE: <u>9/10/99</u>		
PRINT NAME: <u>Adlerman</u>			TIME: <u>1535</u>		
FIRM: <u>Adlerman</u>			DATE: <u>9/10/99</u>		



18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 465-2699
 Email 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9200
 9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2000

CHAIN OF CUSTODY REPORT

Work Order #

PRODOST

REPORT TO:				INVOICE TO:							
ATTENTION:				ATTENTION:							
ADDRESS:				ADDRESS:							
PHONE:				P.O. NUMBER:							
PROJECT NAME:				NCA QUOTE #:							
PROJECT NUMBER:				ANALYST REQUEST:							
SAMPLED BY:				OTHER SPECIFY:							
CLIENT SAMPLE IDENTIFICATION		SAMPLING DATE/TIME		NCA SAMPLE ID (Laboratory Use Only)		MATRIX (W, S, A, O)		# OF CONTAINERS		COMMENTS	
PWX-11, 9'		9/9/99 1300				S		1		please hold	
PWX-11, 12'		9/9/99 1305				S		1		unused oil.	
PWX-12, 2'		9/9/99 1440				S		1		on all samples	
PWX-12, 6'		9/9/99 1445				S		1		for possible additional	
PWX-12, 9'		9/9/99 1450				S		1		analysis	
PWX-12, 12'		9/9/99 1455				S		1		(PES, BHT, BHT-1)	
PWX-13, 2'		9/10/99 900				S		1			
PWX-13, 6'		9/10/99 905				S		1			
PWX-13, 10'		9/9/99 910				S		1			
PWX-13, 14'		9/9/99 915				S		1			

TURNAROUND REQUEST in Business Days

Organic & Inorganic Analyses

10 7 5 4 3 2 1

Standard

Fixed & Hydrocarbon Analyses

☒ 3-4 2 1 Same Day

Standard

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

RECEIVED BY: *Hee Mon* DATE: *9/10/99*

PRINT NAME: *Eve Morgan* FIRM: *WCH* TIME: *15:40*

RECEIVED BY: *[Signature]* DATE: *[Blank]*

PRINT NAME: *[Blank]* FIRM: *[Blank]* TIME: *[Blank]*

ADDITIONAL REMARKS:

PAGE 57



CHAIN OF CUSTODY REPORT

Work Order #:

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 98206-4776
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132
2653 Empire Avenue, Suite F-1, Bend, OR 97701-5711
(425) 420-9200 FAX 924-9290
(509) 924-9200 FAX 906-9210
(503) 906-9200 FAX 382-7588
(541) 383-9310 FAX 382-7588

CLIENT: *FWX*

REPORT TO: *Ann Johnson*

ADDRESS: *200 NE Multnomah #110*

Portland OR 97232

PHONE: *233 2400*

FAX: *233 4925*

PROJECT NAME: *Emerald Cathedral*

PROJECT NUMBER:

SAMPLED BY: *Adelma*

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME
------------------------------	--------------------

<i>FWX-14, 3'</i>	<i>9/10/99 1030</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>NO TPH - g</i>	<i>NO TPH - d10</i>	<i>total Pb</i>	<i>LOC</i>
<i>FWX-15, 3'</i>	<i>9/16/99 1110</i>	<i>X</i>	<i>X</i>	<i>X</i>				
<i>FWX-16, 2'</i>	<i>9/16/99 1205</i>							
<i>FWX-16, 6'</i>	<i>1210</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>			
<i>FWX-16, 10'</i>	<i>1285</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>			
<i>FWX-17, 2'</i>	<i>1235</i>							
<i>FWX-17, 6'</i>	<i>1240</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>			
<i>FWX-17, 10'</i>	<i>1245</i>							
<i>FWX-18, 2'</i>	<i>1300</i>							
<i>FWX-18, 6'</i>	<i>1305</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>			
<i>FWX-18, 10'</i>	<i>1310</i>							
<i>FWX-19, 2'</i>	<i>1355</i>	<i>X</i>	<i>X</i>	<i>X</i>				
<i>FWX-19, 6'</i>	<i>1400</i>							
<i>FWX-19, 10'</i>	<i>1405</i>							
<i>FWX-20, 2'</i>	<i>1430</i>							

INVOICE TO:

P.O. NUMBER:

REQUESTED ANALYSES

TURNAROUND REQUEST in Business Days*

Organic & Inorganic Analyses

STD.	☐	10	7	5	4	3	2	1	<1
Petroleum Hydrocarbon Analyses	☒	4	3	2	1	<1			

OTHER: Please Specify

*Turnaround Request less than standard may incur Rush Charges.

MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA ID
------------------	------------	----------	--------

Please hold unused sample volume on all samples for possible additional analyses (Pb, PTH, phos)

RELINQUISHED BY: <i>[Signature]</i>	DATE: <i>9/16/99</i>	RECEIVED BY: <i>[Signature]</i>	DATE: <i>9/16/99</i>
PRINT NAME: <i>Ann Johnson</i>	FIRM: <i>FWX</i>	PRINT NAME: <i>Eric Mory</i>	FIRM: <i>NCA</i>
ADDITIONAL REMARKS:	DATE: <i>1535</i>	DATE: <i>1535</i>	DATE: <i>1535</i>



North Creek Analytical, Inc.
Environmental Laboratory Network
www.mca-lab.com

CHAIN OF CUSTODY REPORT

1939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (425) 420-9210 F. -0-9210
East 11115 Montomey, Suite B, Spokane, WA 98206-4776 (509) 924-9200 FAX 924-9290
3405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210
20132 Empire Avenue, Suite 1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CLIENT: PAC

INVOICE TO:

TURNAROUND REQUEST in Business Days*

Organic & Inorganic Analyses

10 7 5 4 3 2 1 <1

STD. ☒ 4 3 2 1 <1

Petroleum Hydrocarbon Analyses

STD.

OTHER

Please Specify

*Turnaround Request less than standard may incur Rush Charges.

REPORT TO: Steve Johnson #1160

PO NUMBER:

ADDRESS: 700 NE Hawthorne Rd #1160

PHONE: 253 2490

FAX: 253 4825

PROJECT NAME: Emmell Petrol

SAMPLED BY: Adriana

CLIENT SAMPLE IDENTIFICATION

SAMPLING DATE/TIME

1 PAC-20, CI 9/10/99 1435

2 PAC-20, 10' 9/10/99 1440

3

4

5

6

7

8

9

10

11

12

13

14

15

NWTPH-g
NWTPH-dio
total PB
VOCs

REQUESTED ANALYSES

MATRIX (W, S, O)

OF CONT.

COMMENTS

NCA ID

S

1

Please hold comment.

S

1

Sample volume on all 5 samples for possible additional analysis (Peb, Pelt, Pelt).

RECEIVED BY: Adriana

DATE: 9/10/99

PRINT NAME: Adriana

DATE: 9/10/99

PRINT NAME: Adriana

DATE: 9/10/99

PRINT NAME: Adriana

DATE: 9/10/99

PRINT NAME: Adriana

DATE: 9/10/99

PRINT NAME: Adriana

DATE: 9/10/99

TEMP:

TIME: