3R - 68

REPORTS

DATE:

3/27/2001

BURLINGTON RESOURCES

SAN JUAN DIVISION
March 27, 2001

Certified: 709932200028981 4004

RECEIVED
MAR 29 2001
OIL CONSERVATION DIVISION

Bill Olson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

RE: 2000 Annual Groundwater Investigation and Remediation Reports
San Juan Basin, New Mexico

Dear Mr. Olson:

As required in Burlington Resources' approved Groundwater Investigation and Remediation Plan dated August, 1998, enclosed are the 2000 annual reports for Burlington's groundwater impact sites in the San Juan Basin. Separate reports are enclosed for the following locations:

Cozzens B#1
Fogelson #4-1
Hampton #4M
Johnson Federal #4 Metering Station
Standard Oil Com. #1
Taylor Com. #2A
Maddox Com 1A

If you have questions or additional information is needed, please contact me at (505) 326-9537.

Sincerely,

Gregg Wurtz
Sr. Environmental Representative

Attachments - Groundwater Investigation and Remediation Reports

cc: Denny Foust - NMOCD Aztec
Bruce Gantner - BR
WFS - Mark Harvey (Cozzens B#1, Hampton #4M)
EPFS - Scott Pope (Fogelson #4-1, Johnson Fed. #4, Standard Oil Com.#1)
Facility and Correspondence Files

BURLINGTON RESOURCES 2000 ANNUAL GROUNDWATER REPORT

Fogelson #4-1

SITE DETAILS

Location: Unit Letter P, Section 4, Township 29N, Range 11W; San Juan County, New Mexico
Land Type: Federal

PREVIOUS ACTIVITIES

1994 and 1995

El Paso Field Services (EPFS) excavated approximately 65 cubic yards from their pit at this location in 1994 and installed a monitoring well in 1995.

1998

Burlington Resources (BR) conducted the initial site assessment of our pit in August 1998. The pit had TPH levels above standards and excavation of approximately 4547 cubic yards of impacted soil to a depth of 41 feet occurred in November 1998 (Attachment, Pit Remediation and Closure Form). At that point, soil samples from the walls and bottom of the excavation were collected and tested clean.

1999

The excavation was backfilled with clean fill. Due to EPFS having groundwater impacts at the location, Burlington installed a groundwater monitoring well in the center of the former earthen pit in May 1999 (Attachment, well boring and construction log). After developing the well and allowing it to stabilize, the well was purged and sampled on May 27, 1999.

An attempt was made to install an upgradient monitoring well on October 14, 1999, but auger refusal was encountered at 26 feet. Quarterly groundwater monitoring continued through 1999.

2000

May 2000, four unsuccessful attempts were made to install an upgradient monitoring well. All four attempts were refused at approximately 20 feet in a fine grain competent sandstone bedrock formation. The purpose of the upgradient well installation was to demonstrate that the chloride concentrations and TDS levels were naturally occurring and typical of the local ground water quality.

The monitoring well MWB1 was damaged at the surface in the first quarter by vandalism and repaired with a new surface monument. A site map (Figure 1) is included displaying the locations of the attempted well borings. Four quarters of ground water analytical data are presented in Table 1.

El Paso completed two additional wells downgradient from their monitoring well MW-1.

CONCLUSIONS

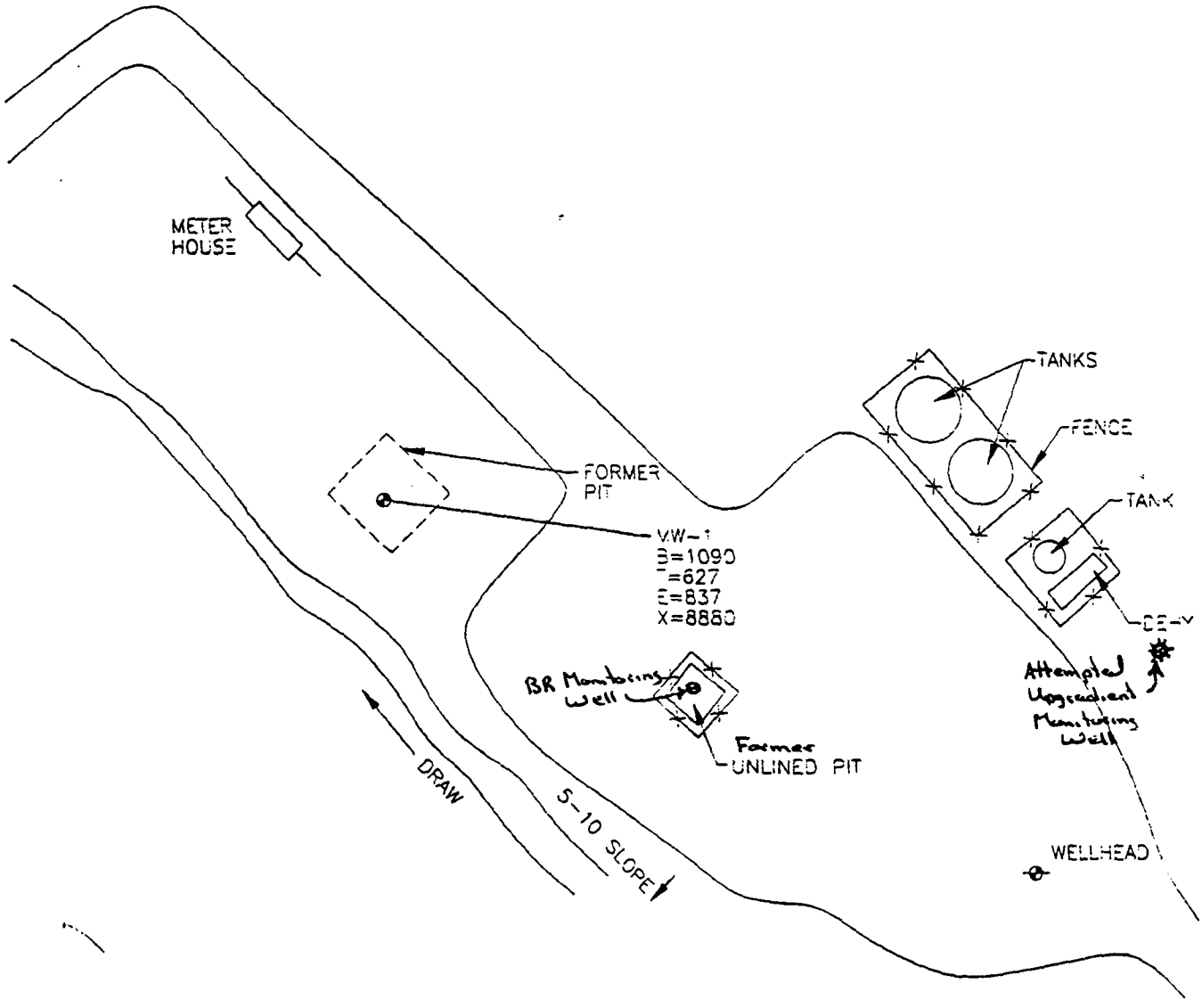
The BR eliminated the source of contamination by excavating BR pit on location. BR installed a source well in the location of the pit excavation and collected six quarters of ground water data. The analytical data results of the groundwater sampling showed levels of constituents of concern below New Mexico Groundwater Standards except for chlorides. Total dissolved solids (TDS) concentrations range from 13,500 to 14,000 mg/l, which is over the 10,000 mg/l limit considered protected by the New Mexico Groundwater Standards and typical for groundwater in this area. BR believes that the chloride concentrations detected are typical of the natural ground water in this area and not related to impacts from BR operations. It is not uncommon in water bearing sedimentary formations in the San Juan Basin to have elevated chlorides levels when the conductivity and TDS levels are over 10,000 mg/l.

RECOMMENDATIONS

- Burlington Resources proposes to discontinue sampling at this site and recommends clean closure granted for area under BR responsibility, which includes the area disturbed surrounding the well location.

Attachments: Figure 1 - Site Map
Table 1 - Groundwater Sampling Results Summary
2000 Groundwater Analytical Results
Well Boring and Construction Logs
Pit Remediation and Closure Report

Figure 1



LEGEND

MW-1	APPROXIMATE MONITORING WELL LOCATION AND NUMBER
B	BENZENE (ug\L)
T	TOLUENE (ug\L)
E	ETHYL BENZENE (ug\L)
X	XYLENE (ug\L)
ug\L	MICROGRAMS PER LITER

NOT TO SCALE

N

PHILIP SERVICES CORP

TITLE:
FOGELSON 4-1 #14
METER 73220
JUNE 4, 1998
(BR Modified 3/22/00)

DWN:	DES.:
TMM	CI
CHKD:	APPD:
CI	
DATE:	REV.:
2/26/99	0

PROJECT NO.: 7520
EPFS GW PITS

FIGURE 1

COL 17520BK-002

Table 1

Groundwater Monitoring Well Sampling

Well Name	MW #	Sample Date	B (ppb)	T (ppb)	E (ppb)	X (ppb)	BTEX (ppb)	Chlorides (ppm)	TDS (ppm)	DTW (1) (ft)
Standard			*10*	*750*	*750*	*620*		*250*		
Fogelson #4-1 (EPNG)	1	5/27/1999	5	<5	210	420	635	**430**	14000	
		9/2/1999	No Sample.							36.45
		9/22/1999						**1700**	13500	
		12/2/1999	<1.0	<1.0	17	33	50	n/a	n/a	35.64
		1/18/2000	<0.5	2.8	65	200	267.8	n/a	n/a	34.31
		5/22/2000	2.9	<1.0	62	200	264.9	***820***	n/a	35.56
		9/7/2000	<0.5	<0.5	18	52	70	**n/a**	n/a	35.34
		12/15/2000	<0.2	0.3	2	5	7.3	640	n/a	35.31

(1) measured from ground surface
n/a = not analyzed

2000 GROUNDWATER ANALYTICAL RESULTS

PHILIP ENVIRONMENTAL

Well Number 1

Serial No. WDPD-

☐ Development of ☐ Purging

WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1

Project Name Burlington Drilling

Project Manager C. IRBY

Project No. 62800025

Client Company Burlington

Phase,Task No.

Site Name Fogelson

Site Address

Development Criteria

☑ 3 to 5 Casing Volumes of Water Removal
☐ Stabilization of Indicator Parameters
☐ Other

Methods of Development

Pump	Bailer
☐ Centrifugal	☑ Bottom Valve
☐ Submersible	☐ Double Check Valve
☐ Peristaltic	☐ Stainless-steel Kemmerer

☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 47.31
Initial Depth to Water (feet) 37.31
Height of Water Column in Well (feet) 10
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Gallons	Gallons to be Removed
Well Casing	10	1.6	5
Gravel Pack			
Drilling Fluids			
Total			

Instruments

Serial No. (if applicable)

☑ pH Meter
☐ DO Monitor
☑ Conductivity Meter
☑ Temperature Meter
☐ Other

Water Disposal

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Initial Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Incremental	Water Volume Removed (gallons): Cumulative	Purge Volume Removed (gallons): Incremental	Purge Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (umhos/cm)	Dissolved Oxygen (mg/l)	Comments
1-18-00	1605		✓							2.5	16.3	6.6	9960		LIGHT BROWN
1-18-00	1620		✓							2.5	16.2	6.8	10,200		LIGHT BROWN

Circle the date and time that the development criteria are met

Comments

Developer's Signature(s) Kelly Padilla Date 1-18-00 Reviewer Date

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number **001039**
January 21, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name Burlington Drilling
Project Number 62800025

Attention: CECIL IRBY

On 01/20/00 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

Kimberly D. McNeill
Project Manager

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: mt

Enclosure

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 001039
PROJECT #	: 62800025	DATE RECEIVED	: 01/20/00
PROJECT NAME	: Burlington Drilling	REPORT DATE	: 01/21/00

PIN I.D. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	MADOX 0100-2-1	AQUEOUS	01/18/00
02	MADOX 0100-2-2	AQUEOUS	01/18/00
03	JOHNSON FED 0100-2-1	AQUEOUS	01/18/00
04	FOG 0100-2-1	AQUEOUS	01/18/00

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL PINNACLE I.D.: 001039
PROJECT # : 62800025
PROJECT NAME : Burlington Drilling

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	MADOX 0100-2-1	AQUEOUS	01/18/00	NA	01/20/00	1
02	MADOX 0100-2-2	AQUEOUS	01/18/00	NA	01/20/00	1
03	JOHNSON FED 0100-2-1	AQUEOUS	01/18/00	NA	01/20/00	10

PARAMETER	DET. LIMIT	UNITS	MADOX 0100-2-1	MADOX 0100-2-2	JOHNSON FED 0100-2-1
BENZENE	0.5	**UG/L**	< 0.5	< 0.5	**3600**
TOLUENE	0.5	**UG/L**	< 0.5	< 0.5	**820**
ETHYLBENZENE	0.5	**UG/L**	< 0.5	< 0.5	**840**
TOTAL XYLENES	0.5	**UG/L**	< 0.5	< 0.5	**7500**
SURROGATE:					
BROMOFLUOROBENZENE (%)			94	86	100
SURROGATE LIMITS	(80 - 120)				

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800025
PROJECT NAME : Burlington Drilling

PINNACLE I.D.: 001039

SAMPLE I.D. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	FOG 0100-2-1	AQUEOUS	01/18/00	NA	01/20/00	1

PARAMETER	DET. LIMIT	UNITS	FOG 0100-2-1
BENZENE	0.5	UG/L	< 0.5
TOLUENE	0.5	**UG/L**	**2.8**
ETHYLBENZENE	0.5	**UG/L**	**65**
TOTAL XYLENES	0.5	**UG/L**	**200**

SURROGATE:
BROMOFLUOROBENZENE (%) 111
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 001039
BLANK I. D.	: 012000	DATE EXTRACTED	: N/A
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 01/20/00
PROJECT #	: 62800025	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: Burlington Drilling		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
SURROGATE:		
BROMOFLUOROBENZENE (%)		95
SURROGATE LIMITS:	(80 - 120)	

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

EST	: EPA 8021 MODIFIED		
SMSD #	: 012000	PINNACLE I.D.	: 001039
LIENT	: PHILIP ENVIRONMENTAL	DATE EXTRACTED	: N/A
ROJECT #	: 62800025	DATE ANALYZED	: 01/20/00
ROJECT NAME	: Burlington Drilling	SAMPLE MATRIX	: AQUEOUS
		UNITS	: UG/L

ARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
ENZENE	<0.5	20.0	20.8	104	21.6	108	4	(80 - 120)	20
OLUENE	<0.5	20.0	19.3	97	19.4	97	1	(80 - 120)	20
THYLBENZENE	<0.5	20.0	20.9	105	20.9	105	0	(80 - 120)	20
OTAL XYLENES	<0.5	60.0	60.9	102	59.4	99	2	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

PHILIP ENVIRONMENTAL

Chain of Custody Record

4000 Monroe Road
Farmington, NM 87401
(505) 326-2262 Phone
(505) 326-2388 FAX

COC Serial No. C 2480

Project Name: Burlington Drilling
Project Number: 62800025 Phase . Task: 35
Samplers: Kelly Padilla
Laboratory: Name: Pinnacle Labs
Location:

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle: BTEX (8021)	BTEX (8021)	BTEX (8021)	BTEX (8021)	Comments
MADOX 0100-2-1	1-18-00	11:10-11:12	AQ	2	X				-01
MADOX 0100-2-2	1-18-00	12:25	↓	2		X			-02
JOHNSON Fed 4 0100-2	1-18-00	1405		2			X		-03
~~EDGELSON~~ 0100-2-1	1-18-00	1630	↓	2				X	-04

001039

Relinquished by:

Signature	Date	Time
Kelly Padilla	1-18-00	1720

Received By:

Signature	Date	Time
[signature]	1-20-00	9:15

Samples Iced: ☑ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Cyanide ..... Sodium hyroxide (NaOH)
- ☒ Volatile Organic Analysis ..... Hydrochloric acid (HCl)
- ☐ Metals ..... Nitric acid (HNO_3)
- ☐ TPH (418.1) ..... Sulfuric acid (H_2SO_4)
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____

Carrier:

Airbill No.

Shipping and Lab Notes:

ON ICE 4.9°C

PHILIP ENVIRONMENTAL

Well Number MW-1 2nd Qtr ☐ Development ☒ Purging

Serial No. WDPD-

WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1

Project Name BR Well Sampling Project Manager R. THOMPSON Project No. 62800228

Client Company BURLINGTON RESOURCES Phase.Task No. 0301

Site Name FOGELSON Com #4-1 Site Address RURAL SAN JUAN CO

Development Criteria

☒ 3 to 5 Casing Volumes of Water Removal
☒ Stabilization of Indicator Parameters
☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 49.29
Initial Depth to Water (feet) 40.56
Height of Water Column in Well (feet) 8.73
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	8.73	1.42 x 3	4.27
Gravel Pack			
Drilling Fluids			
Total			4.27

Instruments

	Serial No. (if applicable)
☒ pH Meter	HYDAC
☐ DO Monitor	
☒ Conductivity Meter	HYDAC
☒ Temperature Meter	HYDAC
☐ Other	

Methods of Development

Pump: ☐ Centrifugal ☐ Submersible ☐ Peristaltic
Bailer: ☒ Bottom Valve ☐ Double Check Valve ☐ Stainless-steel Kemmerer
☐ Other

Water Disposal

INFIT ON SITE

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
5/22/00	1418		X				1	1			25.7	7.00	10610		clear, slightly brown
"	1430		X				1	2			24.9	7.03	10240		"
"	1444		X				1	3			24.6	7.07	10620		"
"	1452		X				1	4			23.3	7.04	10040		"
"	1500		X				1	5			23.5	7.08	10190		brown, slight odor

Circle the date and time that the development criteria are met.

Comments SAMPLED AT 1520.

Developer's Signature(s) Jim Wagner Date 5/22/00 Reviewer RT Date 5/23/00

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number **005094**
June 02, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name BR WELL SAMPLING
Project Number 62800228

Attention: ROBERT THOMPSON

On 05/23/00 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

EPA method 8021 analyses were performed by Pinnacle Laboratories, Inc., Albuquerque, NM.

All other parameters were performed by Environmental Services Laboratory, Inc., Portland, OR.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

.IENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 005094
?OJECT #	: 62800228	DATE RECEIVED	: 05/23/00
?OJECT NAME	: BR WELL SAMPLING	REPORT DATE	: 06/02/00

N	ESL INC.			DATE
#	ID #	CLIENT DESCRIPTION	MATRIX	COLLECTED
	-	FOGELSON 4-1 #14 MW-1	AQUEOUS	05/22/00
	0005117-01A	FOGELSON 4-1 #14 MW-1	AQUEOUS	05/22/00
	-	TRIP BLANK	AQUEOUS	05/22/00

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

ST. : EPA 8021 MODIFIED
LIENT : PHILIP ENVIRONMENTAL
ROJECT # : 62800228
ROJECT NAME : BR WELL SAMPLING

PINNACLE I.D.: 005094

AMPLE .#	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
	FOGELSON 4-1 #14 MW-1	AQUEOUS	05/22/00	NA	05/24/00	2
3	TRIP BLANK	AQUEOUS	05/22/00	NA	05/24/00	1

ARAMETER	DET. LIMIT	UNITS	FOGELSON 4-1 #14 MW-1	TRIP BLANK
ENZENE	0.5	**UG/L**	**2.9**	< 0.5
OLUENE	0.5	UG/L	< 1.0	< 0.5
THYLBENZENE	0.5	**UG/L**	**62**	< 0.5
OTAL XYLENES	0.5	**UG/L**	**200**	< 0.5
ETHYL-t-BUTYL ETHER	2.5	**UG/L**	**100**	< 2.5
URROGATE:				
ROMOFLUOROBENZENE (%)			118	94
URROGATE LIMITS	(80 - 120)			

HEMIST NOTES:
/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

ST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 005094
ANK I. D.	: 005023-B	DATE EXTRACTED	: NA
ENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 05/23/00
OJECT #	: 62800228	SAMPLE MATRIX	: AQUEOUS
OJECT NAME	: BR WELL SAMPLING		

RAMETER	UNITS	
NZENE	UG/L	<0.5
LUENE	UG/L	<0.5
HYLBENZENE	UG/L	<0.5
TAL XYLENES	UG/L	<0.5
THYL-t-BUTYL ETHER	UG/L	<2.5
RROGATE:		
OMOFLUOROBENZENE (%)		96
RROGATE LIMITS:	(80 - 120)	

EMIST NOTES:
A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

ST	: EPA 8021 MODIFIED		
MSD #	: 005073-24	PINNACLE I.D.	: 005094
IENT	: PHILIP ENVIRONMENTAL	DATE EXTRACTED	: NA
OJECT #	: 62800228	DATE ANALYZED	: 05/24/00
OJECT NAME	: BR WELL SAMPLING	SAMPLE MATRIX	: AQUEOUS
		UNITS	: UG/L

RAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
NZENE	<0.5	20.0	21.0	105	20.4	102	3	(80 - 120)	20
LUENE	<0.5	20.0	21.7	109	21.5	108	1	(80 - 120)	20
HYLBENZENE	<0.5	20.0	21.6	108	21.2	106	2	(80 - 120)	20
TAL XYLENES	<0.5	60.0	65.1	109	63.6	106	2	(80 - 120)	20

EMIST NOTES:
A

$$\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{PD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Environmental Services Laboratory, Inc. E S L

17400 SW Upper Boones Ferry Road • Suite 270 • Portland, OR 97224 • (503) 670-8520

May 31, 2000

Jacinta A. Tenorio
Pinnacle Laboratories
2709-D Pan American Fwy NE
Albuquerque, NM 87107
TEL: 505-344-3777
FAX (505) 344-4413

RE: 005094/PHIL Order No.: 0005117

Dear Jacinta A. Tenorio,

Environmental Services Laboratory received 1 sample on 5/25/00 for the analyses presented in the following report.

The Samples were analyzed for the following tests:
Chloride (EPA 325.3)

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety, without the written approval from the Laboratory.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Nichole Karl
Nichole Karl
Project Manager

Keith Hunter
Technical Review

Environmental Services Laboratory

Date: *31-May-00*

CLIENT:	Pinnacle Laboratories	**Client Sample ID:**	005094-02
Lab Order:	0005117	**Tag Number:**	
Project:	005094/PHIL	**Collection Date:**	5/22/00
Lab ID:	0005117-01A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE		**EPA 325.3**				Analyst: **gvs**
Chloride	820	5.00		mg/L	10	5/30/00

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Environmental Services Laboratory

Date: *31-May-00*

CLIENT: Pinnacle Laboratories
Work Order: 0005117
Project: 005094/PHIL

QC SUMMARY REPORT
Method Blank

Sample ID: **MBlank** Batch ID: **01 CL A-5/30/** Test Code: **EPA 325.3** Units: **mg/L** Analysis Date **5/30/00** Prep Date:

Client ID: **0005117** Run ID: **NO INST_000530A** SeqNo: **42809**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.5									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Environmental Services Laboratory

Date: *31-May-00*

CLIENT: Pinnacle Laboratories
Work Order: 0005117
Project: 005094/PHIL

QC SUMMARY REPORT

Sample Duplicate

Sample ID: **0005124-04A DUP** Batch ID: **01 CL A-5/30/** Test Code: **EPA 325.3** Units: **mg/L** Analysis Date **5/30/00** Prep Date:

Client ID: **0005117** Run ID: **NO INST_000530A** SeqNo: **42816**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	5	0.5	0	0	0.0%	0	0	4.5	10.5%	20	

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Environmental Services Laboratory

Date: *31-May-00*

CLIENT: Pinnacle Laboratories
Work Order: 0005117
Project: 005094/PHIL

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **LCS** Batch ID: **01 CL A-5/30/** Test Code: **EPA 325.3** Units: **mg/L** Analysis Date **5/30/00** Prep Date:

Client ID: **0005117** Run ID: **NO INST_000530A** SeqNo: **42810**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	10.75	0.5	10	0	107.5%	85	115	0			

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Pinnacle Laboratories, Inc. — **Interlab Chain of Custody** — Date: 5/24 Page: 1 of 2

Network Project Manager: Jacinta A. Tenorio

Pinnacle Laboratories, Inc.
2709-D Pan American Freeway, NE
Albuquerque, New Mexico 87107
(505) 344-3777 Fax (505) 344-4413

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Metals (8) RCRA	RCRA TCLP METALS	Metals-13 PP List	Metals-TAL (23 METALS)		TOX	TOC	Gen Chemistry: Cl		Oil and Grease	Volatile Organics GC/MS (8260)	BOD	COD	PESTICIDES/PCB (608/8082)	Herbicides (615/8151)	PNA (8310)	8240 (TCLP 1311) ZHE		Base/Neutral Acid Compounds GC/MS (625/8270)	URANIUM (ICP-MS)	RADIUM 226+228	Gross Alpha/Beta	TO-14	NUMBER OF CONTAINERS
005094-02	5/22	1525	AQ									X																

PROJECT INFORMATION		SAMPLE RECEIPT		SAMPLES SENT TO:	
PROJECT #:	005094	Total Number of Containers		PENSACOLA - STL-FL	
PROJ. NAME:	PHIL	Chain of Custody Seals		ESL - OR	X
QC LEVEL:	STD IV	Received Intact?		STL - CT	
QC REQUIRED:	MS MSD BLANK	Received Good Cond./Cold		ATEL - AZ	
TAT:	STANDARD RUSH!!	LAB NUMBER:	0005117	ATEL - MARION	
				ATEL - MELMORE	
DUE DATE:	6/5	COMMENTS:		BARRINGER	
RUSH SURCHARGE:	—			WCAS	
CLIENT DISCOUNT:	—			WOHL	
SPECIAL CERTIFICATION REQUIRED: YES	NO				

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.
Signature: Francine Time: 1700	Signature: Time:
Printed Name: Francine Date: 5/24/00	Printed Name: Date:
Pinnacle Laboratories, Inc.	Company
RECEIVED BY: 1.	**RECEIVED BY: 2**
Signature: Nicole Kay Time: 9:00a	Signature: Time:
Printed Name: Nicholle Kay Date: 5/25	Printed Name: Date:
Company ESL	Company

Chain of Custody Record

005094

PHILIP ENVIRONMENTAL
4000 Monroe Road
Farmington, NM 87401
(505) 326-2262 Phone
(505) 326-2388 FAX

COC Serial No. C 2528

Project Name BR WELL SAMPLING
Project Number 62810228 Phase . Task 0301 .
Samplers J. WAGNON
Laboratory Name PINNACLE LABS
Location ALBUQUERQUE, NM

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle: BTEX	CHLORIDES					LAB ID #						Comments
FOGELSON 4-1 #14 MW-1	5/22/00	1520	H2O	2	X						01						
FOGELSON 4-1 #14 MW-1	5/22/00	1525	H2O	1		X					02						
TRIP BLANK	5/22/00	1525	H2O	1	X	X					03						

Relinquished by:

Signature	Date	Time

Received By:

Signature	Date	Time
Francine Jaime	5/23/00	1730

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Cyanide ..... Sodium hyroxide (NaOH)
- ☒ Volatile Organic Analysis ..... Hydrochloric acid (HCl)
- ☐ Metals ..... Nitric acid (HNO_3)
- ☐ TPH (418.1) ..... Sulfuric acid (H_2SO_4)
- ☒ Other (Specify) CHLORIDES
- ☐ Other (Specify) _____

Carrier: GREYHOUND LINES
Airbill No. GLI 160665075O

Shipping and Lab Notes:

Rec'd @ 4.0°C

PE-176 4/95

PHILIP ENVIRONMENTAL

Well Number MW-01

☐ Development
☐ Purging

WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1

Serial No. WDPD-

Project Name Burlington Well Sampling

Project Manager R Thompson

Project No. 62800229

Client Company Burlington Resources

Phase.Task No. 0301

Site Name Fogelson Com 4-1

Site Address Rural San Juan CO.

Development Criteria

☑ (3) to 5 Casing Volumes of Water Removal
☑ Stabilization of Indicator Parameters
☐ Other _____

Methods of Development

Pump	Bailer
☐ Centrifugal	☑ Bottom Valve
☐ Submersible	☐ Double Check Valve
☐ Peristaltic	☐ Stainless-steel Kemmerer

☐ Other _____

Water Volume Calculation

Initial Depth of Well (feet) 49.29
Initial Depth to Water (feet) 40.34
Height of Water Column in Well (feet) 8.95
Diameter (inches): Well 2" Gravel Pack ____

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	8.95	1.46 x 3	4.38
Gravel Pack			
Drilling Fluids			
Total			4.38

Instruments

	Serial No. (if applicable)
☑ pH Meter	Hydac
☐ DO Monitor	
☑ Conductivity Meter	Hydac
☑ Temperature Meter	Hydac
☐ Other	

Water Disposal

IN PIT ON SITE

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Incremental	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
09-07-00	12:42		X				1	1			23.3	6.37	17350		Cloudy / Grey Slight sulfide odor
	12:47		X				1	2			19.6	6.76	16580		" "
	12:53		X				1	3			18.6	6.94	16470		" "
	12:59		X				1	4			19.4	7.08	16660		" "
	1:04		X				1	5			19.1	7.04	16660		Remained the Same

Circle the date and time that the development criteria are met.

Comments BTEX sampled at 1:09 pm

Developer's Signature(s) Chris A Mann Date 09-07-00 Reviewer RT Date 9/19/00

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

SEP 15 200

Pinnacle Lab ID number **009050**
September 13, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name BR WELL SAMPLING
Project Number 62800228

Attention: ROBERT THOMPSON

On 09/08/00 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

LIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 009050
ROJECT #	: 62800228	DATE RECEIVED	: 09/08/00
ROJECT NAME	: BR WELL SAMPLING	REPORT DATE	: 09/13/00

IN). #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
1	FOGELSON COM.4-1-MW-01	AQUEOUS	09/07/00
2	TRIP BLANK	AQUEOUS	09/07/00

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

EST : EPA 8021 MODIFIED
LIENT : PHILIP ENVIRONMENTAL PINNACLE I.D.: 009050
ROJECT # : 62800228
ROJECT NAME : BR WELL SAMPLING

AMPLE). #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
1	FOGELSON COM.4-1-MW-01	AQUEOUS	09/07/00	NA	09/11/00	1
2	TRIP BLANK	AQUEOUS	09/07/00	NA	09/11/00	1

ARAMETER	DET. LIMIT	UNITS	FOGELSON COM.4-1-MW-01	TRIP BLANK
ENZENE	0.5	UG/L	< 0.5	< 0.5
OLUENE	0.5	UG/L	< 0.5	< 0.5
THYLBENZENE	0.5	**UG/L**	**18**	< 0.5
OTAL XYLENES	0.5	**UG/L**	**52**	< 0.5
URROGATE:				
ROMOFLUOROBENZENE (%)			118	99
URROGATE LIMITS	(80 - 120)			

HEMIST NOTES:
I/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

EST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 009050
LANK I. D.	: 091100	DATE EXTRACTED	: NA
LIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 09/11/00
ROJECT #	: 62800228	SAMPLE MATRIX	: AQUEOUS
ROJECT NAME	: BR WELL SAMPLING		

ARAMETER	UNITS	
ENZENE	UG/L	<0.5
OLUENE	UG/L	<0.5
THYLBENZENE	UG/L	<0.5
OTAL XYLENES	UG/L	<0.5
URROGATE:		
ROMOFLUOROBENZENE (%)		104
URROGATE LIMITS:	(80 - 120)	

HEMIST NOTES:
/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

EST	: EPA 8021 MODIFIED		
SMSD #	: 009051-01	PINNACLE I.D.	: 009050
LIENT	: PHILIP ENVIRONMENTAL	DATE EXTRACTED	: NA
ROJECT #	: 62800228	DATE ANALYZED	: 09/11/00
ROJECT NAME	: BR WELL SAMPLING	SAMPLE MATRIX	: AQUEOUS
		UNITS	: UG/L

ARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
ENZENE	<0.5	20.0	20.1	101	19.7	99	2	(80 - 120)	20
OLUENE	<0.5	20.0	21.0	105	21.1	106	0	(80 - 120)	20
THYLBENZENE	<0.5	20.0	22.1	111	21.7	109	2	(80 - 120)	20
OTAL XYLENES	<0.5	60.0	66.0	110	65.7	110	0	(80 - 120)	20

HEMIST NOTES:
A

$$\text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{PD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

009050

PHILIP ENVIRONMENTAL

Chain of Custody Record

4000 Monroe Road
Farmington, NM 87401

(505) 326-2262 Phone
(505) 326-2388 FAX

COC Serial No. C 2657

Project Name BR well Sampling
Project Number 62800228 Phase . Task 5 0301.
Samplers C. Mace
Laboratory Name PINNACLE
Location

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle: BTEX 8021				Lab ID#								Comments
Fogelson Com. 4-1 MW-01	09-07-00	1:09 pm	H2O	2	X				01								Fogelson Com. 4-1
Trip Blank	09-07-00	4:30 pm	H2O	1	X				02								

Relinquished by:

Signature	Date	Time
Chris A. Mace	09 07 00	15 30

Received By:

Signature	Date	Time
Francine Trujillo	9/8/00	1420

Samples Iced: ☑ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Cyanide ..... Sodium hyroxide (NaOH)
- ☐ Volatile Organic Analysis ..... Hydrochloric acid (HCl)
- ☐ Metals ..... Nitric acid (HNO_3)
- ☐ TPH (418.1) ..... Sulfuric acid (H_2SO_4)
- ☑ Other (Specify) HgCl2
- ☐ Other (Specify)

Carrier: Greyhound Bus Lines

Airbill No. 611 160 691 865 4

Shipping and Lab Notes:

Rec'd @ 4.1°C

PHILIP ENVIRONMENTAL

Well Number MW-01

☐ Development ☑ Purging

WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1

Serial No. WDPD-

Project Name B.R. well Sampling

Project Manager R Thompson

Project No. 62800228

Client Company Burlington Resources

Phase.Task No. 0301

Site Name STANDARD Oil COM. #1

Site Address Rural San Juan CO.

Development Criteria

☑ (3) to 5 Casing Volumes of Water Removal
☑ Stabilization of Indicator Parameters
☐ Other _____

Methods of Development

Pump	Bailer
☐ Centrifugal	☑ Bottom Valve
☐ Submersible	☐ Double Check Valve
☐ Peristaltic	☐ Stainless-steel Kemmerer

☐ Other _____

Water Volume Calculation

Initial Depth of Well (feet) 32.05
Initial Depth to Water (feet) 23.56
Height of Water Column in Well (feet) 8.49
Diameter (inches): Well 2" Gravel Pack ____

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	8.49	1.38 X 3	4.14
Gravel Pack			
Drilling Fluids			
Total			4.14

Instruments

	Serial No. (if applicable)
☑ pH Meter	Hydac
☐ DO Monitor	
☑ Conductivity Meter	Hydac
☑ Temperature Meter	Hydac
☐ Other _____	

Water Disposal

On site in pit

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
09 21 00	1155		X				1	1			24.6	6.26	7570		Clear No odor
	1201		X				1	2			21.9	6.58	7890		Slight odor
	1212		X				1	3			20.5	6.65	7780		" "
	1219		X				1	4			20.4	6.63	7760		" "
	1228		X				1	5			20.4	6.55	8020		No Change

Circle the date and time that the development criteria are met.

Comments Sampled for BTex at 1238 Level in Column Dropping Allowing Time To Recover well needs Lock

Developer's Signature(s) [signature] Date 09 - 21 - 00 Reviewer RT Date 10/5/00

11 27

PHILIP ENVIRONMENTAL

Well Number MW 01 ☐ Development ☑ Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD

Page 1 of 1

Project Name B.R. well Sampling Project Manager R Thompson Project No. 62800228

Client Company Burlington Resources Phase/Task No. 0301

Site Name Fogelson COM 4-1 Site Address Rural San Jaun Co.

Development Criteria

☐ 3 to 5 Casing Volumes of Water Removal

☑ Stabilization of Indicator Parameters

☐ Other

Methods of Development

Pump	Bailer
☐ Centrifugal	☑ Bottom Valve
☐ Submersible	☐ Double Check Valve
☐ Peristaltic	☐ Stainless steel Kemmerer

☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 49.29

Initial Depth to Water (feet) 40.31

Height of Water Column in Well (feet) 8.98

Diameter (inches) of Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	8.98	1.46X3	4.38
Gravel Pack			
Gallons Added (if any)			
Total			4.38

Instruments

	Serial No. (if applicable)
☑ pH Meter	Hydac
☐ DO Monitor	
☑ Conductivity Meter	Hydac
☑ Temperature Meter	Hydac
☐ Other	

Water Disposal On Site in pit

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Initial Depth (feet)	Ending Water Depth (feet)	Water Removed Per Interval (gallons): Interval	Water Removed Per Interval (gallons): Cumulative	Product Thickness Removed (gallons): Interval	Product Thickness Removed (gallons): Cumulative	Temperature (°F)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/l)	Comments
12-15-00	1323		X				1	1			11.5	5.51	out of Range		Cloudy Rotten egg odor
	1325						1	2			11.9	6.83	15990		" "
	1333						1	3			11.2	6.92	15950		" "
	1336						1	4			11.4	7.05	16150		" "
	1341						1	5			11.2	7.10	16320		no Change

Circle the date and time that the development criteria are met.

Comments Sampled for BTex 1355

Developer's Signature(s) Chris A. May Date 12-15-00 Reviewer RT Date 12/17/00

L 30205

Chain of Custody Record

PHILIP ENVIRONMENTAL

4000 Monroe Road
Farmington, NM 87401
(505) 326-2262 Phone
(505) 326-2388 FAX

COC Serial No. C 2838

Project Name B.R. well Sampling
Project Number 62900229 Phase . Task 0307 .
Samplers C MAEZ
Laboratory Name A.C.Z. LABS.
Location STEAMBOAT SPRINGS CO

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle: BTEX 8021	Type of Analysis and Bottle: CHLORIDES	Comments
Fogelson 4-1 #14 MW 1	12-15-00	1355	H2O	2	X		
Fogelson 4-1 #14 MW 1	12-15-00	1355	H2O	1		X	
				1			

Relinquished by:

Signature	Date	Time
Theo A O'Mara	12-19-00	15:00

Received By:

Signature	Date	Time
[signature] ACT.	12/20	10:30

Samples Iced: ☑ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Cyanide ..... Sodium hyroxide (NaOH)
- ☒ Volatile Organic Analysis ..... Hydrochloric acid (HCl)
- ☐ Metals ..... Nitric acid (HNO_3)
- ☐ TPH (418.1) ..... Sulfuric acid (H_2SO_4)
- ☑ Other (Specify) H_2SCL_2
- ☐ Other (Specify)

Carrier: U.P.S.

Airbill No.

Shipping and Lab Notes:

ACZ

Analytical Results

ACZ Laboratories, Inc.
2773 Downhill Drive
Steamboat Springs, CO 80487
(800) 334-5493

Lab Sample ID: ***L30205-09***
Client Sample ID: *Foselson 4-1 14 MW-1*
Client Project ID: *62800228*
ACZ Report ID: *RG137224*

Philip Services
4000 Monroe Road
Farmington, NM 87401
Robert Thompson

Date Sampled: *12/15/00 13:55*
Date Received: *12/19/00*
Date Reported: *12/31/00*

Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylenes

Analysis Method: **M8020**
Extract Method: **M5030**

Analyst: *smp*
Extract Date: *12/20/00*
Analysis Date: *12/21/00*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2		U	ug/L	0.2	0.5
Toluene	000108-88-3	0.3	J	ug/L	0.2	1
Ethylbenzene	000100-41-4	2		ug/L	0.2	1
Xylenes (total)	001330-20-7	5		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
4-Bromofluorobenzene (Surr)	000460-00-4	109	%	80	120

Organic Notes and Qualifiers

MDL = Method Detection Limit; PQL = Practical Quantitation Limit

LCL = Lower Control Limit; UCL = Upper Control Limit

Qualifiers: (Based on EPA CLP 3/90)

U = Analyte was analyzed for but not detected at the indicated MDL

J = Analyte concentration detected at a value between MDL and PQL

B = Analyte found in daily method blank

Organic Supervisor: Paul Leschensky

ACZ

Analytical Results

ACZ Laboratories, Inc.
2773 Downhill Drive
Steamboat Springs, CO 80487
(800) 334-5493

Philip Services
4000 Monroe Road
Farmington, NM 87401
Robert Thompson

Lab Sample ID: ***L30205-10***
Client Sample ID: *Foselson 4-1 14 MW-1*
Client Project ID: *62800228*
ACZ Report ID: *RG137235*

Date Sampled: *12/15/2000 1:55:00 PM*
Date Received: *12/19/2000*
Date Reported: *01/09/2001*

Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	Units	MDL	PQL	Date	Analyst
Chloride	M325.2 - Colorimetric (RFA)	640		mg/L	10	50	12/22/2000	ss
Lab Filtration	***						12/19/2000	kmc

Inorganic Qualifiers (based on EPA CLP 3/90)

U = Analyte was analyzed for but not detected at the indicated MDL

B = Analyte concentration detected at a value between MDL and PQL

PQL = Practical Quantitation Limit

R Poulsen

Ralph Poulsen (President) / Scott Habermehl (PM)

WELL BORING AND CONSTRUCTION LOG

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

Borehole # 1
Well # MW-B1
Page 1 of 2

Project Name
Project Number 21057 Phase 1000.99
Project Location Fogelson 4-1 Com

Elevation
Borehole Location
GWL Depth
Logged By P. Cheney
Drilled By K. Padilla
Date/Time Started 5/17/99 0930
Date/Time Completed 5/17/99 1230

Well Logged By P. Cheney
Personnel On-Site K. Padilla, D. Padilla, P. Cheney
Contractors On-Site
Client Personnel On-Site Ed. Hasely
Drilling Method 4 1/4" HSA
Air Monitoring Method PID

Depth (Feet)		Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ	BH	S	Drilling Conditions & Blow Counts
0				Pit has been excavated to 41' (Ed Hasely, pers. com 5/17). Will collect first sample at 35' to 37'. Fill material is brown, medium to coarse grained sand.						
35		35 – 37	6"	very pale brown, medium grained sandstone No odor		35'	0.0	0.0		BC=50 (6") S/HS = 0.0
40										

Comments: Auger refusal at 48'. All samples appeared clean to 48'. Set 10' of 2" screen from 48' to 38'. Sand pack to 35', open bore hole to ground surface. Approx 6-10" of water in well

Geologist Signature [signature]

RECORD OF SUBSURFACE EXPLORATION

Borehole # 1
Well # MW-B1
Page 2 of 2

Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

Project Name
Project Number 21057 Phase 1000.99
Project Location Foglson 41-1 Com

Elevation
Borehole Location
GWL Depth
Logged By P. Cheney
Drilled By K. Padilla
Date/Time Started 5/17/99 0930
Date/Time Completed 5/17/99 1230

Well Logged By P. Cheney
Personnel On-Site K. Padilla, V. Padilla, P. Cheney
Contractors On-Site
Client Personnel On-Site Ed Hensely

Drilling Method 4 1/4" HSA
Air Monitoring Method PID

Depth (Feet)	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ	BH	S	Drilling Conditions & Blow Counts
40	40	10"	very pale brown, medium to coarse grained sandstone, NO odor. cemented			0.0	0.0	0.0	BC= 50 (6") 50 (4") S/HS= 0.0
	42								
45	45	10"	color change at 45.5 feet. NO light gray, medium grained sandstone, cemented			0.0	0.0	0.0	BC= 50/6" 50/4" S/HS= 0.0
	47								
	48	10"	Auger refusal at approx 48'. Take Sample at 48'. Light grey, medium grained sandstone, cemented			0.0	0.0	0.0	BC= 50/6" 50/4"
10									
15			Set 10' of 2" screen at approx 48'. Sand pack to 35'. open borehole 35' to 0'						
20									
25									
30									
35									
40									

Comments:

Geologist Signature

MONITORING WELL INSTALLATION RECORD

Phillip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(606) 326-2262 FAX (606) 326-2388

Borehole # 1
Well # MW-B1
Page 1 of 1

Project Name
Project Number 21057 Phase 2000.99
Project Location Fogelson 4-1 Com

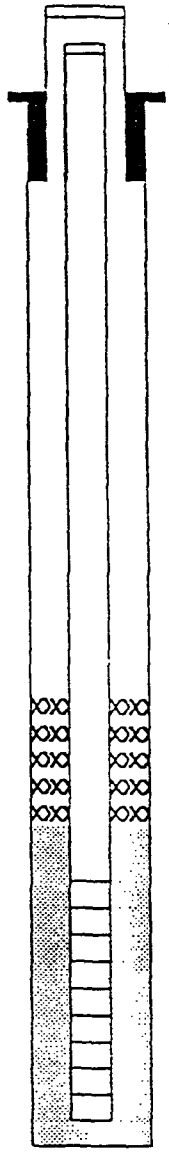
Elevation
Well Location Fogelson 4-1 Com
GWL Depth
Installed By K. Padilla

Date/Time Started 5/17/99 0930
Date/Time Completed 5/17/99 1230

On-Site Geologist P. Cheney
Personnel On-Site K. Padilla, D. Padilla, P. Cheney
Contractors On-Site
Client Personnel On-Site Ed Hasely

Depths in Reference to Ground Surface

Item	Material	Depth
Top of Protective Casing		
Bottom of Protective Casing		
Top of Permanent Borehole Casing		
Bottom of Permanent Borehole Casing		
Top of Concrete		
Bottom of Concrete		
Top of Grout		
Bottom of Grout		
Top of Well Riser		
Bottom of Well Riser		
Top of Well Screen		
Bottom of Well Screen		
Top of Peltonite Seal		
Bottom of Peltonite Seal		
Top of Gravel Pack		
Bottom of Gravel Pack		
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		
Total Depth of Borehole		



Top of Protective Casing
Top of Riser
Ground Surface

Top of Seal N.A
Top of Gravel Pack 35'
Top of Screen 38'

Bottom of Screen 418'
Bottom of Borehole 418'

Comments: Temporary well installation. Set screen 418' - 38', sand pack to 35'. Open borehole from 35' to ground surface

Geologist Signature Paul Cheney

PIT REMEDAITION AND CLOSURE REPORT

District I
P.O. Box 1980, Hobbs, NM
District II
P.O. Drawer DD, Artesia, NM 88211
District III
1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBMIT 1 COPY TO APPROPRIATE DISTRICT OFFICE AND 1 COPY TO SANTA FE OFFICE

(Revised 3/9/94)

PIT REMEDIATION AND CLOSURE REPORT

Operator: Burlington Resources Telephone: (505) 326-9700

Address: 3535 E. 30th Farmington NM 87402

Facility Or: Fogelson 4-1 Com
Well Name

Location: Unit or Qtr/Qtr Sec P Sec 4 T 29N R 11W County San Juan

Pit Type: Separator ___ Dehydrator ___ Other Unknown

Land Type: BLM X, State ___, Fee ___, Other ___

Pit Location: (Attach diagram)
Pit dimensions: length 17, width 20, depth 1
Reference: wellhead X, other ___
Footage from reference: 66'
Direction from reference: 55 Degrees ___ East North X of X West South ___

Depth To Ground Water: (Vertical distance from contaminants to seasonal high water elevation of ground water)	Less than 50 feet (20 points) 50 feet to 99 feet (10 points) Greater than 100 feet (0 Points)	20
Wellhead Protection Area: (Less than 200 feet from a private domestic water source, or; less than 1000 feet from all other water sources)	Yes (20 points) No (0 points)	0
Distance To Surface Water: (Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet (20 points) 200 feet to 1000 feet (10 points) Greater than 1000 feet (0 points)	0
	RANKING SCORE (TOTAL POINTS):	20

Date Remediation Started: 11/4/98 Date Completed: _____

Remediation Method: (Check all appropriate sections) Excavation X Approx. cubic yards 4574

Landfarmed X Insitu Bioremediation ___

Other _____

Remediation Location: (ie. landfarmed onsite, name and location of offsite facility) Onsite X Offsite _____

General Description Of Remedial Action: Soils were excavated to an approx. mate depth of 41 ft. and landfarmed on location. Soil samples were collected from the walls and bottom and tested clean. The excavation was backfilled w/ clean soils. Due to El Paso's groundwater impact on location, a temporary monitoring well was installed in the former p.t.

Ground Water Encountered: No X Yes ___ Depth _____
during excavation

Final Pit: Closure Sampling: (if multiple samples, attach sample results and diagram of sample locations and depths)

Sample location Bottom of excavation.

Sample depth 41 ft

Sample date 11/24/98 Sample time _____

Sample Results

Benzene(ppm) ND

Total BTEX(ppm) 0.196

Field headspace(ppm) 20.1

TPH 17.5

Ground Water Sample: Yes ___ No X (If yes, attach sample results)

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 7/30/99

SIGNATURE E/Hasely PRINTED NAME AND TITLE Ed Hasely Sr. Staff Environmental Rep.