

3R - 285

REPORTS

DATE:

2000

BURLINGTON RESOURCES

SAN JUAN DIVISION
March 27, 2001

Certified: 709932200028981 4004

RECEIVED

MAR 29 2001

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

312285
E C E I
MAR 29 2001

BURLINGTON RESOURCES 2000 ANNUAL GROUNDWATER REPORT

Maddox Com. 1A

SITE DETAILS

Location: Unit Letter I, Section 17, Township 30N, Range 8W; San Juan County, New Mexico
Land Type: Federal

2000 ACTIVITIES

A spill occurred at Burlington Resources (BR) Maddox Com 1A on 12/5/99. The spill released approximately 170 bbls of condensate with 110 bbls being recovered. The spill was contained on location. The NMOCD was notified on 12/17/00 of a possible impact to the groundwater at the site. A soil remediation program was started immediately to remediate the site. In the process of soil excavation a second source of contamination was identified and most likely a historic pit. Ground water was encountered at 15 feet during the excavation process. BR is in contact with the potentially responsible parties for sharing the environmental responsibility. Approximately 2000 cu. yds. of impacted soil was removed from the location south and southeast of the current storage tank and wellhead. The excavation was approximately 40 yds x 20 yds x 15 feet deep at the deepest. Impacted soils were excavated until all apparent source materials had been removed except for an area under the south side of the current storage tank location. Prior to backfilling, a potassium permanganate solution (i.e., Oxy-1) chemical was applied to the bottom and sides of the excavation to stimulate bioremediation.

BR installed a source monitoring well (MW-1) in May 2000 within area excavated and two downgradient wells MW-2 and MW-3 in January 2000. Groundwater data was collected quarterly and is provided in Table 1 including laboratory reports. The source well was analyzed in the second quarter for a complete list of WCCC parameters incorrectly and a new analysis was performed in the fourth quarter of 2000. A map of the site is included as Figure 1. A new laboratory was added for analysis, ACZ Laboratories in Steamboat Colorado, starting in the fourth quarter.

CONCLUSIONS

Analytical results of groundwater sampling from the monitoring well in 2000 show in MW-1 (i.e., source well) initially had levels of benzene, toluene, ethylbenzene and total xylenes above New Mexico Groundwater Standards and the downgradient wells were non-detect. Subsequent sampling events for the remaining quarters show that levels of benzene, toluene, ethylbenzene and total xylenes are below the New Mexico Groundwater Standards in all wells. The general chemistry analysis for the source well shows elevated levels for Chloride, TDS, and Sulfate. These are typical elevated concentrations for sodium sulfate type water that is naturally occurs in this area and are not considered impacts from BR operations.

RECOMMENDATIONS

- Burlington Resources proposes to continue quarterly sampling at this site and submit for closure after four quarters of below standard results.

Attachments: Figure 1 - Site Map
 Table 1 - Groundwater Sampling Results Summary
 2000 Groundwater Analytical Results
 Spill report, excavation log, and Drilling Log/Wellbore Diagrams

San Jaun River

NORTH →

X MW-2

Approximate Groundwater
Direction

Compressor

Dehydrator

Seperator

X MW-3

Exacavation

Burlington
Resources
Maddox Com
1A

Water
tank

Storage
Tank

Berm

X MW-1

Map
Not to Scale

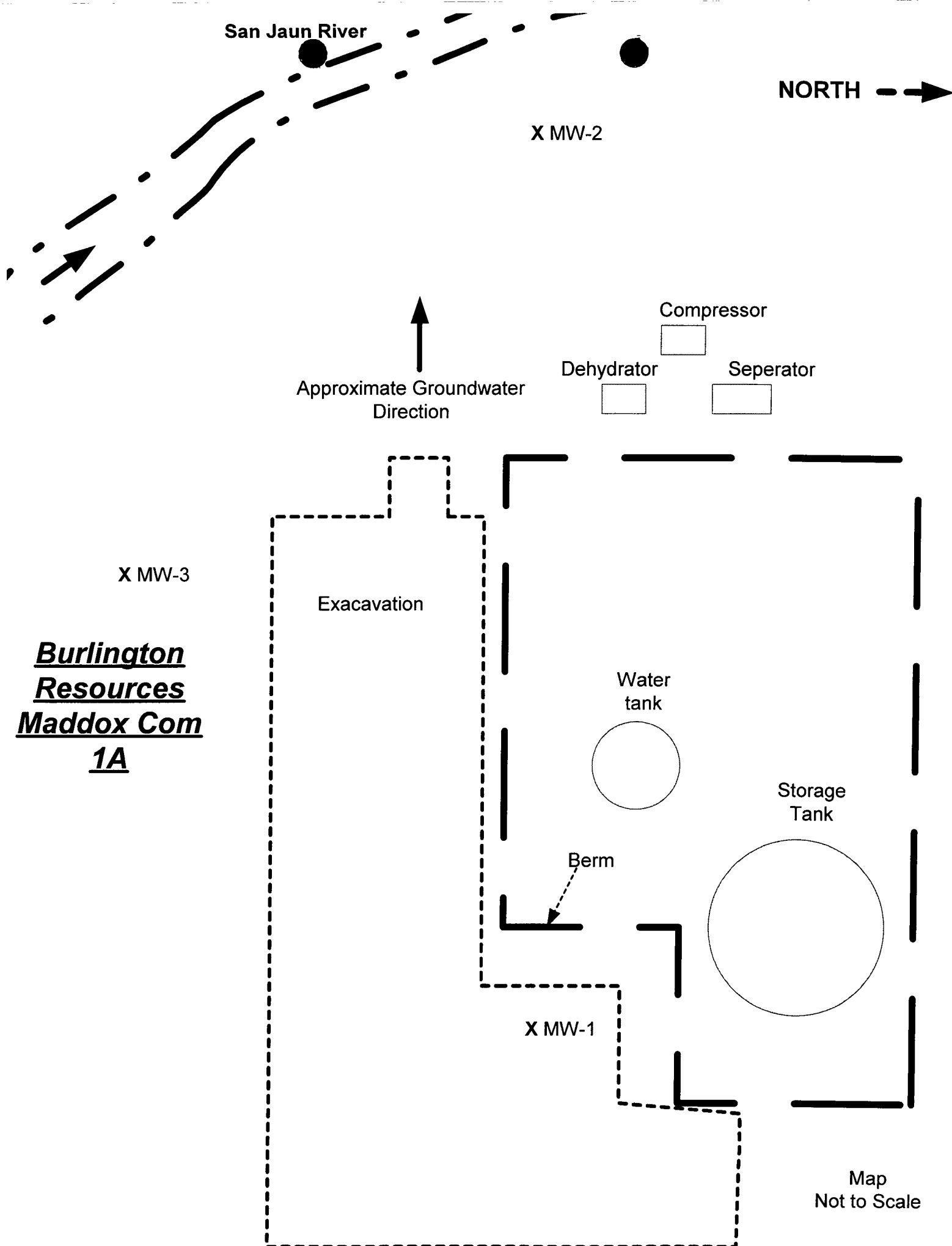


Table 1

Groundwater Monitoring Well Sampling

Well Name	MW #	Sample Date	B (ppb)	T (ppb)	E (ppb)	X (ppb)	BTEX (ppb)	DTW (1) (ft)
<i>Standard</i>			10	750	750	620		
Maddox Com1A	1	Well not installed						
		5/16/2000	1700	500	2200	19000	23400	13.47
		9/22/2000	16	10	43	34	103	13.85
		12/18/2000	<0.5	<1.0	<1.0	<1.0	0	13.57
	2	1/18/2000	<0.5	<0.5	<0.5	<0.5	0	12.71
		5/16/2000	<0.5	<0.5	<0.5	<0.5	0	15.63
		9/22/2000	<0.5	<0.5	<0.5	<0.5	0	15.53
		12/18/2000	<0.5	<1.0	<1.0	<1.0	0	15.55
	3	1/18/2000	<0.5	<0.5	<0.5	<0.5	0	10.98
		5/16/2000	<0.5	<0.5	<0.5	<0.5	0	13.40
		9/22/2000	<0.5	<0.5	<0.5	<0.5	0	13.70
		12/18/2000	<0.5	<1.0	<1.0	<1.0	0	13.69
Note #1								

(1) measured from top of casing

Note #1 4th Qtr lab analysis was performed by new lab, ACZ Laboratories

2000 GROUNDWATER ANALYTICAL RESULTS

[illegible]

2

Project Manager C. IRBY

Phase, Task No.

Sir, please

Water Volume Calculation

- | | | |
|---------------------------------------|----------|---------------|
| Water | Concrete | 24" maximum |
| Initial Depth of Wall (feet) | | 19.35 |
| Initial Depth to Water (feet) | | 12.71 |
| Height of Water Column in Wall (feet) | | 12.71 |
| Diameter (inches): Wall | 2" | Corroded Pipe |

Walter S. Phillips, Jr.

- | Instruments | Serial No. (If applicable) |
|--|----------------------------|
| ☒ pH Meter | |
| ☐ DO Monitor | |
| ☒ Conductivity Meter | |
| ☒ Temperature Meter | |
| ☐ Other | |

Water Disposal

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Cylinder Volume (gallons)		Pressure (lb/inch ²)	Temperature (°C)	pH	Conductivity (microhm/cm)	Dissolved Oxygen (mg/l)	Comments
		Pump	Boiler				In cylinder	Out cylinder						
1-18-00	10:35		✓							15.5	7.5	4091		1-5H BROWN
1-18-00	10:45		✓							16.2	8.0	5018		" "
1-18-00	11:00		✓							16.0	8.0	5140		" "

Comments

Developer's Signature(s) Kelly Padilla

1-18-00

PINNACLE
LABORATORIES

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

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

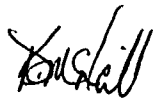
PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

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
PROJECT # : 62800025
PROJECT NAME : Burlington Drilling

PINNACLE ID : 001039
DATE RECEIVED : 01/20/00
REPORT DATE : 01/21/00

PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	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
PROJECT # : 62800025
PROJECT NAME : Burlington Drilling

PINNACLE I.D.: 001039

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	DATE	DATE	DATE	DIL.		
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	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

TEST : EPA 8021 MODIFIED
MSMSD # : 012000
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800025
PROJECT NAME : Burlington Drilling

PINNACLE I.D. : 001039
DATE EXTRACTED : N/A
DATE ANALYZED : 01/20/00
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	20.8	104	21.6	108	4	(80 - 120)	20
TOLUENE	<0.5	20.0	19.3	97	19.4	97	1	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.9	105	20.9	105	0	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	60.9	102	59.4	99	2	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

PHILIP



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 <u>Burlington Drilling</u>		Type of Analysis and Bottle		Total Number of Bottles	Comments
Project Number <u>62800025</u> Phase <u>Task 35</u>		Bottle (8021) (12021) (8021) (8021)			
Samplers <u>Kelly Padilla</u>					
Laboratory <u>Pinnacle Labs</u>					
Sample Number (and depth)	Date	Time	Matrix		
MAD0X 0100-2-1	1-18-00	11:10-11:12	AQ	2	-01
MAD0X 0100-2-2	1-18-00	12:25	↓	2	-02
JOHNSAN 0100-2-3	1-18-00	1405	↓	2	-03
FOG 0100-2-1	1-18-00	1630	↓	2	-04

Relinquished by:

Received By:

Signature <u>Kelly Padilla</u>	Date 1-18-00	Time 1720	Signature <u>AK, H. Padilla</u>	Date 1-20-00	Time 9:15
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Samples Iced: ☒ Yes ☐ No

Carrier:

Preservatives (ONLY for Water Samples)

Shipping and Lab Notes:

- ☐ Cyanide
 - ☒ Volatile Organic Analysis
 - ☐ Metals
 - ☐ TPH (418.1)
 - ☐ Other (Specify)
 - ☐ Other (Specify)
- on ice 4.9°C

Airbill No.

Well Number MW-1

Serial No. WDPD-

Project Name BR WELL SAMPLING

Client Company BURLINGTON RESOURCES

Site Name MADDOX COM #1A

WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1

Project Manager ROBERT THOMPSON

Project No. 62800

Phase Task No. 0301

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) 21.76' TOR

Initial Depth to Water (feet) 13.47' TOR

Height of Water Column in Well (feet) 8.29'

Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	<u>8.29'</u>	<u>1.35 x 3</u>	<u>4.05</u>
Gravel Pack			
Drilling Fluids			
Total			<u>4.05</u>

Methods of Development

Pump ☐ Baller

☐ Centrifugal ☒ Bottom Valve

☐ Submersible ☐ Double Check Valve

☐ Peristaltic ☐ Stainless-steel Kemmerer

☐ Other

Instruments

☒ pH Meter

☐ DO Monitor

☒ Conductivity Meter

☒ Temperature Meter

☐ Other

Serial No. (if applicable) HYDAC

HYDAC

HYDAC

Water Disposal

ON GROUND ON SITE

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/l)	Comments
		Pump	Baller				Increment	Cumulative					
5/16/00	1420		X				1	1	23.6	7.17	8840		DARK BROWN SLURRY
" "	1433		X				1	2	20.1	7.05	7480		" "
" "	1440		X				1	3	20.1	7.04	6920		" "
" "	1446		X				1	4	20.9	7.22	6360		" "
" "	1451		X				1	5	18.9	7.45	5430		" "
" "	1453		X				1	6	17.6	7.44	5540		" "

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

Comments SAMPLED AT 1515.

Robert Thompson

Developer's Signature(s)

Date 5/16/00

Reviewer

Date

Well Number MW-2Serial No. WDPD-

Project Name Be Well Sampling

Client Company: BURLINGTON RESOURCES

Site Name MADDOX Com #1A

Project Manager	Robert Thompson
-----------------	-----------------

Site Address RURAL SAN JUAN CO.

WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1

Project No. 62800228

Phase.Task No. 0301

Development Criteria

☒ 3 to 5 Casing Volumes of Water Removal

Stabilization of Indicator Parameters

☐ Other

Water Volume Calculation

Initial Depth of Well (feet)	22.36' TOR
1	22.36' TOR
2	22.36' TOR
3	22.36' TOR
4	22.36' TOR
5	22.36' TOR
6	22.36' TOR
7	22.36' TOR
8	22.36' TOR
9	22.36' TOR
10	22.36' TOR
11	22.36' TOR
12	22.36' TOR
13	22.36' TOR
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88	22.36' TOR
89	22.36' TOR
90	22.36' TOR
91	22.36' TOR
92	22.36' TOR
93	22.36' TOR
94	22.36' TOR
95	22.36' TOR
96	22.36' TOR
97	22.36' TOR
98	22.36' TOR
99	22.36' TOR
100	22.36' TOR

Initial Depth to Water (feet) 15.63' TOR

Height of Water Column in Well (feet) 6.73

Diameter (inches): Well Z11 Gravel Pack

Methods of Development

Pump

☐ Centrifugaal☐ Submersible☐ Peristaltic

二

Bailer

☒ Bottom Valve☐ Double Check

☐ Stainless-steel

Water Removal Data

[illegible]

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

Comments SAMPLED AT 1/645, WELL BEGAN TO BAIL DOWN.

Developer's Signature(s)

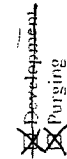
Robert Thompson

Date _____

5/16/00

Reviewer

Date _____



WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1

Project Manager ROBERT THOMPSON

Project No. 62800228

Phase.Task No. 0301

Water Volume Calculation

- Initial Depth of Well (feet) 22.45 TOR
Initial Depth to Water (feet) 13.40 TOR
Height of Water Column in Well (feet) 9.05
Diameter (inches): Well 2 Gravel Pack

Item	Water Volume In Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	9.05	1.48 x 3	4.44
Gravel Pack			
Drilling Fluids			
Total			4.44

- | Instruments | Serial No. (If applicable) |
|--|----------------------------|
| ☒ pH Meter | <u>HYDAC</u> |
| ☐ DO Monitor | |
| ☒ Conductivity Meter | <u>HYDAC</u> |
| ☒ Temperature Meter | <u>HYDAC</u> |
| ☐ Other | |

Water Disposal
ON GROUND ON SITE

Water Removal Data

[illegible]

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

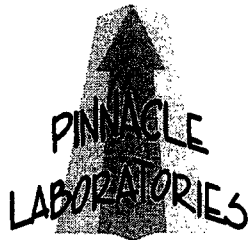
Comments	SAMPLED AT	Cell

Developer's Signature(s) Robert Thompson

Reviewer _____ Date: _____

Date 5/16/00

Date:



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

Pinnacle Lab ID number **005084**
June 16, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name BR WELL SAMPLING
Project Number 62800228

Attention: ROBERT THOMPSON

On 05/19/00 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.

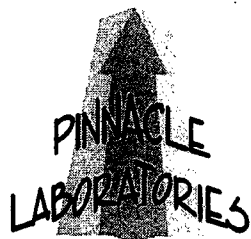
All other parameters were performed by ATEL, Marion, OH.

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

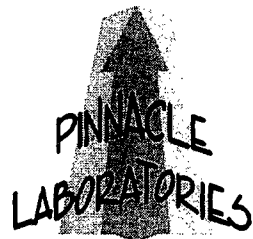


2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800228
PROJECT NAME : BR WELL SAMPLING

PINNACLE ID : 005084
DATE RECEIVED : 05/19/00
REPORT DATE : 06/16/00

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	MADDOX COM #1A MW1	AQUEOUS	05/16/00
02	MADDOX COM #1A MW3	AQUEOUS	05/16/00
03	MADDOX COM #1A MW2	AQUEOUS	05/16/00
04	TRIP BLANK	AQUEOUS	05/16/00



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 # : 62800228
PROJECT NAME : BR WELL SAMPLING

PINNACLE I.D.: 005084

PROJECT NAME : DR WELL SAMPLING						
SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	MADDOX COM #1A MW1	AQUEOUS	05/16/00	NA	05/23/00	50
02	MADDOX COM #1A MW3	AQUEOUS	05/16/00	NA	05/23/00	1
03	MADDOX COM #1A MW2	AQUEOUS	05/16/00	NA	05/23/00	1

PARAMETER	DET. LIMIT	UNITS	MADDOX COM #1A MW1	MADDOX COM #1A MW3	MADDOX COM #1A MW2
BENZENE	0.5	UG/L	1700	< 0.5	< 0.5
TOLUENE	0.5	UG/L	500	< 0.5	< 0.5
ETHYLBENZENE	0.5	UG/L	2200	< 0.5	< 0.5
TOTAL XYLENES	0.5	UG/L	19000	< 0.5	< 0.5

SURROGATE:

BROMOFLUOROBENZENE (%)

SURROGATE LIMITS (80 - 120)

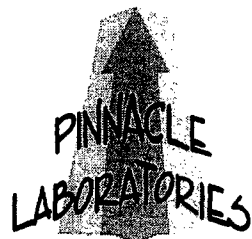
108

90

111

CHEMIST NOTES:

N/A



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Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800228
PROJECT NAME : BR WELL SAMPLING

PINNACLE I.D.: 005084

SAMPLE	DATE	DATE	DATE	DIL.
ID. #	SAMPLED	EXTRACTED	ANALYZED	FACTOR
04	05/16/00	NA	05/23/00	1

PARAMETER	DET. LIMIT	UNITS	TRIP BLANK
BENZENE	0.5	UG/L	< 0.5
TOLUENE	0.5	UG/L	< 0.5
ETHYLBENZENE	0.5	UG/L	< 0.5
TOTAL XYLENES	0.5	UG/L	< 0.5

SURROGATE:

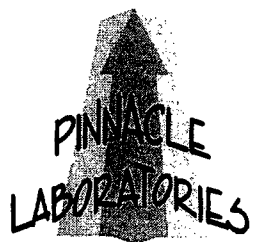
BROMOFLUOROBENZENE (%)

90

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

N/A



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

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 005084
BLANK I. D.	: 052300	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 05/23/00
PROJECT #	: 62800228	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BR WELL SAMPLING		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5

SURROGATE:

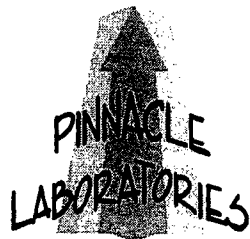
BROMOFLUOROBENZENE (%)

106

SURROGATE LIMITS: (80 - 120)

CHEMIST NOTES:

N/A



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Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 005081-02
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800228
PROJECT NAME : BR WELL SAMPLING

PINNACLE I.D. : 005084
DATE EXTRACTED : NA
DATE ANALYZED : 05/23/00
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	20.4	102	20.1	101	1	(80 - 120)	20
TOLUENE	<0.5	20.0	20.5	103	20.6	103	0	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.8	104	20.8	104	0	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	63.0	105	62.1	104	1	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

Page / 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 Maddox Com. # 1A

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) 22.3

Initial Depth to Water (feet) 15.53

Height of Water Column in Well (feet)

Diameter (inches): Well **2"** Gravel Pack

Methods of Development

Pump · Bailer

☐ Centrifugaal ☒ Bottom Valve☐ Submersible ☐ Double Check Valve

☐ Peristaltic ☐ Stainless-steel Kemmerer

☐ Other

Water Disposal

on site in pit

Water Removal Data

[illegible]

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

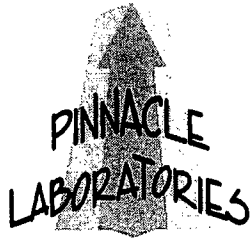
Comments	Sampled for BTex	BTex
	1314	

Developer's Signature(s) Chris A. May

Date 09-27-00

Reviewer

Date 10/5/00



OCT 2 2000

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

Pinnacle Lab ID number 009128
September 29, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name B.R. WELL SAMPLING
Project Number 62800228

Attention: ROBERT THOMPSON

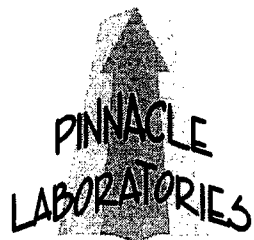
On 09/26/00 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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

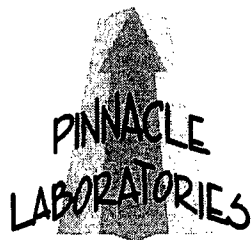
Enclosure



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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 009128
PROJECT #	: 62800228	DATE RECEIVED	: 09/26/00
PROJECT NAME	: B.R. WELL SAMPLING	REPORT DATE	: 09/29/00

PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	MADDOX COM#1A-MW01	AQUEOUS	09/22/00
02	MADDOX COM#1A-MW02	AQUEOUS	09/22/00
03	MADDOX COM#1A-MW03	AQUEOUS	09/22/00



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 # : 62800228
PROJECT NAME : B.R. WELL SAMPLING

PINNACLE I.D.: 009128

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	MADDOX COM#1A-MW01	AQUEOUS	09/22/00	NA	09/27/00	5
02	MADDOX COM#1A-MW02	AQUEOUS	09/22/00	NA	09/27/00	1
03	MADDOX COM#1A-MW03	AQUEOUS	09/22/00	NA	09/27/00	1

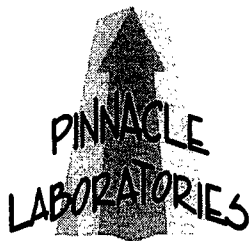
PARAMETER	DET. LIMIT	UNITS	MADDOX COM#1A-MW01	MADDOX COM#1A-MW02	MADDOX COM#1A-MW03
BENZENE	0.5	UG/L	16	< 0.5	< 0.5
TOLUENE	0.5	UG/L	10	< 0.5	< 0.5
ETHYLBENZENE	0.5	UG/L	43	< 0.5	< 0.5
TOTAL XYLENES	0.5	UG/L	34	< 0.5	< 0.5

SURROGATE:

BROMOFLUOROBENZENE (%)	124*	109	105
SURROGATE LIMITS (80 - 120)			

CHEMIST NOTES:

* = high surrogate results due to matrix interference.



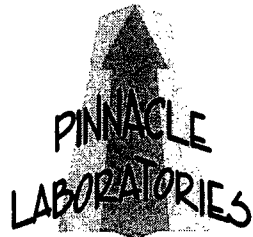
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Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 009128
BLANK I. D.	: 092700	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 09/27/00
PROJECT #	: 62800228	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: B.R. WELL SAMPLING		

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 (%) 103
SURROGATE LIMITS: (80 - 120)
CHEMIST NOTES:
N/A



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

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 009128-02
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800228
PROJECT NAME : B.R. WELL SAMPLING

PINNACLE I.D. : 009128
DATE EXTRACTED : NA
DATE ANALYZED : 09/27/00
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	18.5	93	19.4	97	5	(80 - 120)	20
TOLUENE	<0.5	20.0	20.4	102	21.0	105	3	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	21.1	106	21.5	108	2	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	63.6	106	64.4	107	1	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

ENVIRONMENTAL

4000 Monroe Road
Farmington, NM 87401

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

[illegible]

Signature	Date	Time	Signature	Date	Time
Chris A. M...	09-25-00	15:00	Flancone, Armando	9/26/00	1135

Rec'd @ 6⁰⁰ Ice Present

Serial No. WDPD-

Project Name B.R. well Sampling

Client Company: Burlington Resources

Site Name McDox Com 1A

Project Manager *R Thompson*

Project No. 62800228

Phase.Task No. 0307

00

Development Criteria

☒ 3 to 5 Casing Volumes of Water Removal

☒ Stabilization of Indicator Parameters

☐ Other

Methods of Development

Pump
Boiler

☐ Centrifugal ☒ Bottom Valve

☐ Submersible ☐ Double Check Valve

☐ Peristaltic ☐ Stainless-steel Kemmerer

☐ Other

Water Removal Data

Date	Time	Developmental Method		Removal Rate (cell/min)	Intake Depth (feet)	Trailing Water Depth (feet)	Water Volume (gallons)		Number of Cells per ml	Pre-Experiment Known Cell Count (x10 ⁶ /ml)	Temperature (°C)	pH	Conductivity (microhm/cm)	Dissolved Oxygen (mg/l)	Comments
		Pump	Bottle				Inlet	Outlet							
2-18-00	1224	X					1	1	1		8.2	6.07	8490		Clostridium
	1227	X					1	1	2		10.6	6.10	9320		"
	1231	X					1	1	3		11.4	6.16	10270		"
	1234	X					1	1	4		10.8	6.22	10700		"
	1236	X					1	1	5		11.3	6.26	11670		no change

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

Comments	Sampled for BTex	1241

Developer's Signature(s) Pro. A. M.

DATE 12-18-00

Reviewer RT

Date 12/21/00

Well Number MW 02

Development
H Tagging

WEILL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-

Page 1 of 1

Project Name BR well sampling

Project Manager Robert Thompson

Project No. 62800228

Client Company Burlington Resources

Phase Task No. 0301

Site Name meddax com #1A

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) 22 35

Initial Depth to Water (feet) 13 52

Height of Water Column in Well (feet) 6.8

Estimated (feet) 2 11 Gravel Pack

Methods of Development

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

Instruments

☒ pH Meter

☐ DO Monitor

☒ Conductivity Meter

☒ Temperature Meter

☐ Other

Serial No. (if applicable)

Hydac

Hydac

Hydac

Water Disposal
in pit on site

Water Removal Data

Date	Time	Development Method	Removal Rate (gal/min)	Initial Depth (feet)	Ending Water Depth (feet)	Water Column Depth (feet)	Estimated Volume Removed (gallons)	Temperature (°F)	pH	Conductivity (umhos/cm)	Dissolved Oxygen (mg/l)	Comments
12-18-00	1140	X						7.5	5.87	7530		10-11 orange
	1143	X						9.7	6.07	8620		no odor
	1146	X						10.8	6.04	8680		"
	1149	X						10.7	6.04	8510		"
	1152	X						10.9	6.01	8470		no change

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

Comments Sampled 1207 Full Suite

Developer's Signature(s) Rio A. M...

Date 12-18-00

Reviewer RT

Date 12/21/00

Project Name B.R. well Sampling
Client Company Burlington Resources
Site Name Madbox com #1A

Project Manager R Thompson

Project No. G29000228

Phase/Task No. 0301

Site Address Rural San Juan Co

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 20.94
Initial Depth to Valve (feet) 13.69
Height of Water Column in Well (feet) 7.25
Diameter (feet) 2" Cased Pipe

Serial No. (if applicable)

Instruments

☒ pH Meter

☐ DO Monitor

☒ Conductivity Meter

☒ Temperature Meter

☐ Other

Hydac

Hydac

Hydac

Water Disposal
on 578 in pit

Methods of Development

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

Water Removal Data

Date	Time	Development Method Pump/Boiler	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Volume (ft ³)	Temperature (°F)	pH	Conductivity (umhos/cm)	Dissolved Oxygen (mg/l)	Comments
12-18-00	0947	X				75	07.7	6.43	9110		black water egg odor
	1030	X				75	09.8	6.47	9560		"
	1053	X				75	10.7	6.55	9530		"
	1056	X				75	10.5	6.44	9730		"
	1059	X				75	10.4	6.37	9650		No change

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

Comments Sampled 1118 Full Surge

Developer's Signature(s) R. A. May

Date 12-18-00

Reviewer RT

Date 12/21/00

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

Lab Sample ID: **L30205-06**
Client Sample ID: **Maddox Com. 1A MW1**
Client Project ID: **62800228**
ACZ Report ID: **RG137221**

Philip Services
4000 Monroe Road
Farmington, NM 87401
Robert Thompson

Date Sampled: **12/18/00 11:18**
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: **12/20/00**
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		U	ug/L	0.2	1
Ethylbenzene	000100-41-4		U	ug/L	0.2	1
Xylenes (total)	001330-20-7		U	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
4-Bromofluorobenzene (Surr)	000460-00-4	94	%	80	120

Organic Notes and Qualifiers

MDL = Method Detection Limit; PQL = Practical Quantitation Limit

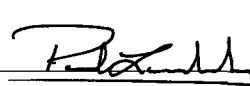
LCL = Lower Control Limit; UCL = Upper Control Limit

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

Lab Sample ID: **L30205-07**
Client Sample ID: **Maddox Com. 1A MW2**
Client Project ID: **62800228**
ACZ Report ID: **RG137222**

Philip Services
4000 Monroe Road
Farmington, NM 87401
Robert Thompson

Date Sampled: **12/18/00 12:07**
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: **12/20/00**
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		U	ug/L	0.2	1
Ethylbenzene	000100-41-4		U	ug/L	0.2	1
Xylenes (total)	001330-20-7	0.4	J	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
4-Bromofluorobenzene (Surr)	000460-00-4	88	%	80	120

Organic Notes and Qualifiers

MDL = Method Detection Limit; PQL = Practical Quantitation Limit

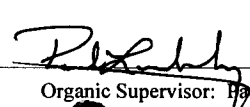
LCL = Lower Control Limit; UCL = Upper Control Limit

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

Lab Sample ID: **L30205-08**
Client Sample ID: **Maddox Com. 1A MW3**
Client Project ID: **62800228**
ACZ Report ID: **RG137223**

Philip Services
4000 Monroe Road
Farmington, NM 87401
Robert Thompson

Date Sampled: **12/18/00 12:41**
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: **12/20/00**
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		U	ug/L	0.2	1
Ethylbenzene	000100-41-4		U	ug/L	0.2	1
Xylenes (total)	001330-20-7	0.2	J	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
4-Bromofluorobenzene (Surr)	000460-00-4	95	%	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 Laboratories, Inc.
2773 Downhill Drive
Steamboat Springs, CO 80487
(800) 334-5493

Lab Sample ID: **L30205-06**
Client Sample ID: **Maddox Com. 1A MW1**
Client Project ID: **62800228**
ACZ Report ID: **RG137233**

Philip Services
4000 Monroe Road
Farmington, NM 87401
Robert Thompson

Date Sampled: **12/18/2000 11:18:00 AM**
Date Received: **12/19/2000**
Date Reported: **01/09/2001**

Sample Matrix: **Ground Water**

Metals Analysis

Parameter	EPA Method	Result	Qual	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M6020 ICP-MS		U	mg/L	0.005	0.03	12/22/2000	jb
Barium, dissolved	M6010B ICP		U	mg/L	0.02	0.05	12/29/2000	kr
Boron, dissolved	M6010B ICP	0.45		mg/L	0.05	0.3	12/29/2000	kr
Cadmium, dissolved	M6020 ICP-MS		U	mg/L	0.001	0.005	12/22/2000	jb
Calcium, dissolved	M6010B ICP	90		mg/L	1	5	12/29/2000	kr
Chromium, dissolved	M6010B ICP		U	mg/L	0.05	0.3	12/29/2000	kr
Copper, dissolved	M6010B ICP		U	mg/L	0.05	0.3	12/29/2000	kr
Iron, dissolved	M6010B ICP	0.07	B	mg/L	0.05	0.3	12/29/2000	kr
Lead, dissolved	M6020 ICP-MS		U	mg/L	0.001	0.005	12/22/2000	jb
Lithium, dissolved	M6010B ICP		U	mg/L	0.1	0.5	12/29/2000	kr
Magnesium, dissolved	M6010B ICP	11		mg/L	1	5	12/29/2000	kr
Manganese, dissolved	M6010B ICP	0.11		mg/L	0.03	0.1	12/29/2000	kr
Mercury, dissolved	M7470 CVAA	0.0003	B	mg/L	0.0002	0.001	12/29/2000	gag
Potassium, dissolved	M6010B ICP	4	B	mg/L	2	5	12/29/2000	kr
Selenium, dissolved	M7740 GFAA		U	mg/L	0.01	0.05	1/6/2001	ms
Silica, dissolved	M6010B ICP	20		mg/L	1	3	1/5/2001	kr
Silver, dissolved	M6010B ICP		U	mg/L	0.03	0.1	1/5/2001	kr
Sodium, dissolved	M6010B ICP	1870		mg/L	10	50	12/29/2000	kr
Strontium, dissolved	M6010B ICP	4.75		mg/L	0.05	0.3	12/29/2000	kr
Uranium, dissolved	M6020 ICP-MS	0.0020	B	mg/L	0.0005	0.003	12/28/2000	jb
Zinc, dissolved	M6010B ICP		U	mg/L	0.05	0.3	12/29/2000	kr

Wet Chemistry

Parameter	EPA Method	Result	Qual	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	M2320B							
Bicarbonate as CaCO3		207		mg/L	2	10	12/20/2000	lc
Carbonate as CaCO3			U	mg/L	2	10	12/20/2000	lc
Hydroxide as CaCO3			U	mg/L	2	10	12/20/2000	lc
Total Alkalinity		207		mg/L	2	10	12/20/2000	lc
Bromide	M300.0 - Ion Chromatography		U	mg/L	0.5	3	12/29/2000	steve
Cation-Anion Balance	Calculation							
Cation-Anion Balance		-3.6		%			1/9/2001	calc
Sum of Anions		94.5		meq/L	0.1	0.5	1/9/2001	calc
Sum of Cations		87.9		meq/L	0.1	0.5	1/9/2001	calc
Chloride	M325.2 - Colorimetric (RFA)	277		mg/L	5	30	12/22/2000	ss
Fluoride	M340.2 - ISE	1.3		mg/L	0.1	0.5	12/22/2000	ksj
Hardness as CaCO3	SM2340B - Calculation	270		mg/L	1	7	1/9/2001	calc
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)

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: **L30205-06**
Client Sample ID: **Maddox Com. 1A MW1**
Client Project ID: **62800228**
ACZ Report ID: **RG137233**

Date Sampled: **12/18/2000 11:18:00 AM**
Date Received: **12/19/2000**
Date Reported: **01/09/2001**

Sample Matrix: **Ground Water**

Lab Filtration & Acidification	***							12/20/2000	ecr
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		U	mg/L	0.02	0.1		1/9/2001	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B	mg/L	0.02	0.1		12/19/2000	ss
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B	mg/L	0.01	0.05		12/19/2000	ss
pH (lab)	M150.1 - Electrometric	7.8		units	0.1	0.1		12/21/2000	lc
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	5980		mg/L	10	20		12/19/2000	kmc
Sodium Absorption Ratio in Water	USGS - 11738-78	50.10			0.03	0.15		1/9/2001	calc
Sulfate	M375.3 - Gravimetric	3930		mg/L	100	200		12/20/2000	ecr
TDS (calculated)	Calculation	6330		mg/L	10	50		1/9/2001	calc
TDS (ratio - measured/calculated)	Calculation	0.94						1/9/2001	calc

Note: The Selenium value is estimated due to matrix interferences.

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

PHILIP

Chain of Custody Record

L 30205

4000 Monroe Road
Farmington, NM 87401

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

COC Serial No. C 2840

Project Name: B.R. well Sampling				Project Number: 1800224 Phase: Task 0301	
Samplers: C Mce2		Laboratory Name: ACZ LAB.		Location: Steamboat Springs CO.	
Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle
MADDOX CON #1A MW 1	12/18/00	1118	H ₂ O	7	X
MADDOX CON #1A MW 2	12/18/00	1207	H ₂ O	7	X
MADDOX CON #1A MW 3	12/18/00	1241	H ₂ O	2	X
BTX 5021 TDS CATIONS ANIONS METALS (SEE ATTACHED)					
Comments					
MADDOX CON #1A					
MADDOX CON #1A					
MADDOX CON #1A					

Relinquished by:

Received By:

Signature	Date	Time	Signature	Date	Time
<i>Chris H. Allen</i>	12/19/00	1500	<i>[Signature]</i>	12/19	10:30

Samples Iced: ☒ Yes ☐ No	Carrier: <i>UPS</i>	Airbill No.
Preservatives (ONLY for Water Samples)		
☐ Cyanide Sodium hydroxide (NaOH)		
☒ Volatile Organic Analysis Hydrochloric acid (HCl)		
☒ Metals Nitric acid (HNO ₃)		
☐ TPH (418.1) Sulfuric acid (H ₂ SO ₄)		
☒ Other (Specify) <i>CATI, U.S. HNO₃</i>		
☒ Other (Specify) <i>HSCl₂</i>		
Shipping and Lab Notes:		

Burlington Resources

Wednesday, December 29, 1999

Ed Hasely, Environmental Representative 505-326-9841

Shanna Nava, Environmental Associate 505-326-9506

Spill Incident Report

Incident Number: 323

DPNO: 4895001

Revised 3/17/98

PERSON REPORTING RELEASE

Person Reporting: Kevin Midkiff	Telephone No.:
Foreman: KEVIN MIDKIFF	Facility Name: MADDOX COM
Person Completing Report: Bruce Gantner	Well Number: 1A

SITE LOCATION OF INFORMATION

Unit Letter I	Section 17	Township 030N	Range 008W	Feet From the 2050	North/South Line	Feet From the 790	East/West Line	County: San Juan
Surface Owner: Federal				Mineral Owner:		Lease Number: NMSF-078578-A		

NATURE OF RELEASE

Type of Substance Released: Condensate	Volume of Release: 170 bbls.	Volume Recovered: 110 bbls.
Source of Release: Drain Line Valve	Date and Hour of Occurrence: 12/5/99 12:00:00 PM	Date and Hour of Discovery: 12/5/99 1:00:00 PM
Date and Time Reported to E.S.: 12/5/99 4:00:00 PM	Reported to who in E.S.? Bruce Gantner	
Contained On-Location: ☒ Yes ☐ No	Type of OCD Report: ☐ Not Required ☒ Initial Report ☐ Final Report	
Was a Watercourse or Dry Wash Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. 0	
If a Major Dry Wash or Arroyo was Impacted, Describe Fully. (Attach Additional Sheets If Necessary) 60 yards from San Juan River		
Describe Cause of Release and Action Taken. (Attach Additional Sheets If Necessary) A drain line between the main drain valve and a secondary valve froze thereby cracking the threads on the main drain valve. Upon thawing this line separated from the valve and released the tank contents. Soils within the berm will be excavated and spread on a co-location with the Maddox 777. The valve will be replaced with a freeze proof valve.		
Describe Area Impacted and Cleanup Action Taken. (Attach Additional Sheets If Necessary) Two feet deep within the bermed area		

Estimated Clean-up Costs: \$3,000.00

Actual Clean-up Costs: \$0.00

Follow-up Required

☒ Yes ☐ No

cc: Sheila Chavez, Accounting
Foreman

Spill report, Excavation Log, and Drilling Log/Wellbore Diagrams



PRODUCTION PIT REMEDIATION FORM

WELL NAME: MADDOX COM WELL No.: 1A DP No.: _____
OPERATOR NAME: BURLINGTON RESOURCES P/L DISTRICT: N/A
COORDINATES: LETTER: I SECTION: 17 TOWNSHIP: 30N RANGE: 8W
PIT TYPE: DEHYDRATOR: X LOCATION DRIP: _____ LINE DRIP: _____ OTHER: _____
FOREMAN No.: N/A AREA: N/A

INITIAL REMEDIATION ACTIVITIES

DATE: 12/16/99 TIME: 0700

GROUND WATER ENCOUNTERED? ☒ Y / ☐ N

INSIDE NMOCD ZONE

FINAL EXCAVATION DIMENSIONS: LENGTH: 101' WIDTH: 52' DEPTH: 15'

APPROX. CUBIC YARDS: 2,917 FINAL PID READING: →
NORTH WALL - 35 PPM
EAST WALL - 21.9 PPM
SOUTH WALL - 61 PPM

REMEDICATION METHOD: ONSITE LANDFARM X

OFFSITE LANDFARM X LOCATION: STILL PENDING

OTHER _____

LANDFARM DIMENSIONS: LENGTH: _____ WIDTH: _____

OUTSIDE NMOCD ZONE

FINAL SAMPLE DEPTH: _____ FINAL PID READING: _____

EXCAVATION SAMPLING INFORMATION

IF PID READINGS ARE LESS THAN 100 PPM, SAMPLE TAKEN DURING EXCAVATION)

SAMPLE DATE: NO SAMPLE COLLECTED SAMPLE NOS N/A N/A

PER ED HASELY
SAMPLE ANALYSIS: TPH METHOD 8015 MODIFIED

IF PID READINGS ARE GREATER THAN 100 PPM, NO SAMPLE WILL BE TAKEN DURING EXCAVATION.
THE EXCAVATION WILL BE SAMPLED PRIOR TO BACKFILLING (SEE ADDITIONAL SAMPLING SECTION).

REMARKS: NO SAMPLES WERE COLLECTED FOR LABORATORY ANALYSIS PER ED HASELY SINCE THE WEST WALL DID NOT CLEANUP. FURTHER REMEDIATION METHODS ARE PENDING. SOME SOIL WAS LAND-FARMED ON LOCATION AND THE REST WAS STOCKPILED PENDING TRANSPORT TO OTHER LOCATIONS OF THE SAME LEASE IN THE IMMEDIATE AREA. INITIAL REMEDIATION ACTIVITIES WERE STARTED BY CF&M OILFIELD SERVICE.

SIGNATURE: Morgan Killian

DATE: 1-21-00

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

4000 Monroe Road

Farmington, New Mexico 87401

(505) 326-2282 FAX (505) 326-2388

Borehole #

Well #

Page

1

MW-2

of

Project Name

Project Number

Project Location

BR maddy Drilling

62800132

Phase

35

122-123-124

Elevation

Borehole Location

GWL Depth

Logged By

Drilled By

Date/Time Started

Date/Time Completed

C. Tuby

K. F. B. Co

1-10-99 9:45

1-10-99 11:30 AM

Well Logged By

Personnel On-Site

Contractors On-Site

Client Personnel On-Site

C. Tuby

Drilling Method

Air Monitoring Method

Hand

02.7

Depth (Feet)	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU			Drilling Conditions & Blow Counts
						BZ	BH	S	
0									
5			Tan - Brn Sand - fine to med Snd - Thin bedded, irregular					1.3	1.3
10			HIT cobbles 2' - 3'						
15			Tan - Brn Sand - fine to med No screens / No filter Gravel / Sand - wet - could NOT retrieve samples					1	
20			TD 20' 0"						
25									
30									
35									
40									

Comments:

7' S&H 30' 1', 10' SCREEN, 10' BLOCK 5' S&H 30' 1'

Geologist Signature

Cert. Tuby

MONITORING WELL INSTALLATION RECORD

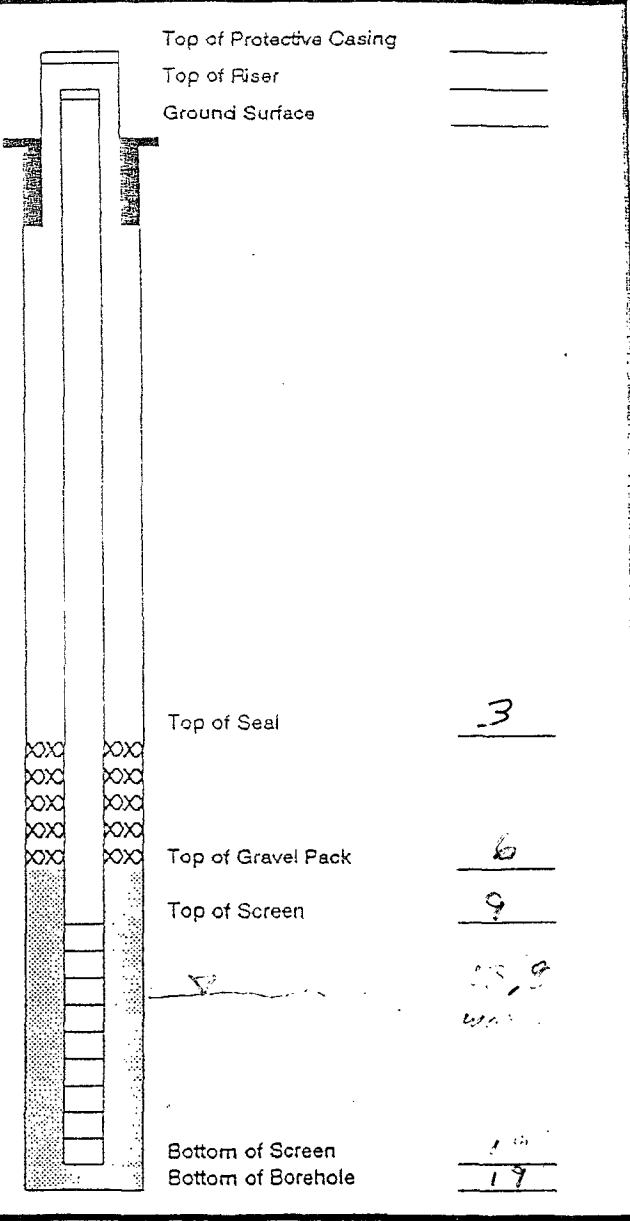
Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

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

Project Name BR Maddox Drilling
Project Number 62800132 Phase 35
Project Location Maddox Drilling
On-Site Geologist C. J. [Signature]
Personnel On-Site _____
Contractors On-Site _____
Client Personnel On-Site [Signature]

Elevation _____
Well Location _____
GWL Depth _____
Installed By R. P. [Signature]
Date/Time Started 1-15-88
Date/Time Completed 1-15-88

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		65
Bottom of Grout		3
Top of Well Riser		
Bottom of Well Riser		9
Top of Well Screen		9
Bottom of Well Screen		19
Top of Peltonite Seal		3
Bottom of Peltonite Seal		6
Top of Gravel Pack		6
Bottom of Gravel Pack		19
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		13.8
Total Depth of Borehole		19'



Comments: _____
Geologist Signature C. J. [Signature]

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

4000 Monroe Road

Farmington, New Mexico 87401

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

Borehole # 2
Well # MW-3
Page 1 of 1

Project Name BF Middle Drilling
Project Number 6293-122 Phase 35
Project Location 10000 N 10000 E

Elevation _____
Borehole Location _____
GWL Depth _____
Logged By J. T. ...
Drilled By J. T. ...
Date/Time Started 1-10-99 11:45 AM
Date/Time Completed 1-10-99 1:03 PM

Well Logged By _____
Personnel On-Site _____
Contractors On-Site _____
Client Personnel On-Site ...
Drilling Method _____
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			Drilling Conditions & Blow Counts
						BZ	BH	S	
0		SPLIT Spoon							
5			Tan - Brown ... Gravelly Cobbles ... Moist			0		0 ppm	Heard Headspace 0 ppm
10			NO SAND NO STAINING / odor Sample too granular/wet TO COLLECT.			0			
15									
20			TD @ 20' Gravel & Cobbles						
25									
30									
35									
40									

Comments: 7 ...
Bottom ...

Geologist Signature [Signature]

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

Borehole # 2
Well # MW-3
Page _____ of _____

Project Name BR Motor Drilling
Project Number 62800132 Phase 75
Project Location 4102 2nd St

On-Site Geologist _____
 Personnel On-Site _____
 Contractors On-Site _____
 Client Personnel On-Site _____

Elevation _____
Well Location _____
GWL Depth _____
Installed By K. B. J.

Date/Time Started 1-10-99 1:PM
Date/Time Completed 1-10-99 2:PM

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		65
Bottom of Grout		3
Top of Well Riser		
Bottom of Well Riser		9
Top of Well Screen		9
Bottom of Well Screen		19
Top of Peltonite Seal		3
Bottom of Peltonite Seal		6
Top of Gravel Pack		6
Bottom of Gravel Pack		20
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		12.4
Total Depth of Borehole		20

Top of Protective Casing _____

Top of Riser _____

Ground Surface _____

Top of Seal 3

Top of Gravel Pack 6

Top of Screen 9

Bottom of Screen 12'4"

Bottom of Borehole 19'

Total Depth of Borehole 20'

Comments: _____

Geologist Signature

Carl S.

RECORD OF SUBSURFACE EXPLORATION

PHILIP SERVICES CORP.

4000 Monroe Road

Farmington, New Mexico 87401

(505) 326-2282 FAX (505) 326-2388

Borehole # _____
Well # 1
Page 1 of 01Project Number 628135 Phase _____Project Name BC WeddingProject Location Eastern Road

Elevation _____

Borehole Location _____

GWL Depth _____

Drilled By VEE R PadillaWell Logged By MINERDate Started 4/27/00 0845Date Completed 4/27/00 1112Drilling Method 4 1/4 ID HSAAir Monitoring Method PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (Inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: PPM BZ BH G			Drilling Conditions & Blow Counts
0				0-11 backfill material, light brown sand medium to very fine with minor gravel. Sand is moderately well sorted and unconsol- idated. Sand appears saturated @ approx 11.3'. Minor root mat- erial @ 11.5 bgs	SP					
5	1	5-6.5	3"				0	0	0	1
10	2	10-11.5	12"	small (<2") HC stones brown clay saturated	CL		0	0	46	8 blow counts
15	3	15-16.5	2"	15-20' cobbles, no sample recovery			0	0	0	18 refusal
20	4	20-21	0				0	0	0	22 refusal
25										
30										
35										
40										

Comments:

Geologist Signature

MONITOR WELL INSTALLATION FORM

Philip Services Corp.
4000 Monroe Rd.
Farmington, NM 87401
(505) 326-2262 FAX (505) 326-2388

Borehole #
Well # MW-1
Page 1 of 1

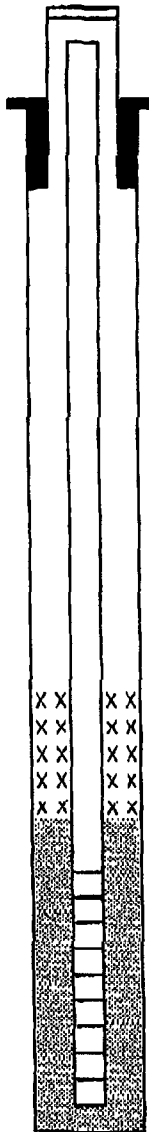
Project Name By Whiddon
Project Number 1028-135 Phase
Site Location Cotton Wood Campground

Elevation _____
Well Location _____
GWL Depth 10.92
Installed by K PADILLA

On-Site Geologist M. Nec
Personnel On-Site Padilla, LeFevre
Contractors On-Site
Client Personnel On-Site LeFevre, E. Hoady

Date/Time Started 4-27 0845
Date/Time Complete 4-27 1117

Depths In Reference to Ground Surface		
Item	Material	Depth (feet)
Top of Protective Casing	STEEL	2.67
Bottom of Protective Casing	STEEL	2.93
Top of Permanent Borehole Casing	NA	
Bottom of Permanent Borehole Casing	NA	
Top of Concrete	NA	
Bottom of Concrete	NA	
Top of Grout	NA	
Bottom of Grout	NA	
Top of Well Riser	PVC	2.93
Bottom of Well Riser	PVC	-4.92
Top of Well Screen	PVC	-4.92
Bottom of Well Screen	PVC	-14.92
Top of Peltonite Seal	3/8 chips	0
Bottom of Peltonite Seal	3/8 chips	-3
Top of Gravel Pack	10-20	-3
Bottom of Gravel Pack	10-20	-20
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		-10.96
Total Depth of Borehole		20.00



Top of Protective Casing 2.67'
Top of Riser (survey elev.) 2.93'
Ground Surface 0

Top of Seal 0
Top of Gravel Pack -3
Top of Screen -4.92
Bottom of Screen -14.92
Bottom of Borehole 20.00

Comments _____

Geologist Signature [Signature]