3R - 66

REPORTS

DATE:

1998 - 2003

BURLINGTON RESOURCES 2002 ANNUAL GROUNDWATER REPORT

Cozzens B #1

SITE DETAILS

Location: Unit Letter L, Section 19, Township 29N, Range 11W; San Juan County, New Mexico
Land Type: Fee

PREVIOUS ACTIVITIES

PNM had conducted pit closure work and installed monitoring wells on this site in 1996 and 1997. Burlington Resources also had participated in excavation of impacted soils.

In December 1997, Burlington Resources excavated approximately 334 cubic yards of impacted soil from an area near an oil storage tank that had leaked. No groundwater was encountered at this time. The excavation was backfilled with clean soils. A report prepared by Philip Services Corporation detailing the excavation work and soil sampling is attached.

1999 ACTIVITIES

Burlington installed a groundwater monitoring well (MW-1) near the oil storage tank on this location in May 1999. At the same time, a second monitoring well (MW-2) was installed at the toe of the slope immediately downgradient and south of location. Auger refusal was encountered at approximately 3 feet during the installation of the second monitoring well (MW-2). Due to the shallow depth of MW-2, we were unable to collect water samples during several of the quarterly sampling events. After developing the wells and allowing them to stabilize, the wells were purged and sampled on May 26, 1999. Water samples were collected from MW-2 during the 3rd and 4th quarters and results showed levels of benzene and xylene above standards.

2000, 2001, and 2002 ACTIVITIES

Quarterly groundwater monitoring continued through 2000. Groundwater analytical data are presented in Table 1. A site map is presented as Figure 1.

CONCLUSIONS

The ground water regime being monitored at this location appears to be artificially created and influenced by an irrigation ditch approximately 60 feet to the east and upgradient from the location. The irrigation ditch may be contributing water to the subsurface strata and artificially creating a shallow perched ground water zone. This perched zone may be the source of the ground water being monitored at the location. The irrigation ditch is flowing approximately April 15 through October 15 annually. Without the ditch influence there may not be any shallow groundwater beneath the location and none is expected upgradient of the ditch at these shallow depths. A project to clay line the ditch to prevent water seepage was started March 2001 by local residents concerned about water damage to near by residential properties from the ditch. The ground water gradient is approximated to be in a west/southwest

direction. The influence of the ditch water on MW-1 and MW-2 can be observed in the water level measurements collected and coincides with the water flow schedule of the ditch. An apparent lag in hydraulic conductivity between the ditch and the monitoring wells is assumed to be three months or more.

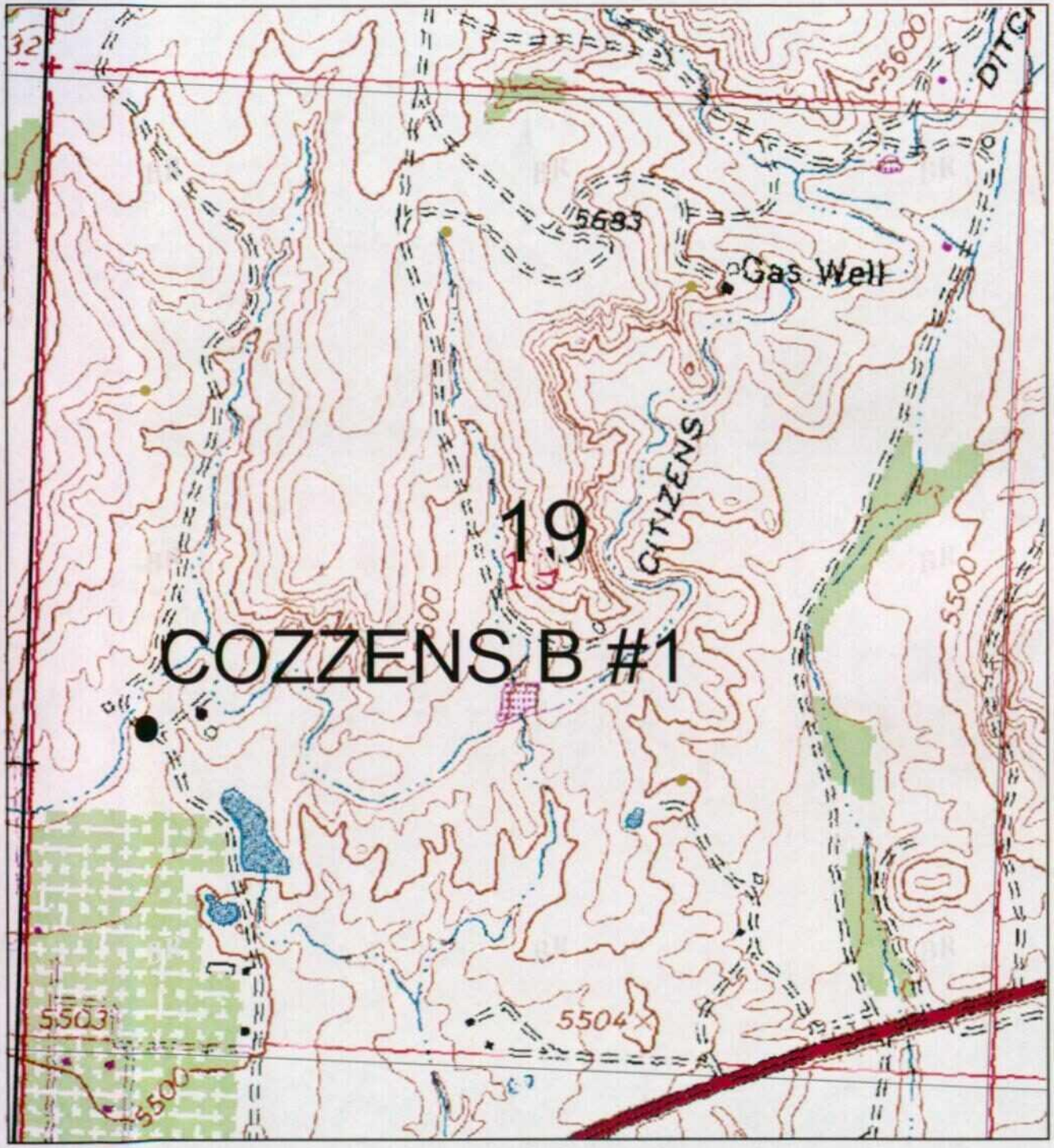
The analytical results of ground water sampling from the source monitoring well (MW-1) in May 1999 showed levels of benzene constituents above New Mexico Ground Water Standards. Since the initial sampling event in May 1999, six quarterly sampling events have shown all BTEX constituents below the standards in MW-1. However, sampling results for 2001 show elevated levels of BTEX. The effect of a minor condensate spill on 1/30/01 of approximately 1 bbl coupled with the soil being previously disturbed during the historic excavation activities may be responsible for the recent increase in the levels of BTEX in MW-1. Further monitoring may determine if this is related to a minor slug of contamination. No evidence of a change in the groundwater regime from the ditch lining project was observed MW-1 and it is possible the lining project did not impact the ditch reach adjacent and upgradient of the location. One detection of benzene identified in the second quarter from MW-1 was determined to be questionable. No additional analysis results in subsequent or historic monitoring detected similar elevated concentrations therefore the result is considered not valid.

The quarterly sampling results from MW-2 have shown BTEX constituents above the standards except for the third quarter of 2000. A trend of natural degradation of the hydrocarbons and of a downward trend in BTEX levels appears possible in well MW-2. Insufficient water prevented the collection of data from this well in 2001. In 2002 a downward trend in bezene and total BTEX concentration was established in the monitoring data. The concentration reported for MW-1 show a decrease in benzene. The concentrations reported for MW-2 show a decrease in benzene and total BTEX.

RECOMMENDATIONS

- Burlington Resources proposes to continue quarterly sampling at this site.
- Upon receiving analytical results below standards for one full year, Burlington Resources will request official closure of this site.

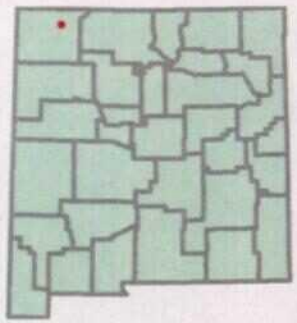
Attachments: Figure 1 - Site Map
Table 1 - Groundwater Sampling Results Summary
2002Groundwater Analytical Results
Drilling Logs/Wellbore Diagrams
Philip Report on Excavation Work



N

BURLINGTON RESOURCES PLAT

300 0 300 600 Feet



BURLINGTON RESOURCES

San Juan Division

Cozzens B # 1
Sec. 19, T29N-R11W
San Juan Co., NM

Transverse Mercator
UTM - 1927 ; Zone 13

1:9935

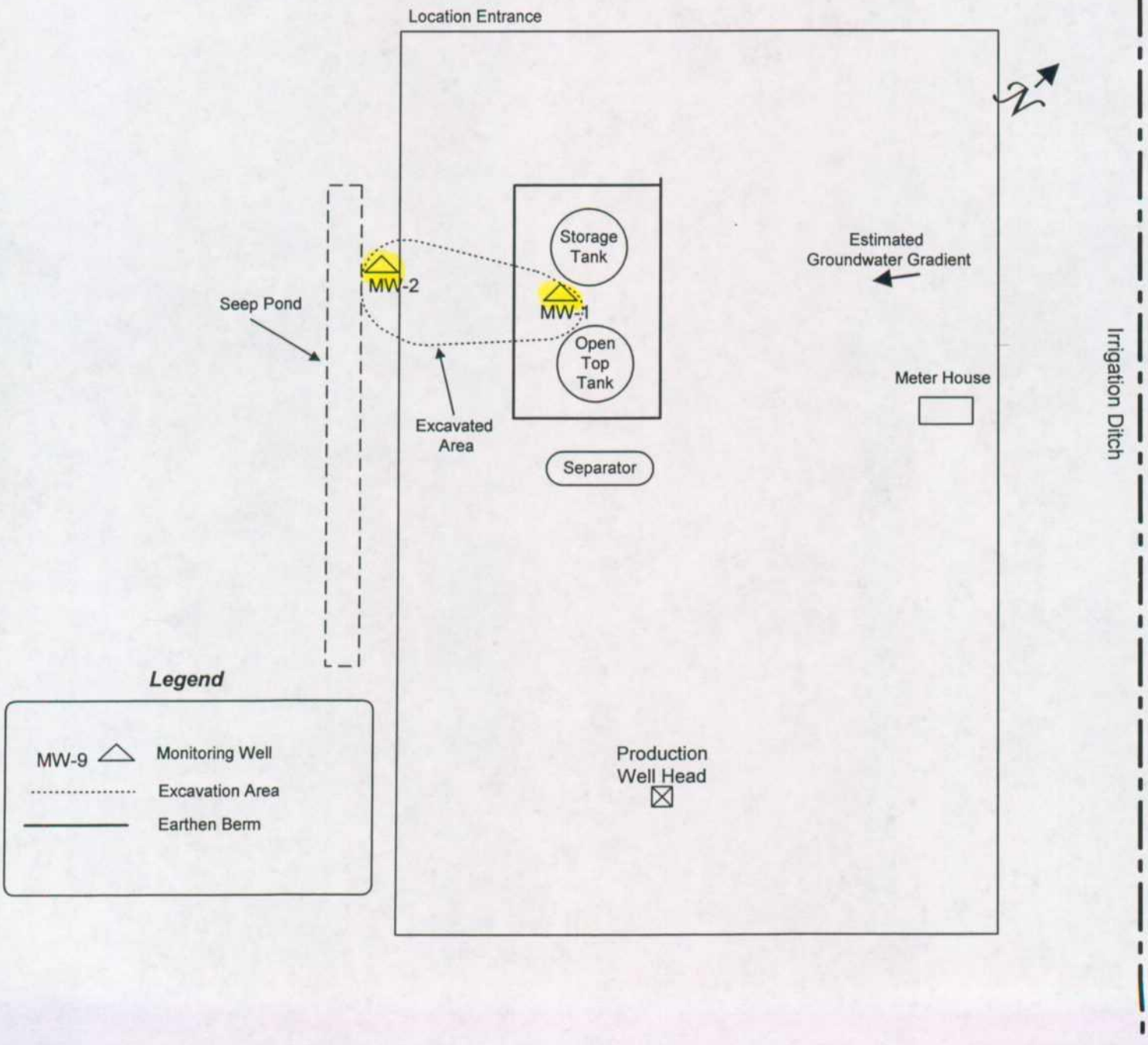
Prepared By: Cheryl Groth Date: 03/27/2002

File No: <Please enter file number> Revised: <Revision date>

File Name: r:\plat\forman and run outlines\kao.apr

Figure 1

Cozzens B#1 - Site Diagram



3/28/00 LEH

2002 GROUNDWATER ANALYTICAL RESULTS

Table 1

Groundwater Monitoring Well Sampling

Well Name	MW #	Sample Date	B (ppb)	T (ppb)	E (ppb)	X (ppb)	BTEX (ppb)	DTW (ft)
Standard			*10*	*750*	*750*	*620*		
Cozzens B #1	MW-1	5/26/1999	**28**	11	23	99	161	
	(aka MW-4)	9/2/1999	2.5	2.1	5.6	22	32.2	2.31
		12/2/1999	<0.5	11	5	27	43	4.43
		1/19/2000	1.7	13	7.6	28	50.3	6.48
		5/11/2000	6.8	1.2	2.6	14	24.6	4.03
		9/7/2000	1.1	<0.5	6.2	10	17.3	3.8
		12/15/2000	2	3	1	4	10	4.57
		3/28/2001	**50.3**	<0.2	1.3	3.6	55.2	lost
		6/28/2001	**4170**	<0.2	220	370	4760	5.26
		9/17/2001	**12.9**	<0.2	0.5	4.3	17.7	3.51
		12/19/2001	**39.6**	3.1	6.3	14.1	63.1	4.64
		3/27/2002	**50.8**	4.5	5.9	21.1	82.3	7.81
		6/25/2002	6	3.1	0.5	8.4	18	3.8
		9/25/2002	0.8	0.6	0.5	0.6	2.5	3.05
		12/30/2002	5.6	10.6	7.7	8.3	32.2	5.7
	MW-2	5/26/1999	Well was dry.			No Sample.		
	(aka MW-5)	9/2/1999	**120**	55	440	450	1065	1.28
		12/2/1999	**250**	39	480	**980**	1749	4.35
		1/19/2000	Well was dry.			No Sampl	0	
		5/11/2000	**550**	140	**830**	**2400**	3920	3.53
		9/7/2000	4.7	1.9	6.2	23	35.8	3.36
		12/15/2000	**65**	4	25	59	153	3.63
		3/28/2001	no sample collected					Dry
		6/28/2001	no sample collected					Dry
		9/17/2001	no sample collected					3.74
		12/19/2001	**31.8**	3	18.9	29.9	83.6	3.87
		3/27/2002	no sample collected Dry					
		6/25/2002	22.3	6.5	7.4	9.5	45.7	3.8
		9/25/2002	1.8	2.4	1.2	30.1	35.5	3.7
		12/30/2002	No sample collected					Dry

☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 5

Page 1 of 1

Project Name B.R. well Sampling

Project Manager LISA Winn

Project No. 151X000138

Client Company Burlington Resources

Site Name COZZENS B-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) 4.45
Initial Depth to Water (feet) 4.44
Height of Water Column in Well (feet) .01
Diameter (inches): Well 2" Gravel Pack

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

Instruments

	Serial No. (If applicable)
☐ pH Meter	YSI 63
☐ DO Monitor	
☑ Conductivity Meter	YSI 63
☑ Temperature Meter	YSI 63
☐ 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
3-25-02	1430														
								DRY							

Comments NOT enough water TO perform water quality Readings or TO collect Samples

Developer's Signature(s) _____ Date 3-25-02

Reviewer _____ Date 3/28/02

☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 9 Page 1 of 1

Project Name B.R. well Sampling Project Manager Lisa Winn Project No. 151700013 8

Client Company BurlingTON Resources

Site Name COZZENS B-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) 14.99
Initial Depth to Water (feet) 7.81
Height of Water Column in Well (feet) 7.18
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	2.18	1.17x3	3.51
Gravel Pack			
Drilling Fluids			
Total			3.51

Instruments

	Serial No. (If applicable)
☑ pH Meter	YSI 63
☐ DO Monitor	
☑ Conductivity Meter	YSI 63
☑ Temperature Meter	YSI 63
☐ 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
3-25-02	1355		X				.75	.75			11.8	7.05	1757		Cloudy Dark Grey mild Septic odor
	1357		X				.75	1.5			10.3	7.08	1566		" "
	1400		X				.75	2.25			10	7.08	1530		" "
	1402		X				.75	3			10.4	7.07	1547		" "
	1405		X			12.30	.75	3.75			10.3	7.08	1531		no Change

Comments Samples for BTEX 1420

Developer's Signature(s) [signature] Date 3-25-02 Reviewer [signature] Date 3/28/02

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

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: COZZENS MW4

ACZ ID: ***L36252-06***
Date Sampled: *03/25/02 14:20*
Date Received: *03/27/02*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021**
Extract Method: **Method**

Analyst: *mwb*
Extract Date: *04/03/02 23:29*
Analysis Date: *04/03/02 23:29*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	50.8		ug/L	0.2	0.5
Ethylbenzene	000100-41-4	5.9	B	ug/L	0.2	1
Toluene	000108-88-3	4.5		ug/L	0.2	1
Xylenes	0001330-207	21.1	B	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	112	%	80	120

Note: PBW contains Ethylbenzene at 0.3ug/L and for Xylenes at 1.4ug/L.

☐ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

amec

Well Number MW-4 Page 1 of 1

Project Name BR WELL SAMPLING Project Manager LISA WINN Project No. 1S17000138

Client Company BURLINGTON RESOURCES

Site Name COZZENS B #1 Site Address RURAL SAN JUAN COUNTY

Development Criteria

☒ ~~10~~ 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) 14.99' TOR
Initial Depth to Water (feet) 3.80' TOR
Height of Water Column in Well (feet) 11.19'
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	11.19	1.83	1.83 x 3
Gravel Pack			
Drilling Fluids			
Total			5.49

Instruments

	Serial No. (If applicable)
☒ pH Meter	YSI 63
☐ DO Monitor	
☒ Conductivity Meter	YSI 63
☒ Temperature Meter	YSI 63
☐ 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
6-25-02	1543		X				0	0			22.9	6.94	1590		BLACKISH - GRAY
6-25-02	1548		X				2	2			17.7	6.93	1523		BLACKISH - GRAY
6-25-02	1553		X				2	4			17.3	6.88	1513		BLACKISH - GRAY
6-25-02	1559		X				2	6			17.3	6.90	1500		BLACKISH - GRAY

Comments SAMPLED FOR BTEX AT 1609

Developer's Signature(s) Pat Thompson Date 6-25-02 Reviewer [signature] Date 7/2/02

L:\forms\MW Dvlpmnt 2.dot 11/29/01

☐ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW-5 Page 1 of 1

Project Name BR WELL SAMPLING Project Manager LISA WINN Project No. 1517000138

Client Company BURLINGTON RESOURCES

Site Name COZZENS B#1 Site Address RURAL SAN JUAN CO.

Development Criteria

☒ 0 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) 4.45' TOR
Initial Depth to Water (feet) 3.80' TOR
Height of Water Column in Well (feet)
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	0.65	0.11	0.11 x 3
Gravel Pack			
Drilling Fluids			
Total			0.33

Instruments

	Serial No. (If applicable)
☒ pH Meter	YSI 63
☐ DO Monitor	
☒ Conductivity Meter	YSI 63
☒ Temperature Meter	YSI 63
☐ Other	

Water Disposal

ONSITE 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

Comments NOT ENOUGH WATER TO COLLECT WATER QUALITY READINGS. SAMPLED FOR BTEX W/O PURGING AT 1631.

Developer's Signature(s) Robert Thompson Date 6-25-02 Reviewer [signature] Date 7/2/02

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

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: COZZENS B#1 MW-4

ACZ ID: ***L37484-02***
Date Sampled: *06/25/02 16:09*
Date Received: *07/02/02*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B**
Extract Method: **Method**

Analyst: *cbr/km on*
Extract Date: *07/05/02 12:01*
Analysis Date: *07/05/02 12:01*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	6		ug/L	0.2	1
Ethylbenzene	000100-41-4	0.5	J	ug/L	0.2	1
m p xylene	01330 20 7	6.8		ug/L	0.2	2
o xylene	00095-47- 6	1.6		ug/L	0.2	1
Toluene	000108-88-3	3.1		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	104	%	80	120

See case narrative.

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

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: COZZENS B#1 MW-5

ACZ ID: ***L37484-03***
Date Sampled: *06/25/02 16:31*
Date Received: *07/02/02*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B**
Extract Method: **Method**

Analyst: *cbr/km on*
Extract Date: *07/03/02 23:15*
Analysis Date: *07/03/02 23:15*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	22.3		ug/L	0.2	1
Ethylbenzene	000100-41-4	7.4		ug/L	0.2	1
m p xylene	01330 20 7	2.9		ug/L	0.2	2
o xylene	00095-47- 6	3		ug/L	0.2	1
Toluene	000108-88-3	6.5		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	43.6	%	80	120

See case narrative.

☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW-4 Page 1 of 1

Project Name B.R well SAMpling Project Manager LISA Winn Project No 517000158

Client Company Burlington Resources

Site Name GOZZENS B-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) 14.99
Initial Depth to Water (feet) 3.05
Height of Water Column in Well (feet) 11.94
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	11.94	1.94X3	5.82
Gravel Pack			
Drilling Fluids			
Total			5.82

Instruments

	Serial No. (If applicable)
☑ pH Meter	YSI 63
☐ DO Monitor	
☑ Conductivity Meter	YSI 63
☑ Temperature Meter	YSI 63
☐ 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
92502	1106		X				1.25	1.25			19.6	7.68	1177		Cloudy Light Gray Mild Septic odor
	1109		X				1.25	2.5			19.1	7.41	1081		" "
	1113		X				1.25	3.75			19.1	7.36	1083		" "
	1116		X				1.25	5			19.2	7.33	1092		" "
	1119		X			4.59	1.25	6.25			19.0	7.32	1069		no change

Comments SAMPLED For BTEX 1025

Developer's Signature(s) [signature] Date 9-25-02 Reviewer [signature] Date 9/30/02

☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 5 Page 1 of 1

Project Name B.R. well Sampling Project Manager LISA minn Project No 151200015

Client Company Burlington Resources

Site Name COZZENS B-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) 4.45
Initial Depth to Water (feet) 3.37
Height of Water Column in Well (feet) 1.08
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	1.08	0.17x3	0.51
Gravel Pack			
Drilling Fluids			
Total			0.51

Instruments

	Serial No. (If applicable)
☑ pH Meter	YSI 63
☐ DO Monitor	
☑ Conductivity Meter	YSI 63
☑ Temperature Meter	YSI 63
☐ Other	

Water Disposal

on site in pit

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
9-25-02	1136					4.15	.25	.25			20.0	7.33	2642		Cloudy, Black, Bottom Egg Odor

Comments AFTer Bailing Approximately .25 gal Bailed well Dry LET Recover SAMples for BTEX 1150

Developer's Signature(s) Chris A Mann Date 9-25-02 Reviewer JNW Date 9/30/02

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

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: COZZENS B-1 MW5

ACZ ID: ***L38684-07***
Date Sampled: *09/25/02 11:05*
Date Received: *09/27/02*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **Method**

Analyst: *km*
Extract Date: *09/27/02 23:35*
Analysis Date: *09/27/02 23:35*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	1.8		ug/L	0.2	1
Ethylbenzene	000100-41-4	1.2		ug/L	0.2	1
m p Xylene	01330 20 7	10.7		ug/L	0.2	2
o Xylene	00095-47- 6	19.4		ug/L	0.2	1
Toluene	000108-88-3	2.4		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	107	%	84	114

See case narrative.

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

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: COZZENS B-1 MW4

ACZ ID: ***L38684-06***
Date Sampled: *09/25/02 10:25*
Date Received: *09/27/02*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **Method**

Analyst: *km*
Extract Date: *09/27/02 22:52*
Analysis Date: *09/27/02 22:52*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	0.8	J	ug/L	0.2	1
Ethylbenzene	000100-41-4	0.5	J	ug/L	0.2	1
m p Xylene	01330 20 7	2.8		ug/L	0.2	2
o Xylene	00095-47- 6		U	ug/L	0.2	1
Toluene	000108-88-3	0.6	J	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	93.6	%	84	114

See case narrative.

amec

Well Number MW 1 ☐ Development ☒ Purging

Serial No. WDPD-

WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1

Project Name Burlington Resources Groundwater Sampling Project Manager Don Fernald Project No. 151700138*

Client Company Burlington Resources Phase.Task No. 1

Site Name Cozzens B# 1 Site Address Rural San Juan County

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 14.88
Initial Depth to Water (feet) 5.7
Height of Water Column in Well (feet) 9.18
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	9.18	1.49 x 3	4.49
Gravel Pack			
Drilling Fluids			
Total			4.49

Instruments

	Serial No. (if applicable)
☒ PH Meter	YSI 63
☐ DO Monitor	
☒ Conductivity Meter	YSI 63
☒ Temperature Meter	YSI 63
☐ Other	

Methods of Development

Pump
☐ Centrifugal
☐ Submersible
☐ Peristaltic

Bailer
☒ Bottom Valve
☐ Double Check Valve
☐ Stainless-steel Kemmerer

☐ Other

Water Disposal

Pit on site

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
12-30-02	0900		X			6.75	5	5			8.7	6.99	1113		cloudy gray w/no oil sheen

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

Comments Took samples 0930

Developer's Signature (s) James Pierce Date 12-30-02 Reviewer Date

L:\forms\WELLDEV.DOC

WELL OBSERVATION DATA

Project Name: BR Groundwater Sampling

Project No.: 151700138*

Project Mngr: Don Fernald

Task: 1

Client Co.: Burlington Resources

Date: 12-30-02

Site Name: Cozzens B#1

Well or Piezometer	Time	Reason Not Measured	Depth to Floating Product (Feet)	Depth to Water (Feet)	Total Well Depth (Feet)	Floating Product Thickness	Comments
MW 1	0900			5.7	14.88		cloudy Gray w/no oil sheen

Reason Not Measured: D = Dry; O = Obstructed; N = Not Accessible

Comments: Took samples of MW 1 inside Berm between tanks at 0930

Signature: James F Pearce

Date: 12-30-02

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

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: MW-1 COZZENS B #1

ACZ ID: ***L39827-02***
Date Sampled: *12/30/02 9:30*
Date Received: *01/02/03*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **Method**

Analyst: *km*
Extract Date: *01/07/03 20:12*
Analysis Date: *01/07/03 20:12*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	5.6		ug/L	0.3	1
Ethylbenzene	000100-41-4	7.7		ug/L	0.2	1
m p Xylene	01330 20 7	6.8		ug/L	0.4	2
o Xylene	00095-47- 6	1.5		ug/L	0.2	1
Toluene	000108-88-3	10.6		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	101	%	84	114

Sample results should be considered estimated due to matrix interferences.

DRILLING LOGS/WELLBORE DIAGRAMS

RECORD OF SUBSURFACE EXPLORATION

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

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

Project Name
Project Number 21072 Phase 1000 99
Project Location Jazzens (Mesa Montana)

Elevation
Borehole Location Jazzens (Mesa Montana)
GWL Depth 3'
Logged By D. Cheney
Drilled By K. Padilla
Date/Time Started 5/19 0800
Date/Time Completed 5/19 1010

Well Logged By D. Cheney
Personnel On-Site Cheney, K. Padilla, W. Padilla
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			Fill to approx 15' (Ed Hasely 5/19). Dry sample at 5-7'						
5	5		Brown, medium to coarse grained poorly sorted sand w/pea gravel. wet at 3', black staining at 5', no odor			0.1		7.6	BC = 8 S/I/S = 3.6
10	10		yellowish brown silty clay. low plasticity, hard			0.5		0.0	BC = 50 (10") S/I/S = 4.6
15	12		TD = 13'. Set 10' screen from 13 to 3', sand to 1' bgs, bentonite to surface						
20									
25									
30									
35									
40									

Comments: Materials 1 silt trap, 1-10' screen 1-5' riser 6 sacks silica sand. 2 sacks bentonite

Geologist Signature D. Cheney

RECORD OF SUBSURFACE EXPLORATI

Cozzens B# 1

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

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

Project Name
Project Number 2171 Phase 200.99
Project Location Cozzens / Mesa Montana

Elevation
Borehole Location
GWL Depth 2'
Logged By D. Cheney
Drilled By D. Cheney
Date/Time Started
Date/Time Completed

Well Logged By D. Cheney
Personnel On-Site Cheney, E. Padilla, O. Padilla, C. Irby
Contractors On-Site
Client Personnel On-Site Ed Hasely

Drilling Method Hand Auger
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				Hand auger to 3' through sand, cobbles and gravel. Auger refusal at 3'. Set 2' of screen from 3' to 1', sand to approx 0.5', bentonite to surface						
5										
10										
15										
20										
25										
30										
35										
40										

Comments:

Geologist Signature

ITORING WELL INSTALLATION RECORD

Environmental Services Corp.
Tenroe Road
ton, New Mexico 87401
326-2262 FAX (505) 326-2388

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

Project Name

Project Number 21073 Phase 1000.91
Project Location Citizens (Mesa Montana)

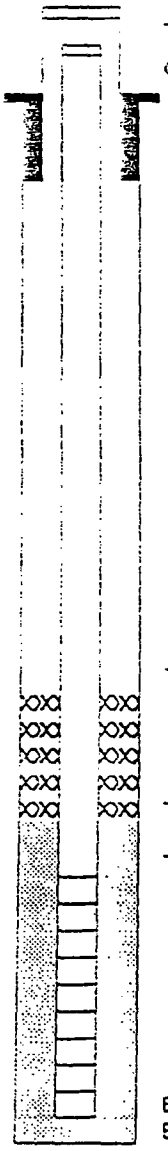
tion
.ocation Citizens
Depth 13'
led By K. Padilla

Time Started 5/19 0800
Time Completed 5/19 1015

On-Site Geologist P. Cheney
Personnel On-Site Cheney, K. Padilla, K. Padilla, C. Irby
Contractors On-Site
Client Personnel On-Site Ed Ireseley

pths in Reference to Ground Surface

m	Material	Depth
o of Protective Casing		
ottom of Protective Casing		
op of Permanent Borehole asing		
ottom of Permanent Borehole asing		
op of Concrete		N.A.
ottom of Concrete		N.A.
op of Grout		N.A.
ottom of Grout		N.A.
op of Well Riser		2' (+)
ottom of Well Riser		3'
op of Well Screen		3'
ottom of Well Screen		13'
op of Peltonite Seal		Ground Surface
ottom of Peltonite Seal		1'
op of Gravel Pack		1'
ottom of Gravel Pack		13'
op of Natural Cave-in		N.A
ottom of Natural Cave-in		N.A.
op of Groundwater		3'
otal Depth of Borehole		13'



Top of Protective Casing
Top of Riser 2'
Ground Surface

Top of Seal Ground surface
Top of Gravel Pack 1'
Top of Screen 3'

Bottom of Screen 13'
Bottom of Borehole 13'

mments: TD = 13'. Installed 2" screen from 13' to 3', sand to 1', bentonite to surface

Geologist Signature

PHILIP REPORT ON EXCAVATION DATED 1/8/98

PHILIP SERVICES CORP.

Industrial Services Group
Central Region

January 8, 1998

Project 19914

Mr. Ed Hasely
Burlington Resources Oil and Gas Company
P.O. Box 4289
Farmington, New Mexico 87499-4289

RE: Report for work performed at the Cozzen B-1 site

Dear Mr. Hasely:

Philip Services Corporation (Philip) is pleased to submit to Burlington Resources Oil and Gas Company (Burlington) this report of the work performed at the Cozzen B-1 site approximately 3 miles east of Bloomfield, New Mexico.

SCOPE OF WORK

On November 21, 1997 Burlington requested Philip to perform the following scope of work at the Cozzen B-1 site:

- Provide technician, pickup truck and photoionization detector (PID) to monitor soil contamination levels at a previous spill.
- Provide loader, trackhoe and two operators to excavate contaminated soil from the tank pad across the road to an old reserve pit.
- Landfarm contaminated soil on site and backfill excavation using soil removed from location.

RESULTS

On December 9, 1997 at approximately 7:00 a.m. Philip began excavation activities at the spill area as designated by Burlington. At approximately 9:00 a.m. Burlington's representative arrived to observe the excavation. At approximately 10:00 a.m. Denny Foutz with the New Mexico Oil Conservation District (NMOCD) arrived. Philip field screened the excavated soil with a PID to monitor the extent of contamination. Results of the first screened readings were 192 parts per million (ppm) on the north side; 5 ppm on the east side; and 681 ppm and 573 ppm on the south side. Based on the field screening results, excavation continued to the south and west.

At 12:00 p.m. Philip collected heated headspace samples, with the following results: 179 ppm on the north side, 5 ppm on the east side and 480 ppm on the south side. Philip resumed excavation

on all sides. At 1:00 p.m. Philip collected samples for a second heated headspace analysis. The results were: 38 ppm and 32 ppm on the north side, 5 ppm on the east side, 81 ppm and 49 ppm on the south side and 118 ppm on the west side.

At the request of Denny Foutz, Philip collected two samples on the down gradient side of the excavation and sent them to Onsite Laboratory in Farmington, New Mexico. The samples were analyzed for Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX) by USEPA method 8020, and Total Petroleum Hydrocarbons (TPH) by USEPA method 8015 modified for gasoline and diesel range. Sample No. Cozzen-01 was collected from the south side of the excavation and sample No. Cozzen-02 was collected from the west. Laboratory analysis indicated BTEX and TPH results to be below NMOCD standards for soil. Results of laboratory analysis are included in Attachment A.

The excavation was approximately 50 feet long, 30 feet wide and approximately 6 feet deep. Philip estimates 334 cubic yards of contaminated soil were removed. No groundwater was encountered. All impacted soil excavated was landfarmed on site.

Once the excavation was complete, Mr. Foutz approved backfilling to the sample locations. Once backfilling was completed, Philip personnel and equipment demobilized from the site.

Philip appreciates the opportunity to provide Burlington with professional services and looks forward to providing additional services in the future. If you have any questions or require additional information, please contact Robert Thompson or Martin Nee at (505) 326-2262.

Respectfully submitted,
PHILIP SERVICES CORPORATION

Robert Thompson
Project Manager

J:\19914\PM\cozzrpt.doc

Attachment A

Results of Laboratory Analysis

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	12-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17062*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-01***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:10
Analyzed by:	DC/HR	GRO Date:	10-Dec-97		
Sample Matrix:	*Soil*	DRO Date:	11-Dec-97		

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.0	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD

DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: *SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography*

Approved by:

Date: 12/12/97

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn: *Scott Pope*
Company: *Philip Environmental*
Address: *4000 Monroe Road*
City, State: *Farmington, NM 87401*

Date: 11-Dec-97
COC No.: *G3688*
Sample No.: *17062*
Job No.: *2-1000*

Project Name: ***Burlington Resources - Cozzen B-1***
Project Location: ***Cozzen-01***
Sampled by: DB Date: 9-Dec-97 Time: 12:10
Analyzed by: DC Date: 10-Dec-97
Sample Matrix: *Soil*

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	19	ug/kg	2	ug/kg
Toluene	55	ug/kg	2	ug/kg
Ethylbenzene	95	ug/kg	2	ug/kg
m,p-Xylene	497	ug/kg	2	ug/kg
o-Xylene	13	ug/kg	2	ug/kg
TOTAL	679	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 12/11/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	12-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17063*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-02***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:12
Analyzed by:	DC/HR	GRO Date:	10-Dec-97		
Sample Matrix:	*Soil*	DRO Date:	11-Dec-97		

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.5	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD

DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: *SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography*

Approved by:

Date: 12/12/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	11-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17063*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-02***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:12
Analyzed by:	DC	Date:	10-Dec-97		
Sample Matrix:	*Soil*				

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	96	ug/kg	2	ug/kg
Toluene	43	ug/kg	2	ug/kg
Ethylbenzene	133	ug/kg	2	ug/kg
m,p-Xylene	508	ug/kg	2	ug/kg
o-Xylene	16	ug/kg	2	ug/kg
TOTAL	796	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved by: DAF

Date: 12/11/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 10-Dec-97

Internal QC No.: 0559-STD
Surrogate QC No.: 0556-STD
Reference Standard QC No.: 0529/30-QC

Method Blank

Parameter	*Result*	*Unit of Measure*
Average Amount of All Analytes In Blank	< 1.0	ppb

Calibration Check

Parameter	*Unit of Measure*	*True Value*	*Analyzed Value*	*RPD*	*Limit*
Benzene	ppb	60.0	62.1	3	15%
Toluene	ppb	60.0	63.3	5	15%
Ethylbenzene	ppb	60.0	62.0	3	15%
m,p-Xylene	ppb	120.0	120.9	1	15%
o-Xylene	ppb	60.0	62.1	3	15%

Matrix Spike

Parameter	*1- Percent Recovered*	*2 - Percent Recovered*	*Limit*	*RPD*	*Limit*
Benzene	91	85	(39-150)	7	20%
Toluene	88	83	(46-148)	6	20%
Ethylbenzene	86	82	(32-160)	4	20%
m,p-Xylene	75	70	(35-145)	6	20%
o-Xylene	89	87	(35-145)	3	20%

Surrogate Recoveries

Laboratory Identification	*S1 Percent Recovered*	*S2 Percent Recovered*	*Laboratory Identification*	*S1 Percent Recovered*	*S2 Percent Recovered*
Limit Percent Recovered	(70-130)		*Limit Percent Recovered*	(70-130)	
17062-G3688	84				
17063-G3688	84				
				12/15/97	12/11/97

S1: Flourobenzene

PHILIP

Chain of Custody Record — Nonchemical Samples

[redacted]10 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230

(618) 281-[redacted]3 Phone
(618) 281-5120 FAX

COC Serial No. G 3688

Project Name	Burlington Res Cozzen B-1	Lab Name	ONSITE
Project Number	Phase . Task 1000 . 77	Location	Farmington
Samplers	David Brown		

Sample Number	Date	Time	Matrix	Analysis Type: TPH	Analysis Type: BTX			Comments
Cozzen - 01	12-9-97	12:10		X	X			7062-63BB
Cozzen - 02	12-9-97	12:12		X	X			7063- L

Relinquished by:

Signature	Date	Time
David Brown	12-9-97	14:25

Received By:

Signature	Date	Time
Craig D Stanley	12/9/97	14:30

Carrier: Airbill No.

Shipping and Lab Notes:

Robert 326-2262 - Philip Services

PE-211 (4/95)

1R66

BURLINGTON RESOURCES

SAN JUAN DIVISION

March 27, 2001

Certified: 70993400001842165308

RECEIVED

APR 01 2002

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

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

RE: 2001 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 2001 annual reports for Burlington's groundwater impact sites in the San Juan Basin. Separate reports are enclosed for the following locations:

Cozzens B#1
Hampton #4M
Johnson Federal #4 Metering Station
Standard Oil Com. #1
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 (Johnson Fed. #4, Standard Oil Com.#1)
Facility and Correspondence Files

3401 East 30th Street, 87402-8807, P.O. Box 4289, Farmington, New Mexico 87499-4289, Telephone 505-326-9700, Fax 505-326-9833

RECEIVED
APR 01 2002
ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

BURLINGTON RESOURCES 2001 ANNUAL GROUNDWATER REPORT

Cozzens B #1

SITE DETAILS

Location: Unit Letter L, Section 19, Township 29N, Range 11W; San Juan County, New Mexico
Land Type: Fee

PREVIOUS ACTIVITIES

PNM had conducted pit closure work and installed monitoring wells on this site in 1996 and 1997. Burlington Resources also had participated in excavation of impacted soils.

In December 1997, Burlington Resources excavated approximately 334 cubic yards of impacted soil from an area near an oil storage tank that had leaked. No groundwater was encountered at this time. The excavation was backfilled with clean soils. A report prepared by Philip Services Corporation detailing the excavation work and soil sampling is attached.

1999 ACTIVITIES

Burlington installed a groundwater monitoring well (MW-1) near the oil storage tank on this location in May 1999. At the same time, a second monitoring well (MW-2) was installed at the toe of the slope immediately downgradient and south of location. Auger refusal was encountered at approximately 3 feet during the installation of the second monitoring well (MW-2). Due to the shallow depth of MW-2, we were unable to collect water samples during several of the quarterly sampling events. After developing the wells and allowing them to stabilize, the wells were purged and sampled on May 26, 1999. Water samples were collected from MW-2 during the 3rd and 4th quarters and results showed levels of benzene and xylene above standards.

2000 ACTIVITIES

Quarterly groundwater monitoring continued through 2000. Groundwater analytical data are presented in Table 1. A site map is presented as Figure 1.

2001 ACTIVITIES

Quarterly groundwater monitoring continued through 2001. Groundwater analytical and field data are presented in Table 1. A site map is presented as Figure 1.

CONCLUSIONS

The ground water regime being monitored at this location appears to be artificially created and influenced by an irrigation ditch approximately 60 feet to the east and upgradient from the location. The irrigation ditch acts as a losing stream contributing water to the subsurface and artificially creating the shallow ground water being monitored at the location. The irrigation ditch is flowing approximately

April 15 through October 15 annually. Without the ditch influence there may not be any shallow groundwater beneath the location and none is expected upgradient of the ditch. A project to clay line the ditch to prevent water seepage was started March 2001 by local residents concerned about water damage from the ditch. The ground water gradient is approximated to be in a west/southwest direction. The influence of the ditch water on MW-1 can be observed in the water level measurements collected and coincides with the water flow schedule of the ditch. An apparent lag in hydraulic conductivity is assumed to be three months or more.

The analytical results of ground water sampling from the source monitoring well (MW-1) in May 1999 showed levels of benzene constituents above New Mexico Ground Water Standards. Since the initial sampling event in May 1999, six quarterly sampling events have shown all BTEX constituents below the standards in MW-1. However, sampling results for 2001 show elevated levels of BTEX. The effect of a minor condensate spill on 1/30/01 of approximately 1 bbl coupled with the soil being previously disturbed during the historic excavation activities may be responsible for the increased level of BTEX in MW-1. Further monitoring may determine if this is related to a minor slug of contamination. No evidence of a change in the groundwater regime from the ditch lining project was observed MW-1 and it is possible the lining project did not impact the ditch reach adjacent and upgradient of the location. One detection of benzene identified in the second quarter from MW-1 was determined to be questionable. No additional analysis results in subsequent or historic monitoring detected similar concentrations therefore the result is not considered valid.

The quarterly sampling results from MW-2 have shown BTEX constituents above the standards except for the third quarter of 2000. A trend of natural degradation of the hydrocarbons and of a downward trend in BTEX levels appears possible in well MW-2. Insufficient water prevented the collection of data from this well in 2001.

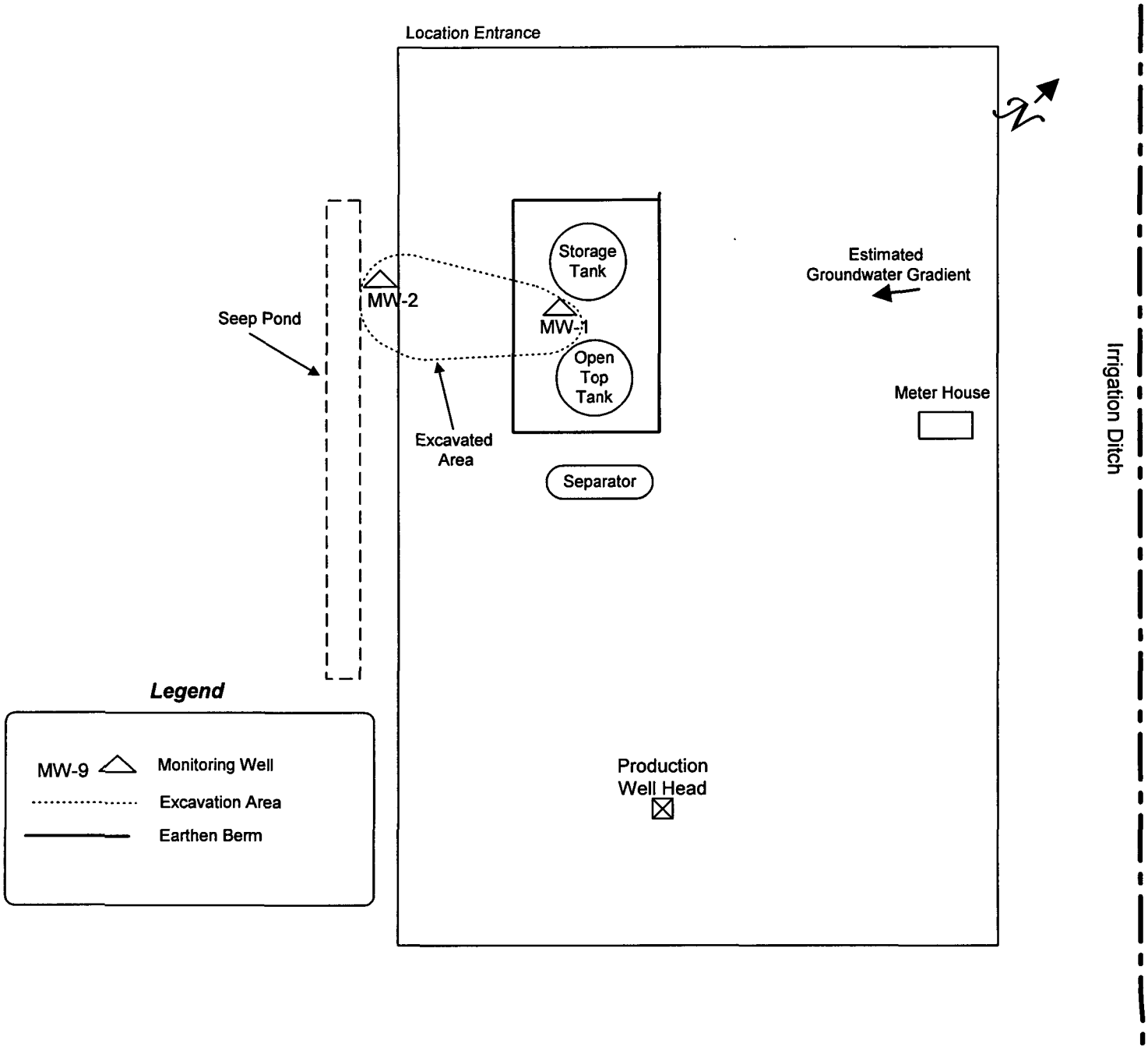
RECOMMENDATIONS

- Burlington Resources proposes to continue quarterly sampling at this site.
- Upon receiving analytical results below standards for one full year, Burlington Resources will request official closure of this site.

Attachments: Figure 1 - Site Map
Table 1 - Groundwater Sampling Results Summary
2001 Groundwater Analytical Results
Drilling Logs/Wellbore Diagrams
Philip Report on Excavation Work

Figure 1

Cozzens B#1 - Site Diagram



3/28/00 LEH

2001 GROUNDWATER ANALYTICAL RESULTS

Table 1

Groundwater Monitoring Well Sampling

Well Name	MW #	Sample Date	B (ppb)	T (ppb)	E (ppb)	X (ppb)	BTEX (ppb)	DTW (ft)
Standard			*10*	*750*	*750*	*620*		
Cozzens B #1	MW-1 (aka MW-4)	5/26/1999	**28**	11	23	99	161	
		9/2/1999	2.5	2.1	5.6	22	32.2	2.31
		12/2/1999	<0.5	11	5	27	43	4.43
		1/19/2000	1.7	13	7.6	28	50.3	6.48
		5/11/2000	6.8	1.2	2.6	14	24.6	4.03
		9/7/2000	1.1	<0.5	6.2	10	17.3	3.8
		12/15/2000	2	3	1	4	10	4.57
		3/28/2001	**50.3**	<0.2	1.3	3.6	55.2	lost
		6/28/2001	**4170**	<0.2	220	370	4760	5.26
		9/17/2001	**12.9**	<0.2	0.5	4.3	17.7	3.51
		12/19/2001	**39.6**	3.1	6.3	14.1	63.1	4.64
	MW-2 (aka MW-5)	5/26/1999	Well was dry.			No Sample.		
		9/2/1999	**120**	55	440	450	1065	1.28
		12/2/1999	**250**	39	480	**980**	1749	4.35
		1/19/2000	Well was dry.			No Sampl	0	
		5/11/2000	**550**	140	830	2400	3920	3.53
		9/7/2000	4.7	1.9	6.2	23	35.8	3.36
		12/15/2000	**65**	4	25	59	153	3.63
		3/28/2001	no sample collected					Dry
		6/28/2001	no sample collected					Dry
		9/17/2001	no sample collected					3.74
		12/19/2001	31.8	3	18.9	29.9	83.6	3.87

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

Organic Analytical Results

Burlington Resources, Inc.

Project ID: B.R. Well Sampling
Sample ID: Cozzens MW 4

ACZ ID: *L31380-04*
Date Sampled: 03/28/01 48:00
Date Received: 03/31/2001
Sample Matrix: Ground Water

Benzene, Toluene, Ethylbenzene & Xylenes

Analysis Method: M8020
Extract Method: Method

Analyst: smp
Extract Date: 4/2/01
Analysis Date: 4/2/01
Dilution Factor: 1

Compound

Parameter	CAS	Result	Qual	Units	MDL	PQL
Benzene	000071-43-2	50.3		ug/L	0.2	0.5
Ethylbenzene	000100-41-4	1.3		ug/L	0.2	1
Toluene	000108-88-3		U	ug/L	0.2	1
Xylenes	001330-20-7	3.6		ug/L	0.2	1

Surrogate Recoveries

Parameter	CAS	Result	Qual	Units	MDL	PQL
Bromofluorobenzene	00000460004	113		%	80	120

L31380

Chain of Custody Record

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

COC Serial No. C 2830

Project Name B.R. well Sampling
Project Number 62800288 Phase . Task 0301 .
Samplers C Maez
Laboratory Name A.C.2. LABS
Location STEAMBOAT Springs CO.

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle: BTEX 8021	Comments
COZZENS MW4	3-29-01	1448	H_2O	2	X	COZZENS B #1

Relinquished by:

Signature	Date	Time
Chris Maez	3-29-00	1600

Received By:

Signature	Date	Time

Samples Iced: ☑ Yes ☐ No
Carrier: UPS
Airbill 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) HCl
- ☐ Other (Specify)

Shipping and Lab Notes:

PE-176 4/95

Well Development and Purging Data

Project No. 6178 Development ☐
Task No. — Purging ☑
Well No. MW 4 Site Name/Identification COZZENS B#1 Site Address Rural San Juan Co
Page 1 of 1
Client/Project Name Burlington Resources BR well Sampling Project Manager LISA winn

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

Water Volume Calculation
Initial Depth of Well (feet) 14.99
Initial Depth to Water (feet) 5.26
Height of Water Column in Well (feet) 9.73
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	9.73	1.58 x 3	4.74
Gravel Pack			
Drilling Fluids			
Total			4.74

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 on site in pit

Sampling Activities
Type of Container VOA No. of Containers 2
Parameters Sampled For BTEX

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
6-28-01	1402		X				1	1			24.6	7.31	1770		Slight Septic odor
	1405		X				1	2			22.1	7.32	1670		Slight Septic odor
	1408		X				1	3			20.8	7.37	1620		" "
	1410		X				1	4			20.6	7.34	1620		" "
	1413		X			6.65	1	5			20.4	7.32	1610		no Change

Circle the date and time that the development criteria are met

Comments Sampled for BTEX 1430

Developer's Signature (s) Chris A. Winn Date 6-28-01 Reviewer [illegible] Date 7/5/01

Well Development and Purging Data

Golden Environmental Management (GEM)

Project No. 6178 | Development ☐ | Purging ☑ | Page 1 of 1

Task No. –

Well No. MW 5 | Site Name/Identification COZZENS B #1 | Site Address Rural San Juan CO

Client/Project Name Burlington Resources B.R. well Sampling | Project Manager LISA winn

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 4.45
Initial Depth to Water (feet) 4.45
Height of Water Column in Well (feet)
Diameter (inches): Well 2" Gravel Pack

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

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

On SITE in piT

Sampling Activities

Type of Container | No. of Containers
Parameters Sampled For

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
6-28-01	1440				DRY										

Circle the date and time that the development criteria are met

Comments Did NOT Sample no water To get water quality Readings or Sample

Developer's Signature (s) [signature] Date 6-28-01 Reviewer [signature] Date 7/3/01

ACZ Laboratories, Inc.

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

CHAIN of CUSTODY

Quote #: **ACZ Project #:**

CLIENT INFORMATION

Name to appear on Report and Invoice

Burlington Resources
P.O. Box 4289
Farmington N.M. 87499-4289
Attn: Greg Wurtz Tel: 326-9537
Email:

Carbon Copy: Report X **Invoice** ___

Golden Environmental Mngmt.
906 San Juan BLVD Suite D
Farmington N.M. 87401
Attn: Lisa Winn Tel: (505) 566-9116
Email:

PROJECT INFORMATION

Client Project name and/or PO#:
B.R. well Samplings

Shipping Company:
Tracking #:

ANALYSES REQUESTED *(required or attach bid/list)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	BTEX 8021							
COZZENS B#1 MW 4	6-29-01 1430	H2O	2	X							
Trip Blank	6-29-01	H2O	1	X							

Matrix Options: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water)
SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	6-29-01 1306		

PAGE 1 of 1

FRMQA021.01.00.03

White - Return with sample. Yellow - Retain for your records.

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

Organic Analytical Results

Burlington Resources, Inc.

Project ID: B.R. well sampling
Sample ID: COZZENSB#1 MW 4

ACZ ID: ***L32735-06***
Date Sampled: *06/28/01 14:30*
Date Received: *06/30/01*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021**
Extract Method: **Method**

Analyst: *smp*
Extract Date: *07/12/01 21:23*
Analysis Date: *07/12/01 21:23*
Dilution Factor: *50*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	4170		ug/L	10	30
Ethylbenzene	000100-41-4	220		ug/L	10	50
Toluene	000108-88-3		U	ug/L	10	50
Xylenes	001330-20-7	370		ug/L	10	50

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	102	%	80	120

Well Development and Purging Data

Project No. 6128 | Development ☐ | Purging ☑ | Page 1 of 1

Task No.

Well No. MW 4 | Site Name/Identification COZZENS B-1 | Site Address Rural San Juan CO

Client/Project Name Burlington Resources BR well Sampling | Project Manager

Development Criteria
- ☐ 3 to 5 Casing Volumes of Water Removal
- ☐ Stabilization of Indicator Parameters
- ☐ Other

Water Volume Calculation
- Initial Depth of Well (feet) 14.99
- Initial Depth to Water (feet) 3.51
- Height of Water Column in Well (feet) 11.48
- Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	11.48	1.80x3	5.61
Gravel Pack			
Drilling Fluids			
Total			5.61

Instruments | **Serial No. (if applicable)**
- ☑ PH Meter — Hydac
- ☐ DO Monitor
- ☑ Conductivity Meter — Hydac
- ☑ Temperature Meter — Hydac
- ☐ Other

Water Disposal ///
On site in pit

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☐ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Sampling Activities
Type of Container | No. of Containers
Parameters Sampled For

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
9-12-01	1548		X				1.25	1.25			25.3	6.50	2170		
	1553		X				1.25	2.5			22.2	6.21	1850		
	1555		X				1.25	3.75			21.3	6.25	1650		
	1558		X				1.25	5			21.2	6.22	1640		
	1601		X				1.25	6.25			21.1	6.26	1630		

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

Comments Sampled Br Benex 1610

Developer's Signature (s) [signature] Date 9-12-01 Reviewer [signature] Date 9/27/01

Well Development and Purging Data

Golden Environmental Management GEM

Project No. 5/28 | Development ☐ | Purging ☑ | Page 1 of 1

Task No. ______

Well No. MW 5 | Site Name/Identification Cozzens B#1 | Site Address Rural San Juan CO.

Client/Project Name Burlington Resources BR Well Sampling | Project Manager Lisa Winn

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 4.45
Initial Depth to Water (feet) 3.74
Height of Water Column in Well (feet) 0.71
Diameter (inches): Well 2" Gravel Pack ______

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	0.71	0.11x3	0.33
Gravel Pack			
Drilling Fluids			
Total			0.33

Instruments

Instrument	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

On Site in pit

Sampling Activities

Type of Container ______ No. of Containers ______
Parameters Sampled For

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
9-17-01	1617		x				.7	.7			21.2	6.66	3610		Cloudy, yellow and Black Spots Rotten egg odor
	1618		x				.7	.14			21.6	6.70	3760		"
	1619		x			4.27	.7	.21			[illegible]	6.72	3810		no Change

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

Comments [illegible] .21 gal Bailed well Dry Did not Recover enough to [illegible] Sample

Developer's Signature (s) [signature] Date 9-17-01 Reviewer L Winn Date 9/22/01

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

Organic Analytical Results

Burlington Resources, Inc.
Project ID: BR Well Sampling
Sample ID: COZZENS MW4

ACZ ID: ***L33990-01***
Date Sampled: *09/17/01 16:10*
Date Received: *09/20/01*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021**
Extract Method: **Method**

Analyst: *smp*
Extract Date: *09/27/01 15:49*
Analysis Date: *09/27/01 15:49*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	12.9		ug/L	0.2	0.5
Ethylbenzene	000100-41-4	0.5	J	ug/L	0.2	1
Toluene	000108-88-3		U	ug/L	0.2	1
Xylenes	0001330-207	4.3		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	106	%	80	120

☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 4 Page 1 of 1

Project Name BR well Sampling Project Manager Lisa Winn Project No. 15/7000138

Client Company Burlington Resources

Site Name COZZENS B-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) 14.99
Initial Depth to Water (feet) 4.64
Height of Water Column in Well (feet) 10.35
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	10.35	1683	5.04
Gravel Pack			
Drilling Fluids			
Total			5.04

Instruments

	Serial No. (If applicable)
☑ pH Meter	YSI 63
☐ DO Monitor	
☑ Conductivity Meter	YSI 63
☑ Temperature Meter	YSI 63
☐ Other	

Water Disposal

On site in pit

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
12-19-01	1409						1.25	1.25			11.9	7.09	1608		Cloudy Light grey mild sulfide odor
	1411						1.25	2.5			11.5	7.04	1509		" "
	1413						1.25	3.75			11.6	7.03	1516		" "
	1415						1.25	5			11.5	7.05	1486		" "
	1417					6.12	1.25	6.25			11.7	7.04	1526		no Change

Comments Sampled for BTEX 1425

Developer's Signature(s) Chris Gray Date 12-19-01 Reviewer Lisa Winn Date 12/21/01

L:\forms\MW Dvlpmnt 2.dot 11/29/01

☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 5 Page 1 of 1

Project Name B.R. well Sampling Project Manager Lisa Winn Project No 512000138

Client Company Burlington Resources

Site Name Cozzens B-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) 4.45
Initial Depth to Water (feet) 3.87
Height of Water Column in Well (feet) _____
Diameter (inches): Well 2" Gravel Pack _____

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

Instruments

	Serial No. (If applicable)
☑ pH Meter	YSI 63
☐ DO Monitor	
☑ Conductivity Meter	YSI 63
☑ Temperature Meter	YSI 63
☐ Other	

Water Disposal

on site in pit

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
12-19-01	1434		x			4.42	.25	.25			8.6	7.26	2167		Cloudy Rotten Egg odor

Comments Took one good water quality Reading collected Sample 1445

Developer's Signature(s) _____ Date 12-19-01 Reviewer _____ Date 12/21/01

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

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: Cozzens B-1 MW 5

ACZ ID: ***L35290-07***
Date Sampled: *12/19/01 14:45*
Date Received: *12/20/01*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021**
Extract Method: **Method**

Analyst: *mwb*
Extract Date: *12/29/01 6:29*
Analysis Date: *12/29/01 6:29*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	31.8		ug/L	0.2	0.5
Ethylbenzene	000100-41-4	18.9		ug/L	0.2	1
Toluene	000108-88-3	3		ug/L	0.2	1
Xylenes	0001330-207	29.9		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	115	%	80	120

Note: Due to sample carry over, Ethylbenzene was high in CCV at 127%.

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

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: Cozzens B-1 MW 4

ACZ ID: ***L35290-06***
Date Sampled: *12/19/01 14:25*
Date Received: *12/20/01*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021**
Extract Method: **Method**

Analyst: *mwb*
Extract Date: *12/29/01 3:25*
Analysis Date: *12/29/01 3:25*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	39.6		ug/L	0.2	0.5
Ethylbenzene	000100-41-4	6.3		ug/L	0.2	1
Toluene	000108-88-3	3.1		ug/L	0.2	1
Xylenes	0001330-207	14.1		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	120	%	80	120

DRILLING LOGS/WELLBORE DIAGRAMS

RECORD OF SUBSURFACE EXPLORATION

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

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

Project Name
Project Number 21077 Phase 200 99
Project Location Cazzens (Mesa Montana)

Elevation
Borehole Location Cazzens (Mesa Montana)
GWL Depth 3'
Logged By D. Cheney
Drilled By E. Padilla
Date/Time Started 5/19 0800
Date/Time Completed 5/19 1000

Well Logged By D. Cheney
Personnel On-Site Cheney, E. Padilla, D. Padilla
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			Fill to approx 15' (Ed Hasely 5/19). Sample at 5-7'						
5	5		Brown, medium to coarse grained poorly sorted sand w/pea gravel. Wet at 3', black staining at 5', no odor			0.1		7.6	BC = 8 S/I/S = 3.6
10	7								
	10		yellowish brown silty clay. Low plasticity, Hard			0.5		0.0	BC = 50 (10") S/I/S = 4.6
15	12		TD = 13'. Set 10' screen from 13 to 3', sand to 1' bgs, bentonite to surface						
20									
25									
30									
35									
40									

Comments: Materials 1 silt trap, 1-10' screen 1-5' riser 6 sacks silica sand. 2 sacks bentonite

Geologist Signature D. Cheney

RECORD OF SUBSURFACE EXPLORATION

Cozzens B# 1

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

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

Project Name
Project Number 2173 Phase 200.99
Project Location Cozzens / mesa manzano

Elevation
Borehole Location
GWL Depth 2'
Logged By P. Cheney
Drilled By P. Cheney
Date/Time Started
Date/Time Completed

Well Logged By P. Cheney
Personnel On-Site Cheney, E. Padilla, D. Padilla, C. Irby
Contractors On-Site
Client Personnel On-Site Ed Hasely

Drilling Method Hand Auger
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				Hand auger to 3' through sand, cobbles and gravel. Auger refusal at 3'. Set 2' of screen from 3' to 1', sand to approx 0.5', bentonite to surface						
5										
10										
15										
20										
25										
30										
35										
40										

Comments:

Geologist Signature Paul Cheney

ONITORING WELL INSTALLATION RECORD

lip Environmental Services Corp.
0 Monroe Road
nington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

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

Project Name

Project Number 21073 Phase 1000.91
Project Location Citizens (Mesa Montana)

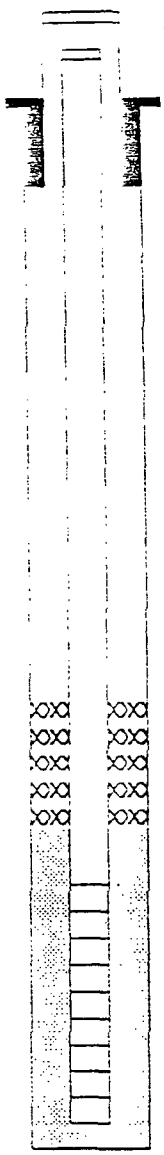
On-Site Geologist J. Cheney
Personnel On-Site Cheney & Padilla, K. Padilla, C. Irby
Contractors On-Site
Client Personnel On-Site Ed Jasely

evation
ell Location Citizens
VL Depth 21'
stalled By K. Padilla

ate/Time Started 5/19 0800
ate/Time Completed 5/19 1015

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		N.A.
Bottom of Concrete		N.A.
Top of Grout		N.A.
Bottom of Grout		N.A.
Top of Well Riser		2' (+)
Bottom of Well Riser		3'
Top of Well Screen		3'
Bottom of Well Screen		13'
Top of Peltonite Seal		Ground Surface
Bottom of Peltonite Seal		1'
Top of Gravel Pack		1'
Bottom of Gravel Pack		13'
Top of Natural Cave-in		N.A
Bottom of Natural Cave-in		N.A.
Top of Groundwater		3'
Total Depth of Borehole		13'



Top of Protective Casing
Top of Riser 2'
Ground Surface
Top of Seal Ground surface
Top of Gravel Pack 1'
Top of Screen 3'
Bottom of Screen 13'
Bottom of Borehole 13'

Comments: TD = 13'. Installed 2" screen from 13' to 3' sand to 1', bentonite to surface

Geologist Signature

PHILIP REPORT ON EXCAVATION DATED 1/8/98

PHILIP SERVICES CORP

Industrial Services Group
Central Region

January 8, 1998

Project 19914

Mr. Ed Hasely
Burlington Resources Oil and Gas Company
P.O. Box 4289
Farmington, New Mexico 87499-4289

RE: Report for work performed at the Cozzen B-1 site

Dear Mr. Hasely:

Philip Services Corporation (Philip) is pleased to submit to Burlington Resources Oil and Gas Company (Burlington) this report of the work performed at the Cozzen B-1 site approximately 3 miles east of Bloomfield, New Mexico.

SCOPE OF WORK

On November 21, 1997 Burlington requested Philip to perform the following scope of work at the Cozzen B-1 site:

- Provide technician, pickup truck and photoionization detector (PID) to monitor soil contamination levels at a previous spill.
- Provide loader, trackhoe and two operators to excavate contaminated soil from the tank pad across the road to an old reserve pit.
- Landfarm contaminated soil on site and backfill excavation using soil removed from location.

RESULTS

On December 9, 1997 at approximately 7:00 a.m. Philip began excavation activities at the spill area as designated by Burlington. At approximately 9:00 a.m. Burlington's representative arrived to observe the excavation. At approximately 10:00 a.m. Denny Foutz with the New Mexico Oil Conservation District (NMOCD) arrived. Philip field screened the excavated soil with a PID to monitor the extent of contamination. Results of the first screened readings were 192 parts per million (ppm) on the north side; 5 ppm on the east side; and 681 ppm and 573 ppm on the south side. Based on the field screening results, excavation continued to the south and west.

At 12:00 p.m. Philip collected heated headspace samples, with the following results: 179 ppm on the north side, 5 ppm on the east side and 480 ppm on the south side. Philip resumed excavation

on all sides. At 1:00 p.m. Philip collected samples for a second heated headspace analysis. The results were: 38 ppm and 32 ppm on the north side, 5 ppm on the east side, 81 ppm and 49 ppm on the south side and 118 ppm on the west side.

At the request of Denny Foutz, Philip collected two samples on the down gradient side of the excavation and sent them to Onsite Laboratory in Farmington, New Mexico. The samples were analyzed for Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX) by USEPA method 8020. and Total Petroleum Hydrocarbons (TPH) by USEPA method 8015 modified for gasoline and diesel range. Sample No. Cozzen-01 was collected from the south side of the excavation and sample No. Cozzen-02 was collected from the west. Laboratory analysis indicated BTEX and TPH results to be below NMOCD standards for soil. Results of laboratory analysis are included in Attachment A.

The excavation was approximately 50 feet long, 30 feet wide and approximately 6 feet deep. Philip estimates 334 cubic yards of contaminated soil were removed. No groundwater was encountered. All impacted soil excavated was landfarmed on site.

Once the excavation was complete, Mr. Foutz approved backfilling to the sample locations. Once backfilling was completed, Philip personnel and equipment demobilized from the site.

Philip appreciates the opportunity to provide Burlington with professional services and looks forward to providing additional services in the future. If you have any questions or require additional information, please contact Robert Thompson or Martin Nee at (505) 326-2262.

Respectfully submitted,
PHILIP SERVICES CORPORATION

Robert Thompson
Project Manager

J:\19914\PM\cozzrpt.doc

Attachment A

Results of Laboratory Analysis

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	12-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17062*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-01***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:10
Analyzed by:	DC/HR	GRO Date:	10-Dec-97		
Sample Matrix:	*Soil*	DRO Date:	11-Dec-97		

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.0	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD

DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: *SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography*

Approved by:

Date: 12/12/97

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	11-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17062*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-01***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:10
Analyzed by:	DC	Date:	10-Dec-97		
Sample Matrix:	*Soil*				

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	19	ug/kg	2	ug/kg
Toluene	55	ug/kg	2	ug/kg
Ethylbenzene	95	ug/kg	2	ug/kg
m,p-Xylene	497	ug/kg	2	ug/kg
o-Xylene	13	ug/kg	2	ug/kg
TOTAL	679	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 12/11/97

OFF: 505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	12-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17063*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-02***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:12
Analyzed by:	DC/HR	GRO Date:	10-Dec-97		
Sample Matrix:	*Soil*	DRO Date:	11-Dec-97		

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.5	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD

DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: *SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography*

Approved by:

Date: 12/12/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	11-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17063*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-02***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:12
Analyzed by:	DC	Date:	10-Dec-97		
Sample Matrix:	*Soil*				

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	96	ug/kg	2	ug/kg
Toluene	43	ug/kg	2	ug/kg
Ethylbenzene	133	ug/kg	2	ug/kg
m,p-Xylene	508	ug/kg	2	ug/kg
o-Xylene	16	ug/kg	2	ug/kg
TOTAL	796	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved by: *Date:* 12/11/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 10-Dec-97

Internal QC No.: 0559-STD
Surrogate QC No.: 0556-STD
Reference Standard QC No.: 0529/30-QC

Method Blank

Parameter	*Result*	*Unit of Measure*
Average Amount of All Analytes In Blank	< 1.0	ppb

Calibration Check

Parameter	*Unit of Measure*	*True Value*	*Analyzed Value*	*RPD*	*Limit*
Benzene	ppb	60.0	62.1	3	15%
Toluene	ppb	60.0	63.3	5	15%
Ethylbenzene	ppb	60.0	62.0	3	15%
m,p-Xylene	ppb	120.0	120.9	1	15%
o-Xylene	ppb	60.0	62.1	3	15%

Matrix Spike

Parameter	*1- Percent Recovered*	*2 - Percent Recovered*	*Limit*	*RPD*	*Limit*
Benzene	91	85	(39-150)	7	20%
Toluene	88	83	(46-148)	6	20%
Ethylbenzene	86	82	(32-160)	4	20%
m,p-Xylene	75	70	(35-145)	6	20%
o-Xylene	89	87	(35-145)	3	20%

Surrogate Recoveries

Laboratory Identification	*S1 Percent Recovered*	*S2 Percent Recovered*	*Laboratory Identification*	*S1 Percent Recovered*	*S2 Percent Recovered*
Limit Percent Recovered	(70-130)		*Limit Percent Recovered*	(70-130)	
17062-G3688	84				
17063-G3688	84				
				12/15/97	12/11/97

S1: Flourobenzene

PHILIP

Chain of Custody Record — Nonchemical Samples

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230

(618) 281-7173 Phone
(618) 281-5120 FAX

COC Serial No. G 3688

Project Name	Burlington Res Cozzen B-1	Lab Name	ONSITE
Project Number	Phase . Task 1000 . 77	Location	FARMINGTON
Samplers	DAVID BROWN		

Sample Number	Date	Time	Matrix	Analysis Type: TPH	Analysis Type: BTX			Comments
Cozzen - 01	12-9-97	12:10		X	X			17062-G3688
Cozzen - 02	12-9-97	12:12		X	X			17063- "

Relinquished by:

Signature	Date	Time
[signature]	12-9-97	14:25

Received By:

Signature	Date	Time
[signature]	12/9/97	14:30

Carrier: Airbill No.

Shipping and Lab Notes:

ROBERT 326-2262 - Philip Services

PE-211 (4/95)

BURLINGTON RESOURCES

SAN JUAN DIVISION
March 27, 2001

Certified: 709932200028981 4004

RECEIVED
MAR 29 2001

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

3401 East 30th St., 87402, P.O. Box 4289, Farmington, New Mexico 87499-4289, Telephone 505-326-9700, Fax 505-326-9833

BURLINGTON RESOURCES 2000 ANNUAL GROUNDWATER REPORT

Cozzens B #1

SITE DETAILS

Location: Unit Letter L, Section 19, Township 29N, Range 11W; San Juan County, New Mexico
Land Type: Fee

PREVIOUS ACTIVITIES

PNM had conducted pit closure work and installed monitoring wells on this site in 1996 and 1997. Burlington Resources also had participated in excavation of impacted soils.

In December 1997, Burlington Resources excavated approximately 334 cubic yards of impacted soil from an area near an oil storage tank that had leaked. No groundwater was encountered at this time. The excavation was backfilled with clean soils. A report prepared by Philip Services Corporation detailing the excavation work and soil sampling is attached.

1999 ACTIVITIES

Burlington installed a groundwater monitoring well (MW-1) near the oil storage tank on this location in May 1999. At the same time, a second monitoring well (MW-2) was installed at the toe of the slope immediately downgradient and south of location. Auger refusal was encountered at approximately 3 feet during the installation of the second monitoring well (MW-2). Due to the shallow depth of MW-2, we were unable to collect water samples during several of the quarterly sampling events. After developing the wells and allowing them to stabilize, the wells were purged and sampled on May 26, 1999. Water samples were collected from MW-2 during the 3rd and 4th quarters and results showed levels of benzene and xylene above standards.

2000 ACTIVITIES

Quarterly groundwater monitoring continued through 2000. Groundwater analytical data are presented in Table 1. A site map is presented as Figure 1.

CONCLUSIONS

The groundwater regime being monitored at this location is artificially created and influenced by an irrigation ditch approximately 60 feet to the east and upgradient from the location. The irrigation ditch acts as a losing stream contributing water and artificially creating the shallow groundwater being monitored at the location. The irrigation ditch is flowing approximately April 15 through October 15 annually. Without the ditch influence there would not be any shallow groundwater beneath the location. A project to line the ditch to prevent water seepage was started March 2001. The extent and effect this project will have on the monitoring wells has not been determined. The groundwater gradient is approximated to be in a west/southwest direction. Indications of the influence of the ditch water can be

project will have on the monitoring wells has not been determined. The groundwater gradient is approximated to be in a west/southwest direction. Indications of the influence of the ditch water can be observed in the water level measurements collected in the MW-1 well and coincide with the water flow schedule of the ditch.

Analytical results of groundwater sampling from the source monitoring well (MW-1) in May 1999 showed levels of benzene constituents above New Mexico Groundwater Standards. Since the initial sampling event, the quarterly sampling results from MW-1 have shown all BTEX constituents below the standards. The quarterly sampling results from MW-2 have shown BTEX constituents above the standards except for the third quarter of 2000. The beginning of a downward trend in BTEX levels appears possible in well MW-2.

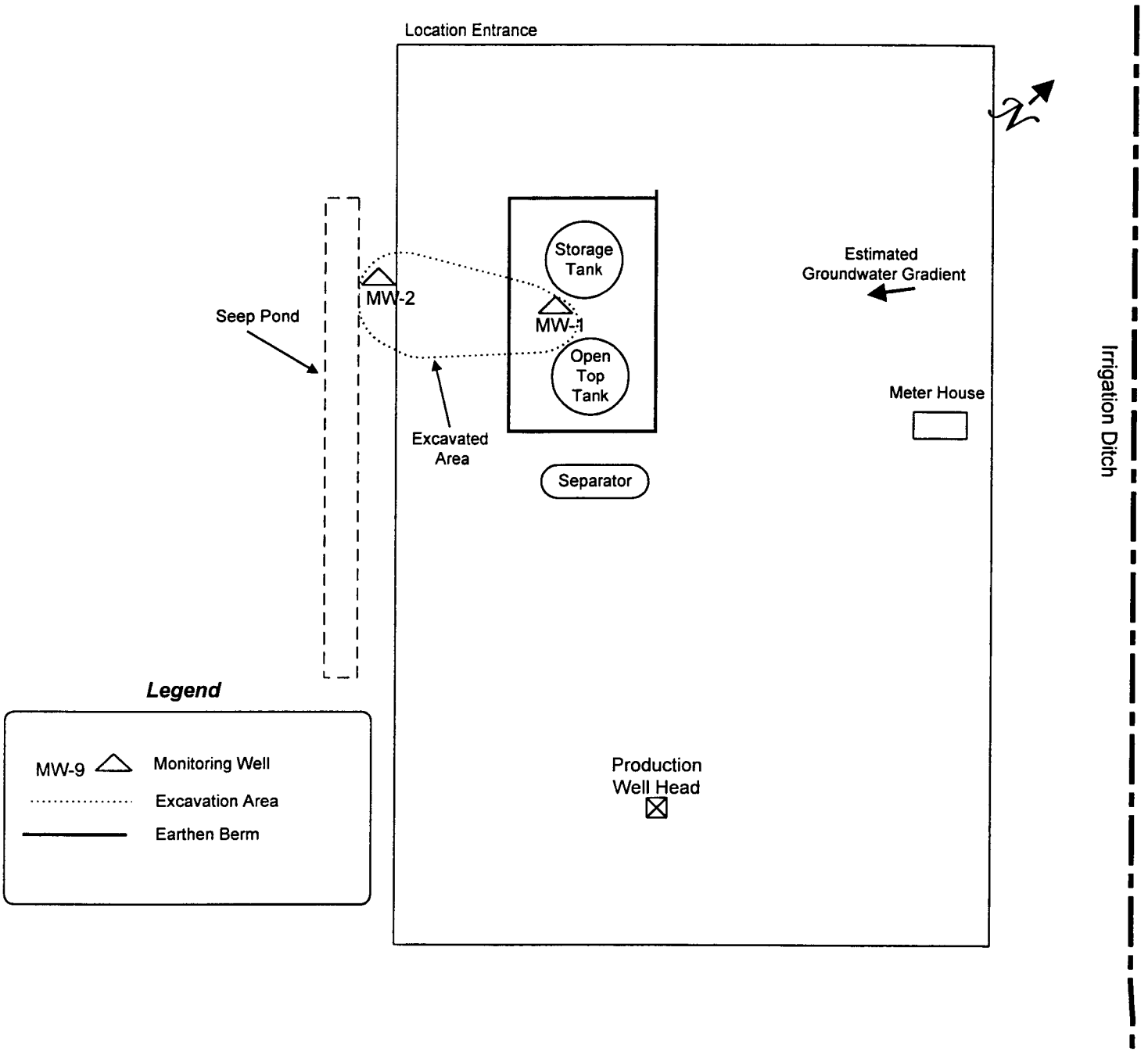
RECOMMENDATIONS

- Burlington Resources proposes to continue Quarterly sampling only well MW-2 at this site.
- Upon receiving analytical results below standards for one full year, Burlington Resources will request official closure of this site.

Attachments: Figure 1 - Site Map
Table 1 - Groundwater Sampling Results Summary
2000 Groundwater Analytical Results
Drilling Logs/Wellbore Diagrams
Philip Report on Excavation Work

Figure 1

Cozzens B#1 - Site Diagram



3/28/00 LEH

Table 1

Groundwater Monitoring Well Sampling

Well Name	MW #	Sample Date	B (ppb)	T (ppb)	E (ppb)	X (ppb)	BTEX (ppb)	DTW (ft)
Standard			*10*	*750*	*750*	*620*		
Cozzens B #1	1	5/26/1999	**28**	11	23	99	161	
		9/2/1999	2.5	2.1	5.6	22	32.2	2.31
		12/2/1999	<0.5	11	5	27	43	4.43
		1/19/2000	1.7	13	7.6	28	50.3	6.48
		5/11/2000	6.8	1.2	2.6	14	24.6	4.03
		9/7/2000	1.1	<0.5	6.2	10	17.3	3.8
		12/15/2000	2	3	1	4	10	4.57
	2	5/26/1999	Well was dry.			No Sample.		
		9/2/1999	**120**	55	440	450	1065	1.28
		12/2/1999	**250**	39	480	**980**	1749	4.35
		1/19/2000	Well was dry.			No Sample	0	
		5/11/2000	**550**	140	830	2400	3920	3.53
		9/7/2000	**4.7**	1.9	6.2	23	35.8	3.36
		12/15/2000	**65**	4	25	59	153	3.63

2000 GROUNDWATER ANALYTICAL RESULTS

PHILIP ENVIRONMENTAL

Well Number MW-05

☐ Development ☒ Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-

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 COZZENS B#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) 4.45' TOR
Initial Depth to Water (feet) 3.53' TOR
Height of Water Column in Well (feet) .92'
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	0.92'	0.15 X 3	.45
Gravel Pack			
Drilling Fluids			
Total			.45

Instruments

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

Water Disposal

PIT TANK 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
5/11/00	1510		X				.25	.25			23.4	6.93	4140		BLACK

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

Comments WELL WENT DRY AT .25 GAL. LET RECOVER AND SAMPLED. SAMPLED AT 1525.

Developer's Signature(s) Robert Thompson Date 5/11/00 Reviewer Date

PHILIP ENVIRONMENTAL

Well Number MW-04

☐ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-

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 COZZENS B#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) 15.00' TOR
Initial Depth to Water (feet) 4.03' TOR
Height of Water Column in Well (feet) 10.97'
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	10.97'	1.79x3	5.37
Gravel Pack			
Drilling Fluids			
Total			5.37

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

ON GROUND 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
5/11/00	1410		X				1.5	1.5			23.0	7.15	2150		BLACK W/ DEBRIS
5/11/00	1423		X				1.5	3.0			21.2	7.18	2140		BLACK
5/11/00	1431		X				1.5	4.5			18.4	7.28	1999		BLACK
5/11/00	1440		X				1.5	6.0			19.9	7.24	2010		BLACK

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

Comments

Developer's Signature(s) Date 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 **005079**
May 26, 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.

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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 005079
PROJECT #	: 62800228	DATE RECEIVED	: 05/19/00
PROJECT NAME	: BR WELL SAMPLING	REPORT DATE	: 05/26/00

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	COZZENS B#1 MW4	AQUEOUS	05/11/00
02	COZZENS B#1 MW5	AQUEOUS	05/11/00

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 # : 62800228
PROJECT NAME : BR WELL SAMPLING

PINNACLE I.D.: 005079

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	COZZENS B#1 MW4	AQUEOUS	05/11/00	NA	05/23/00	2
02	COZZENS B#1 MW5	AQUEOUS	05/11/00	NA	05/23/00	20

PARAMETER	DET. LIMIT	UNITS	COZZENS B#1 MW4	COZZENS B#1 MW5
BENZENE	0.5	**UG/L**	**6.8**	**550**
TOLUENE	0.5	**UG/L**	**1.2**	**140**
ETHYLBENZENE	0.5	**UG/L**	**2.6**	**830**
TOTAL XYLENES	0.5	**UG/L**	**14**	**2400**

SURROGATE:			
BROMOFLUOROBENZENE (%)		110	120
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.	: 005079
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

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 #	: 005081-02	PINNACLE I.D.	: 005079
CLIENT	: PHILIP ENVIRONMENTAL	DATE EXTRACTED	: NA
PROJECT #	: 62800228	DATE ANALYZED	: 05/23/00
PROJECT NAME	: BR WELL SAMPLING	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

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

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

PHILIP ENVIRONMENTAL

Chain of Custody Record

005079

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

COC Serial No. C 2547

Project Name BR WELL SAMPLING

Project Number 62800228 Phase . Task 0301 .

Samplers R. THOMPSON

Laboratory Name PINNACLE LABS

Location ALBUQUERQUE, NM

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle: BTEX 8021	Comments
01 COZZENS B#1 MW4	5/11/00	1450	H_2O	2	X	
02 COZZENS B#1 MW5	5/11/00	1525	H_2O	2	X	

Relinquished by:

Signature	Date	Time
Robert Thompson	5/19/00	0825

Received By:

Signature	Date	Time
[illegible]	5/19/00	1615

Samples Iced: ☒ Yes ☐ No

Carrier: GREYHOUND LINES

Airbill No. GLI 160 665 0760

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) _____

Shipping and Lab Notes:

"ON ICE"

4.6° C

PHILIP ENVIRONMENTAL

Well Number MW-07

☐ Development ☑ Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-

Page 1 of 1

Project Name Burlington | Project Manager R Thompson | Project No. 628 00228

Client Company Burlington Resources | Phase.Task No. 0301

Site Name Cozens B #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) 14.99
Initial Depth to Water (feet) 3.80
Height of Water Column in Well (feet) 11.19
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume In Well: Cubic Feet	Water Volume In Well: Gallons	Gallons to be Removed
Well Casing	11.19	1.82 x 3	5.46
Gravel Pack			
Drilling Fluids			
Total			5.46

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): 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
09-02-00	2:23		X				1.25	1.25			28.6	6.45	2540		Grey Black strong septic odor
	2:26		X				1.25	2.50			26.4	6.28	2450		" "
	2:29		X				1.25	3.75			25.5	6.19	2430		" "
	2:33		X				1.25	5			24.7	6.11	2420		" "
	2:35		X				1.25	6.25			24.4	6.04	2420		No Change

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

Comments Sampled for BTEX 2:40 pm

Developer's Signature(s) [signature] Date 09-02-00 Reviewer RT Date 9/19/00

PHILIP ENVIRONMENTAL

Well Number MW-02

☐ 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. 628 00228

Client Company Burlington Resources | Phase.Task No. 0301

Site Name Cozens 13#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) 4.45
Initial Depth to Water (feet) 3.36
Height of Water Column in Well (feet) 1.09
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	1.09	.17 X 3	0.51
Gravel Pack			
Drilling Fluids			
Total			0.51

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): 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
09-07-00	3:00		X				.11	.11			26.7	7.44	5350		Rotten egg smell Black in color
	3:03		X				.11	.22			25.0	7.11	5220		" "
	3:05		X				.11	.33			23.9	7.17	5050		" "
	3:06		X				.11	.44			23.5	7.36	4960		" "
	3:07		X				.11	.55			23.3	7.22	5000		Remained the same

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

Comments Sampled for BTex 3:13 pm

Developer's Signature(s) Chris A. May 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 2000

Pinnacle Lab ID number **009049**
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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 009049
PROJECT #	: 62800228	DATE RECEIVED	: 09/08/00
PROJECT NAME	: BR WELL SAMPLING	REPORT DATE	: 09/13/00

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	COZZENS B#1-MW 01	AQUEOUS	09/07/00
02	COZZENS B#1-MW 02	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

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

PINNACLE I.D.: 009049

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	COZZENS B#1-MW 01	AQUEOUS	09/07/00	NA	09/11/00	1
02	COZZENS B#1-MW 02	AQUEOUS	09/07/00	NA	09/11/00	1

PARAMETER	DET. LIMIT	UNITS	COZZENS B#1-MW 01	COZZENS B#1-MW 02
BENZENE	0.5	**UG/L**	**1.1**	**4.7**
TOLUENE	0.5	**UG/L**	< 0.5	**1.9**
ETHYLBENZENE	0.5	**UG/L**	**6.2**	**6.2**
TOTAL XYLENES	0.5	**UG/L**	**10**	**23**
SURROGATE:				
BROMOFLUOROBENZENE (%)			120	120
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.	: 009049
BLANK I. D.	: 091100	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 09/11/00
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 (%)		104
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 #	: 009051-01	PINNACLE I.D.	: 009049
CLIENT	: PHILIP ENVIRONMENTAL	DATE EXTRACTED	: NA
PROJECT #	: 62800228	DATE ANALYZED	: 09/11/00
PROJECT NAME	: BR WELL SAMPLING	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	20.1	101	19.7	99	2	(80 - 120)	20
TOLUENE	<0.5	20.0	21.0	105	21.1	106	0	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	22.1	111	21.7	109	2	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	66.0	110	65.7	110	0	(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

009049

COC Serial No. C 2449

Project Name BR well Sampling
Project Number 624 00228 Phase . Task 0301 .
Samplers C. Maez
Laboratory Name PINNACLE
Location ALBQ. N.M.

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle: BTEX 8021	Lab ID#	Comments
Cozzens B#1-MW 01	09-07-00	2:40pm	H20	2	X	01	Cozzens B #1
Cozzens B#1-MW 02	09-07-00	3:13pm	H20	2	X	02	Cozzens B#1

Relinquished by:

Signature	Date	Time
Chris A. Maez	09-07-00	15 30

Received By:

Signature	Date	Time
Francine Jimmie	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) $HgCl_2$
- ☐ Other (Specify) _____

Carrier:

Airbill No. GLI 160 691 9654

Shipping and Lab Notes:

Rec'd @ 4.1°c

PE-176 4/95

PHILIP ENVIRONMENTAL

Well Number MW 04 ☐ Development ☒ Purging

WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1

Serial No. WOPD-

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

Client Company Burlington Resources Phase.Task No. 0301

Site Name COZZENS B#1 Site Address RURAL SAN JUAN CO.

Development Criteria

☐ 3 to 5 Casing Volumes of Water Removal (10)
☒ Stabilization of Indicator Parameters
☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 14.99
Initial Depth to Water (feet) 4.57
Height of Water Column in Well (feet) 10.42
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Gallons	Gallons to be Removed
Well Casing	10.42	1.70x3	5.1
Gravel Pack			
Drilling Fluids			
Total			5.1

Instruments

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

Methods of Development

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

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): 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
12-15-00	0841						1.25	1.25			6.9	6.14	3000		Cloudy Grey petroleum odor
	0844						1.25	2.50			2.4	5.81	2990		" "
	0848						1.25	3.75			2.1	5.62	2990		" "
	0851						1.25	5			7.9	5.48	3080		" "
	0954						1.25	6.25			8.3	5.42	3190		no change

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

Comments Sampled for BTEX 0913

Developer's Signature(s) Chris A. Mann Date 12-15-00 Reviewer RT Date 12/18/00

L30205

PHILIP

Chain of Custody Record

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

COC Serial No. C 2839

Project Name B.R. well Sampling
Project Number 62800228 Phase . Task 0301.
Samplers C Maez
Laboratory Name A.C.Z. LABS
Location Steam Boat Springs CO.

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle: BTEX 8021	Comments
Cozzens B.#1 MW1	12-15-00	0913	H_2O	2	X	Cozzens B#1
Cozzens B.#1 MW2	12-15-00	0903	H_2O	2	X	Cozzens B#1

Relinquished by:

Signature	Date	Time
	12 18 00	1500

Received By:

Signature	Date	Time
[signature] ACZ.	12/19	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) $HgCl_2$
- ☐ Other (Specify)

Carrier: ~~Courier~~ UPS
Airbill No.
Shipping and Lab Notes:

PE-176 4/95

PHILIP ENVIRONMENTAL

Well Number MW 05 ☐ Development ☑ Purging

Serial No. WDPD-

WELL DEVELOPMENT AND PURGING DATA

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

Client Company Burlington Resources Phase.Task No. 0301

Site Name COZZENS B #1 Site Address Rural San Juan CO.

Development Criteria

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

Methods of Development

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

☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 4.45
Initial Depth to Water (feet) 3.63
Height of Water Column in Well (feet) 0.82
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Gallons	Gallons to be Removed
Well Casing	0.82	0.13X3	0.39
Gravel Pack			
Drilling Fluids			
Total			

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): Incremental	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
12-15-00	0816		X				.10	.10			0.1.4	6.21	5180		Cloudy Black Rotton egg odor

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

Comments AFTER Bailing .10 gallons Bailed well Dry 0816 Let Recover Sampled for BTEX 0903

Developer's Signature(s) Chris A. Mackey Date 12-15-00 Reviewer RT Date 12/18/00

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: ***L30205-04***
Client Sample ID: *Cozzens B 1 MW1*
Client Project ID: *62800228*
ACZ Report ID: *RG137219*

Date Sampled: *12/15/00 9:13*
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	2		ug/L	0.2	0.5
Toluene	000108-88-3	3		ug/L	0.2	1
Ethylbenzene	000100-41-4	1		ug/L	0.2	1
Xylenes (total)	001330-20-7	4		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
4-Bromofluorobenzene (Surr)	000460-00-4	108	%	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: ***L30205-05***
Client Sample ID: *Cozzens B 1 MW2*
Client Project ID: *62800228*
ACZ Report ID: *RG137220*

Date Sampled: *12/15/00 9:03*
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	65		ug/L	0.2	0.5
Toluene	000108-88-3	4		ug/L	0.2	1
Ethylbenzene	000100-41-4	25		ug/L	0.2	1
Xylenes (total)	001330-20-7	59		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
4-Bromofluorobenzene (Surr)	000460-00-4	124	%	80	120

Surrogate recovery elevated due to hydrocarbon coelution.

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

DRILLING LOGS/WELLBORE DIAGRAMS

RECORD OF SUBSURFACE EXPLORATION

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

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

Project Name
Project Number 21092 Phase 1000 99
Project Location Cozzens (Mesa Montana)

Elevation
Borehole Location Cozzens (Mesa Monzano)
GWL Depth 3'
Logged By D. Cheney
Drilled By K. Padilla
Date/Time Started 5/19 0800
Date/Time Completed 5/19 1000

Well Logged By D. Cheney
Personnel On-Site Cheney, K. Padilla, D. Padilla
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			Fill to approx 15' (Ed Hasely, 5/19). 1st sample at 5-7'						
5	5		Brown, medium to coarse grained poorly sorted sand w/pea gravel. wet at 3', black staining at 5', no odor			0.1		7.6	BC = 8 S/1FS = 3.6
10	7								
	10		yellowish brown silty clay. low plasticity, hard			0.5		0.0	BC = 50 (10") S/1FS = 4.6
15	12		TD = 13'. Set 10' screen from 13 to 3', sand to 1' bgs, bentonite to surface						
20									
25									
30									
35									
40									

Comments: Materials 1 silt trap, 1-10' screen, 1-5' riser 6 sacks silica sand, 2 sacks bentonite

Geologist Signature [signature]

RECORD OF SUBSURFACE EXPLORATION

Cozzens B# 1

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

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

Project Name
Project Number 21073 Phase 1000.99
Project Location Cozzens (mesa monzano

Elevation
Borehole Location
GWL Depth 2'
Logged By P. Cheney
Drilled By P. Cheney
Date/Time Started
Date/Time Completed

Well Logged By P. Cheney
Personnel On-Site Cheney, E. Padilla, D. Padilla, C. Irby
Contractors On-Site
Client Personnel On-Site Ed Hasely

Drilling Method Hand Auger
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				Hand auger to 3' through sand, cobbles and gravel. Auger refusal at 3'. Set 2' of screen from 3' to 1', sand to approx 0.5', bentonite to surface						
5										
10										
15										
20										
25										
30										
35										
40										

Comments:

Geologist Signature Paul Cheney

MONITORING WELL INSTALLATION RECORD

Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(5061 326-2262 FAX (5061 326-2388

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

Project Name

Project Number 21073 Phase 1000.91
Project Location Cozzens (mesa Montana)

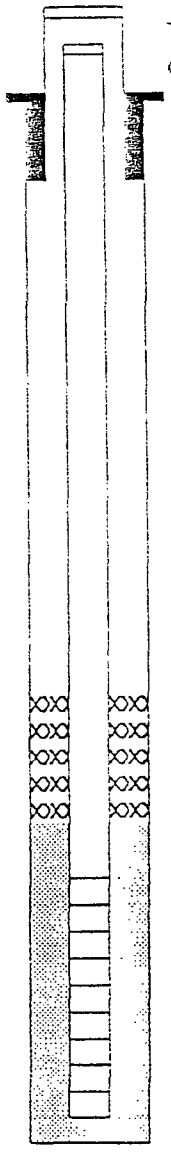
Elevation
Well Location Cozzens
GWL Depth 3'
Installed By K. Padilla

Date/Time Started 5/19 0800
Date/Time Completed 5/19 1015

On-Site Geologist J Cheney
Personnel On-Site Cheney D. Padilla, K. Padilla, C. Irby
Contractors On-Site
Client Personnel On-Site Ed Riesely

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		N.A.
Bottom of Concrete		N.A.
Top of Grout		N.A.
Bottom of Grout		N.A.
Top of Well Riser		2' (+)
Bottom of Well Riser		3'
Top of Well Screen		3'
Bottom of Well Screen		13'
Top of Peltonite Seal		Ground Surface
Bottom of Peltonite Seal		1'
Top of Gravel Pack		1'
Bottom of Gravel Pack		13'
Top of Natural Cave-In		N.A
Bottom of Natural Cave-In		N.A.
Top of Groundwater		3'
Total Depth of Borehole		13'



Top of Protective Casing
Top of Riser 2'
Ground Surface
Top of Seal Ground surface
Top of Gravel Pack 1'
Top of Screen 3'
Bottom of Screen 13'
Bottom of Borehole 13'

Comments: TD = 13'. Installed 2" screen from 13' to 3', sand to 1', bentonite to surface

Geologist Signature J Cheney

PHILIP REPORT ON EXCAVATION DATED 1/8/98

PHILIP SERVICES CORP

Industrial Services Group
Central Region

January 8, 1998 Project 19914

Mr. Ed Hasely
Burlington Resources Oil and Gas Company
P.O. Box 4289
Farmington, New Mexico 87499-4289

RE: Report for work performed at the Cozzen B-1 site

Dear Mr. Hasely:

Philip Services Corporation (Philip) is pleased to submit to Burlington Resources Oil and Gas Company (Burlington) this report of the work performed at the Cozzen B-1 site approximately 3 miles east of Bloomfield, New Mexico.

SCOPE OF WORK

On November 21, 1997 Burlington requested Philip to perform the following scope of work at the Cozzen B-1 site:

- Provide technician, pickup truck and photoionization detector (PID) to monitor soil contamination levels at a previous spill.
- Provide loader, trackhoe and two operators to excavate contaminated soil from the tank pad across the road to an old reserve pit.
- Landfarm contaminated soil on site and backfill excavation using soil removed from location.

RESULTS

On December 9, 1997 at approximately 7:00 a.m. Philip began excavation activities at the spill area as designated by Burlington. At approximately 9:00 a.m. Burlington's representative arrived to observe the excavation. At approximately 10:00 a.m. Denny Foutz with the New Mexico Oil Conservation District (NMOCD) arrived. Philip field screened the excavated soil with a PID to monitor the extent of contamination. Results of the first screened readings were 192 parts per million (ppm) on the north side; 5 ppm on the east side; and 681 ppm and 573 ppm on the south side. Based on the field screening results, excavation continued to the south and west.

At 12:00 p.m. Philip collected heated headspace samples, with the following results: 179 ppm on the north side, 5 ppm on the east side and 480 ppm on the south side. Philip resumed excavation

on all sides. At 1:00 p.m. Philip collected samples for a second heated headspace analysis. The results were: 38 ppm and 32 ppm on the north side, 5 ppm on the east side, 81 ppm and 49 ppm on the south side and 118 ppm on the west side.

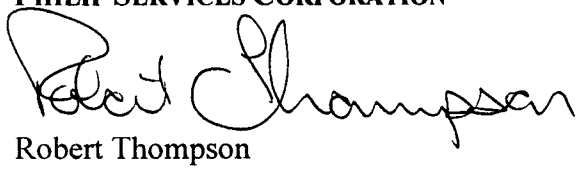
At the request of Denny Foutz, Philip collected two samples on the down gradient side of the excavation and sent them to Onsite Laboratory in Farmington, New Mexico. The samples were analyzed for Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX) by USEPA method 8020, and Total Petroleum Hydrocarbons (TPH) by USEPA method 8015 modified for gasoline and diesel range. Sample No. Cozzen-01 was collected from the south side of the excavation and sample No. Cozzen-02 was collected from the west. Laboratory analysis indicated BTEX and TPH results to be below NMOCD standards for soil. Results of laboratory analysis are included in Attachment A.

The excavation was approximately 50 feet long, 30 feet wide and approximately 6 feet deep. Philip estimates 334 cubic yards of contaminated soil were removed. No groundwater was encountered. All impacted soil excavated was landfarmed on site.

Once the excavation was complete, Mr. Foutz approved backfilling to the sample locations. Once backfilling was completed, Philip personnel and equipment demobilized from the site.

Philip appreciates the opportunity to provide Burlington with professional services and looks forward to providing additional services in the future. If you have any questions or require additional information, please contact Robert Thompson or Martin Nee at (505) 326-2262.

Respectfully submitted,
PHILIP SERVICES CORPORATION



Robert Thompson
Project Manager

J:\19914\PM\cozzrpt.doc

Attachment A

Results of Laboratory Analysis

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	12-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17062*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-01***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:10
Analyzed by:	DC/HR	GRO Date:	10-Dec-97		
Sample Matrix:	*Soil*	DRO Date:	11-Dec-97		

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.0	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD

DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: *SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography*

Approved by:

Date: 12/12/97

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	11-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17062*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-01***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:10
Analyzed by:	DC	Date:	10-Dec-97		
Sample Matrix:	*Soil*				

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	19	ug kg	2	ug/kg
Toluene	55	ug/kg	2	ug/kg
Ethylbenzene	95	ug/kg	2	ug/kg
m,p-Xylene	497	ug/kg	2	ug/kg
o-Xylene	13	ug/kg	2	ug/kg
TOTAL	679	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 12/11/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	12-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17063*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-02***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:12
Analyzed by:	DC/HR	GRO Date:	10-Dec-97		
Sample Matrix:	*Soil*	DRO Date:	11-Dec-97		

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.5	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD

DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: *SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography*

Approved by:

Date: 12/12/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	11-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17063*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-02***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:12
Analyzed by:	DC	Date:	10-Dec-97		
Sample Matrix:	*Soil*				

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	96	ug/kg	2	ug/kg
Toluene	43	ug/kg	2	ug/kg
Ethylbenzene	133	ug/kg	2	ug/kg
m,p-Xylene	508	ug/kg	2	ug/kg
o-Xylene	16	ug/kg	2	ug/kg
TOTAL	796	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved by: *Date:* 12/11/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 10-Dec-97

Internal QC No.: 0559-STD
Surrogate QC No.: 0556-STD
Reference Standard QC No.: 0529/30-QC

Method Blank

Parameter	Result	Unit of Measure
Average Amount of All Analytes In Blank	< 1.0	ppb

Calibration Check

Parameter	Unit of Measure	True Value	Analyzed Value	RPD	Limit
Benzene	ppb	60.0	62.1	3	15%
Toluene	ppb	60.0	63.3	5	15%
Ethylbenzene	ppb	60.0	62.0	3	15%
m,p-Xylene	ppb	120.0	120.9	1	15%
o-Xylene	ppb	60.0	62.1	3	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	Limit
Benzene	91	85	(39-150)	7	20%
Toluene	88	83	(46-148)	6	20%
Ethylbenzene	86	82	(32-160)	4	20%
m,p-Xylene	75	70	(35-145)	6	20%
o-Xylene	89	87	(35-145)	3	20%

Surrogate Recoveries

Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered	Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
17062-G3688	84				
17063-G3688	84				
				12/15/97	12/11/97

S1: Flourobenzene

PHILIP

Chain of Custody Record — Nonchemical Samples

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230

(618) 281-7173 Phone
(618) 281-5120 FAX

COC Serial No. G 3688

Project Name	Burlington Res. Cozzen B-1			Lab	Name	ONSITE					
Project Number	Phase . Task ~~3000~~ 1000 . 77				Location	FARMINGTON					
Samplers	DAVID BROWN			Analysis Type							
Sample Number	Date	Time	Matrix	TPH	BTX					Comments	
Cozzen - 01	12-9-97	12:10		X	X					17062-G3688	
Cozzen - 02	12-9-97	12:12		X	X					17063-	↓

Relinquished by:

Signature	Date	Time
David Brown	12-9-97	14:25

Received By:

Signature	Date	Time
Craig D. Stanley	12/9/97	14:30

Carrier: Airbill No.

Shipping and Lab Notes:

ROBERT 326-2262 - Philip Services

PE-211 (4/95)

RECEIVED
MAR 31 2000
Oil Conservation Division

BURLINGTON RESOURCES
SAN JUAN DIVISION

March 29, 2000

Certified: P 895 114 539

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

RE: 1999 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 1999 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

If you have questions or additional information is needed, please contact me at (505) 326-9841.

Sincerely,

Ed Hasely

Ed Hasely
Sr. Staff Environmental Representative

Attachments - Groundwater Investigation and Remediation Reports

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

BURLINGTON RESOURCES 1999 ANNUAL GROUNDWATER REPORT

Cozzens B #1

SITE DETAILS

Location: Unit Letter L, Section 19, Township 29N, Range 11W; San Juan County, New Mexico
Land Type: Fee

PREVIOUS ACTIVITIES

PNM had conducted pit closure work and installed monitoring wells on this site in 1996 and 1997. Burlington Resources also had participated in excavation of impacted soils.

In December 1997, Burlington Resources excavated approximately 334 cubic yards of impacted soil from an area near an oil storage tank that had leaked. No groundwater was encountered at this time. The excavation was backfilled with clean soils. A report prepared by Philip Services Corporation detailing the excavation work and soil sampling is attached.

1999 ACTIVITIES

Burlington installed a groundwater monitoring well (MW-1) near the oil storage tank on this location in May 1999. At the same time, a second monitoring well (MW-2) was installed at the toe of the slope immediately south of location. After developing the wells and allowing them to stabilize, the wells were purged and first sampled on May 26, 1999.

Quarterly groundwater monitoring continued through 1999. Groundwater analytical data are presented in Table 1. A site map is presented as Figure 1.

CONCLUSIONS

Analytical results of groundwater sampling from the source monitoring well (MW-1) in May 1999 showed levels of benzene constituents above New Mexico Groundwater Standards. Since the initial sampling event, the quarterly sampling results from MW-1 have shown all BTEX constituents below the standards.

Auger refusal was encountered at approximately 3 feet during the installation of the second monitoring well (MW-2). Due to the shallow depth of this well, we were unable to collect water samples during several of the quarterly sampling events. Water samples were collected from MW-2 during the 3rd and 4th quarters and results showed levels of benzene and xylene above standards.

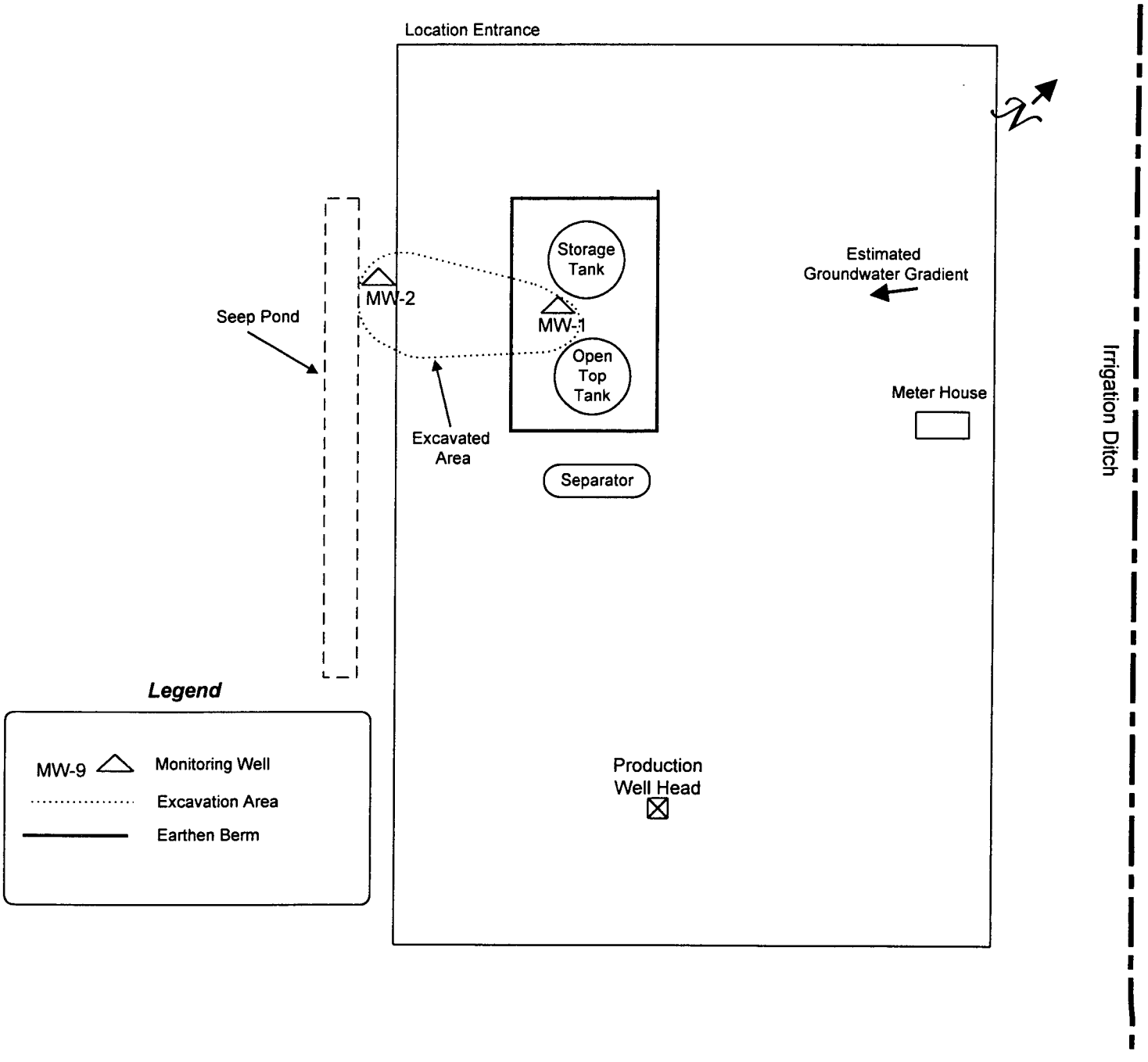
RECOMMENDATIONS

- Burlington Resources proposes to continue quarterly sampling at this site.
- Upon receiving analytical results below standards for one full year, Burlington Resources will request official closure of this site.

Attachments: Figure 1 - Site Map
Table 1 - Groundwater Sampling Results Summary
1999 Groundwater Analytical Results
Drilling Logs/Wellbore Diagrams
Philip Report on Excavation Work

Figure 1

Cozzens B#1 - Site Diagram



3/28/00 LEH

Table 1

Groundwater Monitoring Well Sampling

Well Name	MW #	Sample Date	B (ppb)	T (ppb)	E (ppb)	X (ppb)	BTEX (ppb)	DTW (ft)
Standard			*10*	*750*	*750*	*620*		
Cozzens B #1	1	5/26/99	**28**	11	23	99	161	
		9/2/99	2.5	2.1	5.6	22	32.2	2.31
		12/2/99	<0.5	11	5	27	43	4.43
		1/19/00	1.7	13	7.6	28	50.3	6.48
	2	5/26/99	Well was dry.			No Sample.		
		9/2/99	**120**	55	440	450	1065	1.28
		12/2/99	**250**	39	480	**980**	1749	4.35
		1/19/00	Well was dry.			No Sample.		

1999 GROUNDWATER ANALYTICAL RESULTS

PINNACLE LABORATORIES

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

Pinnacle Lab ID number **905100**
June 30, 1999

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name BURLINGTON DRILLING
Project Number 21057.2000.99

Attention: PAUL CHENEY

On 5/27/99 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592), received a request to analyze **aqueous and non-aq** 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 methods 8015 and 8021 were performed by Pinnacle Laboratories, Inc., Albuquerque, NM.

All other parameters were performed by ESL (OR) Inc., Portland, OR.

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	: 905100
PROJECT #	: 21057.2000.99	DATE RECEIVED	: 5/27/99
PROJECT NAME	: BURLINGTON DRILLING	REPORT DATE	: 6/30/99

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	BR-COZMW1	AQUEOUS	5/26/99
02	BR-HAMPTON MW13	AQUEOUS	5/26/99
03	BR-HAMPTON MW9	AQUEOUS	5/26/99
04	BR-HAMP MW12	AQUEOUS	5/26/99
05	BR-HAMP MW7	AQUEOUS	5/26/99
06	BR-HAMP MW5	AQUEOUS	5/26/99
07	PIT #2 LIU16	AQUEOUS	5/26/99
08	BR-HAMP MW8	AQUEOUS	5/26/99

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.: 905100
PROJECT # : 21057.2000.99
PROJECT NAME : BURLINGTON DRILLING

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	BR-COZMW1	AQUEOUS	5/26/99	NA	6/2/99	1
02	BR-HAMPTON MW13	AQUEOUS	5/26/99	NA	6/2/99	1
03	BR-HAMPTON MW9	AQUEOUS	5/26/99	NA	6/2/99	1

PARAMETER	DET. LIMIT	UNITS	BR-COZMW1	BR-HAMPTON MW13	BR-HAMPTON MW9
BENZENE	0.5	**UG/L**	**28**	**2100 (D100)**	**120**
TOLUENE	0.5	**UG/L**	**11**	**22**	< 0.5
ETHYLBENZENE	0.5	**UG/L**	**23**	**8.8**	**1.6**
TOTAL XYLENES	0.5	**UG/L**	**99**	**29**	**0.8**
METHYL-t-BUTYL ETHER	2.5	**UG/L**	**6.3**	< 2.5	< 2.5
SURROGATE:					
BROMOFLUOROBENZENE (%)			94	88	96
SURROGATE LIMITS	(80 - 120)				

CHEMIST NOTES:
(D100) = 100 X DILUTION, ANALYZED ON 6/2/99

Environmental Services Laboratory, Inc. E S L

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

June 23, 1999

Kim McNeill
Pinnacle Laboratories
2709-D Pan American Fwy NE

Albuquerque, NM 87107

TEL: 505-344-3777
FAX (505) 344-4413

RE: 905100/PHIL/Burl. Drilling Order No.: 9905152

Dear Kim McNeill,

Environmental Services Laboratory received 2 samples on 05/28/99 for the analyses presented in the following report.

The Samples were analyzed for the following tests:
- CHLORIDE (Chloride)
- ICP Metals (ICPMET)
- MERCURY (Mercury)
- Nitrate/Nitrite (Nitrogen)
- Sulfate (Sulfate)
- TOTAL DISSOLVED SOLIDS (E160.1)

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 tests results, please feel free to call.

Sincerely,

Keith Hunter

Kimberly Hill
Project Manager

Technical Review

ANALYTICAL SERVICES FOR THE ENVIRONMENT

Environmental Services Laboratory

Date: *24-Jun-99*

CLIENT:	Pinnacle Laboratories	**Client Sample ID:**	905100-01
Lab Order:	9905152	**Tag Number:**	
Project:	905100/PHIL/Burl. Drilling	**Collection Date:**	05/26/99
Lab ID:	9905152-01A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
CHLORIDE		**EPA 325.3**				Analyst: **cms**
Chloride	1	0.5		mg/L	1	06/04/99
NITRATE/NITRITE		**EPA 353.3**				Analyst: **sld**
Nitrogen, N+N	ND	0.05		mg/L	1	06/11/99
SULFATE		**EPA 375.4**				Analyst: **ams**
Sulfate	1100	620		mg/L	125	06/07/99
TOTAL DISSOLVED SOLIDS		**EPA 160.1**				Analyst: **cms**
Total Dissolved Solids (Residue, Filterable)	2100	10		mg/L	1	06/02/99
MERCURY		**SW 7470 / EPA 245.**				Analyst: **btn**
Mercury	ND	0.002		mg/L	1	06/08/99
ICP METALS		**SW 6010 / EPA 200.**				Analyst: **ams**
Arsenic	ND	0.05		mg/L	1	06/16/99
Barium	ND	0.3		mg/L	1	06/16/99
Cadmium	ND	0.005		mg/L	1	06/16/99
Chromium	ND	0.05		mg/L	1	06/16/99
Lead	ND	0.05		mg/L	1	06/16/99
Selenium	ND	0.05		mg/L	1	06/16/99
Silver	ND	0.02		mg/L	1	06/16/99

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

ESL ~ OREGON

TO: Specialty

Chain of Custody

17400 SW Upper Boones Ferry Rd., Suite 270
Portland, Oregon 97224 • (503) 670-8520 FAX: (503) 670-9243

LABORATORY NUMBER: _____

ESL Project Manager: Kim Hill

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	PCB	Karl Fisher	TOC	Sulfide	BOD	Coliform:	E.Coli	TKN	RCRA 8 minus Hg		
9905100-01													X		
-02															

PROJECT INFORMATION

PROJECT NUMBER: 9905152

PROJECT NAME:

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS	
COC SEALS/INTACT? Y / N / NA	
RECEIVED INTACT? Y / N	
RECEIVED COLD? Y / N	

Results by:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.
Signature: Kimberly Hill — Time: 10:15AM	Signature: — Time:
Printed Name: Kimberly Hill — Date: 6/16/99	Printed Name: — Date:
Company: ESL - OR	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**
Signature: — Time:	Signature: — Time:
Printed Name: — Date:	Printed Name: — Date:
Company:	Company:

Pinnacle Laboratories, Inc. — Interlab Chain of Custody

Date: 5/27 Page: 1 of 1 9905152

Network Project Manager: Kimberly D. McNeill

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		TOX	TOC	Gen Chemistry: Cl, SO4, TDS	Total NO2/NO3	Oil and Grease	Volatile Organics GC/MS (8260)	BOD	COD	PESTICIDES/PCB (608/8080)	8270 BY GC/MS	PNA (8310)	8240 (TCLP 1311) ZHE	Herbicides (615/8150)	Base/Neutral Acid Compounds GC/MS (625/8270)	URANIUM	RADIUM 226+228	Gross Alpha/Beta	TO-14	NUMBER OF CONTAINERS
905100-01	5/26	0850	AQ		X							X	X															
-02	"	1050	"									X	X															

PROJECT INFORMATION		SAMPLE RECEIPT		SAMPLES SENT TO:		RELINQUISHED BY: 1.	RELINQUISHED BY: 2.
PROJECT #:	905100	Total Number of Containers		PENSACOLA - STL-FL		Signature: Time: Francine Tonno 1700	Signature: Time:
PROJ. NAME:	PHIL	Chain of Custody Seals		PORTLAND - ESL-OR	X	Printed Name: Date: Francine Tonno 5/27/99	Printed Name: Date:
QC LEVEL:	(STD) IV	Received Intact?		STL - CT		Pinnacle Laboratories, Inc.	Company
QC REQUIRED:	(MS) MSD BLANK	Received Good Cond./Cold		STL- NEW JERSEY		RECEIVED BY: 1.	RECEIVED BY: 2
TAT:	(STANDARD) RUSH!!	LAB NUMBER:		N. CREEK		Signature: Time:	Signature: Time:
DUE DATE:	6/10	COMMENTS:		BARRINGER		Printed Name: Date:	Printed Name: Date:
RUSH SURCHARGE:	—			SEQUOIA		Company	Company
CLIENT DISCOUNT:	—						
SPECIAL CERTIFICATION							
REQUIRED: YES	(NO)						

PINNACLE LABORATORIES

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: _____ PAGE: ___ OF ___

PLI Accession #: 905100

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: Paul Cheney

COMPANY: Philip Environmental

ADDRESS:

PHONE:

FAX:

BILL TO:

COMPANY:

ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB I.D.	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline) MTBE	8021 (BTEX) ☐ MTBE ☐ TMB ☐ PCE	8021 (TCL)	8021 (EDX)	8021 (HALO)	8021 (CUST)	504.1 EDB ☐ / DBCP ☐	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides /PCB (608/8081/8082)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry: Cl, SO_4, NO_3 TDS, NO_3	Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method 1311)	Metals:		NUMBER OF CONTAINERS
BR-CO2MW1	5/26	850	H_2O	01					X														X			X				5
BR-HamptonMW3	5/26	1050	H_2O	02					X														X			X				5
BR-HamptonMW2	5/24	1157	H_2O	03					X																					2
BR-HAMPMW12	5/24	1245	H_2O	04					X																					2
BR-HampMW4	5/24	1345	H_2O	05					X																					2
BR-HAMPMW5	5/24	1332	H_2O	06					X																					2
Pit #2 LEV16	5/24	0940	Soil	07			X		X																					2
BR-HAMPMW8	5/26	1445	H_2O	08					X																					5

PROJECT INFORMATION

PROJ. NO.: 21057.200.99

PROJ. NAME: Burl. Drilling

P.O. NO.:

SHIPPED VIA:

SAMPLE RECEIPT

NO. CONTAINERS	25
CUSTODY SEALS	(Y) N / NA
RECEIVED INTACT	YES
BLUE ICE/ICE	3°C

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) [ ]24hr ☐48hr ☐72hr ☐1 WEEK (NORMAL) ☐

CERTIFICATION REQUIRED: ☐NM ☐SDWA ☐OTHER

METHANOL PRESERVATION ☐

COMMENTS: FIXED FEE ☐

RELINQUISHED BY: 1.

Signature: Time:

Printed Name: Date:

Company:

See reverse side (Force Magure)

RECEIVED BY: 1.

Signature: Time:

Printed Name: Date:

Company:

RELINQUISHED BY: 2.

Signature: Time:

Printed Name: Date:

Company:

RECEIVED BY: (LAB) 2.

Signature: Francine Tonno Time: 1425

Printed Name: Francine Tonno Date: 5/27/99

Pinnacle Laboratories Inc.

Water Sampling Data

PHILIP SERVICES CORP

Location No. COZZENS B#1

Serial No. WSD-

Group List Number

Sample Type: ☒ Groundwater ☐ Surface Water ☐ Other Date 9/2/99

Project Name BURLINGTON WATER SAMPLING Project No. 62800023

Project Manager C. JERBY Phase.Task No.

Site Name COZZENS B#1 MW/ INSIDE BERM

Sampling Specifications

Requested Sampling Depth Interval (feet)

Requested Wait Following Development/Purging (hours)

Initial Measurements

Time Elapsed From Final Development/Purging (hours)

Initial Water Depth (feet) 2.31' 12:40pm

Nonaqueous Liquids Present (Describe)

Water Quality/Water Collection

DO = Dissolved Oxygen; Cond. = Conductivity

Date	Time	Sampler Initials	Water Quality Readings: Temp. (°C)	pH	DO (mg/L)	Cond. (µmhos/cm)	Water Collection Data: Volume Removed (gallons)	Removal Rate (gal/min)	Pump Intake Depth (feet)	Bail	Final Water Depth (feet)	Notes (Explain in Comments Below)
9/2/99	1:00	CC					7gal				4.58'	

Sample Containers

Container Type: G = Clear Glass; A = Amber Glass; P = Plastic; V = VOA Vial (Glass); O = Other (Specify)

Preservatives: H = HCl; N = HNO_3; S = H_2SO_4; A = NaOH; O = Other (Specify); – = None

Analytical Parameter List	Container: Number	Type	Volume (mL)	Field Filtered: Yes	No	Preserved	Cooled During Collection: Yes	No	Comments
8021	2	VOA			X	HCl	X		

Filter Type Chain-of-Custody Form Number

Comments BAILER IN WATER WHEN I ARRIVED · REMOVED · DUMPED AT 9:10am. STRONG HC ODOR & BLACK STAINING ON BAILER

Signature Cathy Cullico Date 9/2/99 Reviewer Date

STRING, WILL LET IT RECOVER BEFORE OTW MEAS.

Form A0202 Rev. 02/24/94

Water less strong HC odor + black sediment

Done Purging 1:25

PSC PHILIP SERVICES CORP.

Water Sampling Data

Location No. COZZENS B#1

Serial No. WSD-

Group List Number

Sample Type: [X] Groundwater [ ] Surface Water [ ] Other

Date 9/2/99

Project Name BURLINGTON WATERSAMPLING

Project No. 62800023

Project Manager C. IRBY

Phase.Task No.

Site Name COZZENS B#1 MW 2, DOWNSLOPE

Sampling Specifications

Requested Sampling Depth Interval (feet)

Requested Wait Following Development/Purging (hours)

Initial Measurements

Time Elapsed From Final Development/Purging (hours)

Initial Water Depth (feet) 1.28'

Nonaqueous Liquids Present (Describe)

Water Quality/Water Collection

DO = Dissolved Oxygen; Cond. = Conductivity

Date	Time	Sampler Initials	Water Quality Readings: Temp. (°C)	pH	DO (mg/L)	Cond (µmhos/cm)	Water Collection Data: Volume Removed (gallons)	Removal Rate (gal/min)	Pump Intake Depth (feet)	Bail	Final Water Depth (feet)	Notes (Explain in Comments Below)
9/2/99	12:55	CC					< 1/4					

Sample Containers

Container Type: G = Clear Glass; A = Amber Glass; P = Plastic; V = VOA Vial (Glass), O = Other (Specify)
Preservatives: H = HCl; N = HNO_3; S = H_2SO_4; A = NaOH; O = Other (Specify); — = None

Analytical Parameter List	Container Number	Type	Volume (mL)	Field Filtered Yes	No	Preserved	Cooled During Collection Yes	No	Comments
8021	2	VOA			X	ICE + HCl			1 VOA ACID REACTING
									VIGOROUSLY WITH
									ACID. SEDIMENT
									IN BOTH.

Filter Type

Chain-of-Custody Form Number

Comments BAILER IN WATER WHEN I ARRIVED. REMOVED & DUMPED AT 9:15am. STRONG HC ODOR? BLACK STAIN ON

Signature Cathy Cullicott Date 9/2/99 Reviewer Date

BAILER + STRING. WILL LET IT RECOVER BEFORE DTW MEAS. well dry w < 1/4 gallon removed. Very strong odor!

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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 909019
PROJECT #	: (none)	DATE RECEIVED	: 9/3/99
PROJECT NAME	: BURL. DRILLING	REPORT DATE	: 9/14/99

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	TAYI OR COM #2A MW1	AQUEOUS	9/1/99
02	COZZENS B#1 MW1	AQUEOUS	9/2/99
03	COZZENS B#1 MW2	AQUEOUS	9/2/99

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 / 8015 GRO
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : (none)
PROJECT NAME : BURL. DRILLING

PINNACLE I.D.: 909019

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	TAYLOR COM #2A MW1	AQUEOUS	9/1/99	NA	9/9/99	1
02	COZZENS B#1 MW1	AQUEOUS	9/2/99	NA	9/10/99	1
03	COZZENS B#1 MW2	AQUEOUS	9/2/99	NA	9/9/99	100

PARAMETER	DET. LIMIT	UNITS	TAYLOR COM #2A MW1	COZZENS B#1 MW1	COZZENS B#1 MW2
FUEL HYDROCARBONS	50	**UG/L**	**120**	**930**	**11000**
HYDROCARBON RANGE			**C6-C14**	**C6-C14**	**C6-C14**
HYDROCARBONS QUANTITATED USING			**GASOLINE**	**GASOLINE**	**GASOLINE**
BENZENE	0.5	UG/L	< 0.5	2.6	120
TOLUENE	0.5	UG/L	< 0.5	2.1	55
ETHYLBENZENE	0.5	**UG/L**	**1.3**	**5.6**	**440**
TOTAL XYLENES	0.5	**UG/L**	**1.6**	**22**	**450**
METHYL-t-BUTYL ETHER	2.5	UG/L	< 2.5	< 2.5	< 250
SURROGATE:					
BROMOFLUOROBENZENE (%)			104	114	99
SURROGATE LIMITS	(80 - 120)				

CHEMIST NOTES:
N/A

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: 9/2/99 PAGE: 1 OF 1

PLI Accession #: 909019

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: CECIL IRBY

COMPANY: PHILIP SERVICES CORP
ADDRESS: 4000 MONROE
FARMINGTON, NM 87401
PHONE: 505-326-2262
FAX: 505-326-2388

BILL TO: SAME
COMPANY
ADDRESS:

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB I.D.	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline) MTBE	8021 (BTEX) ☐ MTBE ☐ TMB ☐ PCE	8021 (TCL)	8021 (EDX)	8021 (HALO)	8021 (CUST)	504.1 EDB ☐ / DBCP ☐	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides /PCB (608/8081/8082)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry:	Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method 1311)	Metals:	NUMBER OF CONTAINERS
TAYLOR GAS COM #2A	9/1/99	4:15pm	AQ	01				X																					2
SMW1																													
COZZENS B#1 MW1	9/2/99	1:00pm	AQ	02				X																					2
COZZENS B#1 MW2	9/2/99	1:15pm	AQ	03				X																					2

PROJECT INFORMATION	
PROJ. NO.:	
PROJ. NAME:	BUELL DRILLING
P.O. NO.:	
SHIPPED VIA:	GREYHOUND

SAMPLE RECEIPT	
NO. CONTAINERS	6
CUSTODY SEALS	Y N N/A
RECEIVED INTACT	Y N N/A
BLUE ICE/ICE	Y N N/A

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒

CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER

METHANOL PRESERVATION ☐

COMMENTS: FIXED FEE ☐

RELINQUISHED BY: 1.	
Signature:	Time: 3pm
Printed Name: CATHY CULLICOTT	Date: 9/2/99
Company: PHILIP SERVICES	
See reverse side (Force Majeure)	

RECEIVED BY: 1	
Signature:	Time:
Printed Name:	Date:
Company:	

RELINQUISHED BY: 2	
Signature:	Time:
Printed Name:	Date:
Company:	

RECEIVED BY: (LAB) 2	
Signature:	Time: 1445
Printed Name:	Date: 9/3/99

Pinnacle Laboratories Inc.

11 rev'98 PLI Inc · Pinnacle Laboratories, Inc. • 2709-D Pan American Freeway, NE • Albuquerque, New Mexico 87107 • (505) 344-3777 • Fax (505) 344-4413 • E-mail: PIN_LAB@WORLDNET.ATT.NET

DISTRIBUTION: White - PLI, Canary - Originator

Water Sampling Data

PHILIP SERVICES GROUP

Serial No. WSD- Location No. _____

Group List Number _____

Sample Type: ☒ Groundwater ☐ Surface Water ☐ Other _____ Date 12 2 99

Project Name Burlington Dely Project No. 62P00025

Project Manager C. Irby Phase.Task No. 31

Site Name Cozzens B-1 (Well #1)

Sampling Specifications

Requested Sampling Depth Interval (feet) _____

Requested Wait Following Development/Purging (hours) _____

Initial Measurements

Time Elapsed From Final Development/Purging (hours) _____

Initial Water Depth (feet) _____

Nonaqueous Liquids Present (Describe) _____

Water Quality/Water Collection

DO = Dissolved Oxygen; Cond. = Conductivity

Date	Time	Sampler Initials	Water Quality Readings: Temp. (°C)	pH	DO (mg/L)	Cond. (µmhos/cm)	Water Collection Data: Volume Removed (gallons)	Removal Rate (gal/min)	Pump Intake Depth (feet)	Bail	Final Water Depth (feet)	Notes (Explain in Comments Below)
12-2-99	15:40	CI		See	Well	Development	Form					

Container Type: G = Clear Glass; A = Amber Glass; P = Plastic; V = VOA Vial (Glass); O = Other (Specify)

Sample Containers

Preservatives: H = HCl; N = HNO_3; S = H_2SO_4; A = NaOH; O = Other (Specify); — = None

Analytical Parameter List	Container: Number	Container: Type	Container: Volume (mL)	Field Filtered: Yes	Field Filtered: No	Preserved	Cooled During Collection: Yes	Cooled During Collection: No	Comments
BTEX	2	VOA	40		✓	HCl	✓		C02 12 99 - 1

Filter Type _____ Chain-of-Custody Form Number _____

Comments _____

Signature Cecil Irby Date 12-2-99 Reviewer _____ Date _____

Form A0202 Rev. 02/24/94

FILE No.314 12/10 '99 PM 04:12 ID:PHILIP SERVICES FAX:505 326 2388 PAGE 7

PHILIP ENVIRONMENTAL

Well Number: 1

Serial No. WDPD-

☐ Development
☐ Purging

WELL DEVELOPMENT AND PURGING DATA

Page ____ of ____

Project Name: Burlington Daly
Project Manager: C Irby
Project No. 62800025

Client Company: Burlington Resources
Phase.Task No. 35

Site Name: Cozzens B-1
Site Address: ____

Development Criteria

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

Methods of Development

Pump
☐ Centrifugal
☐ Submersible
☐ Peristaltic
☐ Other ____

Bailer
☒ Bottom Valve
☐ Double Check Valve
☐ Stainless-steel Kemmerer

Water Volume Calculation

Initial Depth of Well (feet) 14.7
Initial Depth to Water (feet) 4.43
Height of Water Column in Well (feet) 10
Diameter (Inches): Well ____ Gravel Pack ____

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing		1.6	4.8
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)	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
12-2-99	15:40		✓									7.6			
	16:00											7.6			
	16:00											7.5			

Circle the date and time that the development criteria are met

Comments ____

Developer's Signature(s) Cecil [signature]
Date ____
Reviewer ____ Date ____

Water Sampling Data

PHILIP SERVICES CORP.

Serial No. WSD-

Location No. _____

Group List Number _____

Sample Type: ☐ Groundwater ☐ Surface Water ☐ Other _____ Date 12-2-99

Project Name Burlington Pits Project No. 62B00025

Project Manager C. Irby Phase.Task No. 35

Site Name Cozens B-1 (well #2)

Sampling Specifications

Requested Sampling Depth Interval (feet) _____

Requested Wait Following Development/Purging (hours) _____

Initial Measurements

Time Elapsed From Final Development/Purging (hours) _____

Initial Water Depth (feet) _____

Nonaqueous Liquids Present (Describe) _____

Water Quality/Water Collection

DO = Dissolved Oxygen; Cond. = Conductivity

Date	Time	Sampler Initials	Water Quality Readings: Temp. (°C)	pH	DO (mg/L)	Cond. (µmhos/cm)	Water Collection Data: Volume Removed (gallons)	Removal Rate (gal/min)	Pump Intake Depth (feet)	Bail	Final Water Depth (feet)	Notes (Explain in Comments Below)
12-2-99	1620	CI		See	well		Development			Form		

Sample Containers

Container Type: G = Clear Glass; A = Amber Glass; P = Plastic; V = VOA Vial (Glass); O = Other (Specify)

Preservative: H = HCl; N = HNO_3; S = H_2SO_4; A = NaOH; O = Other (Specify); – = None

Analytical Parameter List	Container: Number	Type	Volume (mL)	Field Filtered: Yes	No	Preservative	Cooled During Collection: Yes	No	Comments
BTEX	2	VOA	40		✓	HCl	✓		Black suspended "weathered" stuff

Filter Type _____ Chain-of-Custody Form Number _____

Comments _____

Signature Cecil Irby Date 12-2-99 Reviewer _____ Date _____

Form A0202 Rev. 02/24/94

PHILIP ENVIRONMENTAL

Well Number 2 ☐ Development ☐ Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WQPD- Page ____ of ____

Project Name Burlington D-1 Project Manager Cindy Project No. 628 99025

Client Company Burlington Resources Phase.Task No. 35

Site Name Cozzens Site Address T29N R11W Sec 15

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) ~~4.35~~ 4.45
Initial Depth to Water (feet) ~~4.35~~ 4.35
Height of Water Column in Well (feet) ____
Diameter (inches): Well ____ Gravel Pack ____

Item	Water Volume in Well: Cubic Feet	Gallons	Gallons to be Removed
Well Casing			
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)	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
12-2-99	1620		✓									✓	N/A		COZ1299-1-2

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

Comments ____

Developer's Signature(s) Cindy Date 12-2-99 Reviewer ____ Date ____

Form A6101 Rev. 10/16/94 S:\NEWFORM\PE_A0101.DOT 1/31/98

Pinnacle Lab ID number **912012**
December 09 1999

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name (none)
Project Number (none)

Attention: CECIL IRBY

On 12/3/99 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.

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: jt

Enclosure

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 912012
PROJECT #	: (none)	DATE RECEIVED	: 12/3/99
PROJECT NAME	: (none)	REPORT DATE	: 12/9/99

PIN ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	COZ1299-1-2	AQUEOUS	12/2/99
02	COZ1299-1-1	AQUEOUS	12/2/99
03	FOG1299-1	AQUEOUS	12/2/99
04	SOC1299-1	AQUEOUS	12/1/99
05	JF1299-1	AQUEOUS	12/1/99

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : (none)
PROJECT NAME : (none)

PINNACLE I.D.: 912012

SAMPLE ID #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	COZ1299-1-2	AQUEOUS	12/2/99	NA	12/8/99	20
02	COZ1299-1-1	AQUEOUS	12/2/99	NA	12/7/99	1
03	FOG1299-1	AQUEOUS	12/2/99	NA	12/8/99	2

PARAMETER	DET. LIMIT	UNITS	COZ1299-1-2	COZ1299-1-1	FOG1299-1
BENZENE	0.5	**UG/L**	**250**	< 0.5	< 1.0
TOLUENE	0.5	**UG/L**	**39**	**11**	< 1.0
ETHYLBENZENE	0.5	**UG/L**	**480**	**5.0**	**17**
TOTAL XYLENES	0.5	**UG/L**	**980**	**27**	**33**
METHYL-t-BUTYL ETHER	2.5	UG/L	< 50	< 2.5	< 5.0
SURROGATE:					
BROMOFLUOROBENZENE (%)			107	112	108
SURROGATE LIMITS	(80 - 120)				

CHEMIST NOTES:
SAMPLE FOG1299-1 WAS ANALYZED AT A 2 X DILUTION DUE TO THE FOAMY NATURE OF THE SAMPLE.

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE 12-2-99 PAGE 1 OF 1

PROJECT MANAGER: Cecil Irby

COMPANY: Philip Env. Srvcs
ADDRESS: 4000 Monroe
Farmington, NM 87401
PHONE: 505-326-2262
FAX:

BILL TO: Philip Env. Services
COMPANY:
ADDRESS:

Analyses: Petroleum Hydrocarbons (418.1) TRPH; (MOD.8015) Diesel/Direct Inject; (M8015) Gas/Purge & Trap; 8021 (BTEX)/8015 (Gasoline) MTBE; 8021 (BTEX) ☐ MTBE ☐ TMB ☐ PCE; 8021 (TCL); 8021 (EDX); 8021 (HALO); 8021 (CUST); 504.1 EDB ☐ / DBCP ☐; 8260 (TCL) Volatile Organics; 8260 (Full) Volatile Organics; 8260 (CUST) Volatile Organics; 8260 (Landfill) Volatile Organics; Pesticides /PCB (608/8081/8082); Herbicides (615/8151); Base/Neutral/Acid Compounds GC/MS (625/8270); Polynuclear Aromatics (610/8310/8270-SIMS); General Chemistry; Priority Pollutant Metals (13); Target Analyte List Metals (23); RCRA Metals (8); RCRA Metals by TCLP (Method 1311); Metals:

CO21299-1-2	12/2		AQ
CO21299-1-1	↓		↓
FOG 1299-1	↓		↓
SBC 1299-1	12/1		↓
JF 1299-1	↓		↓

PLEASE FILL THIS FORM IN COMPLETELY.

PROJ NO.:
PROJ NAME:
P.O. NO.:
SHIPPED VIA:

RUSH ☐24hr ☐48hr ☐72hr ☐1 WEEK (NORMAL) ☐
CERTIFICATION REQUIRED: ☐NM ☐SDWA ☐OTHER
METHANOL PRESERVATION ☐
COMMENTS: FIXED FEE ☐

Signature: Cecil Irby Time: 12-2-99 16:50
Printed Name: Date:
Company:
See reverse side (Force Majeure)

Signature: Time:
Printed Name: Date:
Company:

Signature: Time:
Printed Name: Date:
Company:

11/10/98 PLI Inc.: Pinnacle Laboratories, Inc. • 2709-D Pan American Freeway, NE • Albuquerque, New Mexico 87107 • (505) 344-3777 • Fax (505) 344-4413 • E-mail: PINLAB@WORLDNET.ATT.NET

DISTRIBUTION: White - PLI, Canary - Originator

DRILLING LOGS/WELLBORE DIAGRAMS

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-1
Page 1 of 1

Project Name
Project Number 21072 Phase 1000.99
Project Location Cozzens (Mesa Monzano)

Elevation
Borehole Location Cozzens (Mesa Monzano)
GWL Depth 3'
Logged By D. Cheney
Drilled By K. Padilla
Date/Time Started 5/19 0800
Date/Time Completed 5/19 1000

Well Logged By D. Cheney
Personnel On-Site Cheney, K. Padilla, D. Padilla
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				Fill to approx 15' (Ed Hasely, 5/19). 1st sample at 5-7'						
		▼ (3')								
5		5 – 7		Brown, medium to coarse grained poorly sorted sand w/pea gravel. wet at 3', black staining at 5', no odor			0.1		7.6	BC= 8 s/hts= 3.6
10		10 – 12		yellowish brown silty clay. Low plasticity, Hard			0.5		0.0	BC= 50 (10") s/hts= 4.6
15				TD=13'. Set 10' screen from 13 to 3', sand to 1' bgs, bentonite to surface						
20										
25										
30										
35										
40										

Comments: Materials 1 silt trap, 1-10' screen, 1-5' riser, 6 sacks silica sand, 2 sacks bentonite

Geologist Signature [signature]

RECORD OF SUBSURFACE EXPLORATION

Cozzens B# 1

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

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

Project Name
Project Number 21073 Phase 1000.99
Project Location Cozzens (mesa monzano

Elevation
Borehole Location
GWL Depth 2'
Logged By P. Cheney
Drilled By P. Cheney
Date/Time Started
Date/Time Completed

Well Logged By P. Cheney
Personnel On-Site Cheney, E. Padilla, D. Padilla, C. Irby
Contractors On-Site
Client Personnel On-Site Ed Hasely

Drilling Method Hand Auger
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				Hand auger to 3' through sand, cobbles and gravel. Auger refusal at 3'. Set 2' of screen from 3' to 1', sand to approx 0.5', bentonite to surface						
5										
10										
15										
20										
25										
30										
35										
40										

Comments:

Geologist Signature Paul Cheney

MONITORING WELL INSTALLATION RECORD

Phillip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(506) 326-2262 FAX (506) 326-2388

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

Project Name

Project Number 21073 Phase 1000.91
Project Location Cozzens (Mesa Montana)

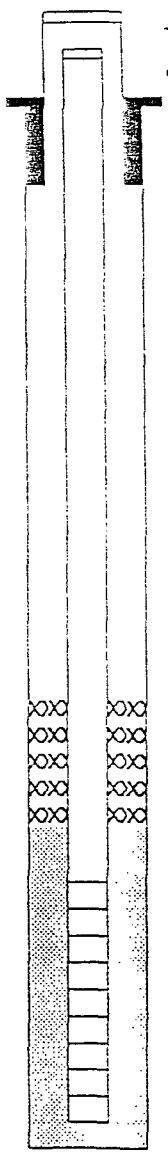
Elevation
Well Location Cozzens
GWL Depth 3'
Installed By R. Padilla

Date/Time Started 5/19 0800
Date/Time Completed 5/19 1015

On-Site Geologist P. Cheney
Personnel On-Site Cheney, D. Padilla, R. Padilla, C. Irby
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		N.A.
Bottom of Concrete		N.A.
Top of Grout		N.A.
Bottom of Grout		N.A.
Top of Well Riser		2' (+)
Bottom of Well Riser		3'
Top of Well Screen		3'
Bottom of Well Screen		13'
Top of Peltonite Seal		Ground Surface
Bottom of Peltonite Seal		1'
Top of Gravel Pack		1'
Bottom of Gravel Pack		13'
Top of Natural Cave-In		N.A
Bottom of Natural Cave-In		N.A.
Top of Groundwater		3'
Total Depth of Borehole		13'



Top of Protective Casing
Top of Riser 2'
Ground Surface
Top of Seal Ground surface
Top of Gravel Pack 1'
Top of Screen 3'
Bottom of Screen 13'
Bottom of Borehole 13'

Comments: TD = 13'. Installed 2" screen from 13' to 3', sand to 1', bentonite to surface

Geologist Signature

PHILIP REPORT ON EXCAVATION DATED 1/8/98

PHILIP SERVICES CORP.

Industrial Services Group
Central Region

January 8, 1998

Project 19914

Mr. Ed Hasely
Burlington Resources Oil and Gas Company
P.O. Box 4289
Farmington, New Mexico 87499-4289

RE: Report for work performed at the Cozzen B-1 site

Dear Mr. Hasely:

Philip Services Corporation (Philip) is pleased to submit to Burlington Resources Oil and Gas Company (Burlington) this report of the work performed at the Cozzen B-1 site approximately 3 miles east of Bloomfield, New Mexico.

SCOPE OF WORK

On November 21, 1997 Burlington requested Philip to perform the following scope of work at the Cozzen B-1 site:

- Provide technician, pickup truck and photoionization detector (PID) to monitor soil contamination levels at a previous spill.
- Provide loader, trackhoe and two operators to excavate contaminated soil from the tank pad across the road to an old reserve pit.
- Landfarm contaminated soil on site and backfill excavation using soil removed from location.

RESULTS

On December 9, 1997 at approximately 7:00 a.m. Philip began excavation activities at the spill area as designated by Burlington. At approximately 9:00 a.m. Burlington's representative arrived to observe the excavation. At approximately 10:00 a.m. Denny Foutz with the New Mexico Oil Conservation District (NMOCD) arrived. Philip field screened the excavated soil with a PID to monitor the extent of contamination. Results of the first screened readings were 192 parts per million (ppm) on the north side; 5 ppm on the east side; and 681 ppm and 573 ppm on the south side. Based on the field screening results, excavation continued to the south and west.

At 12:00 p.m. Philip collected heated headspace samples, with the following results: 179 ppm on the north side, 5 ppm on the east side and 480 ppm on the south side. Philip resumed excavation

4000 Monroe Road • Farmington, NM 87401 • (505) 326-2262 • Fax (505) 326-2388

on all sides. At 1:00 p.m. Philip collected samples for a second heated headspace analysis. The results were: 38 ppm and 32 ppm on the north side, 5 ppm on the east side, 81 ppm and 49 ppm on the south side and 118 ppm on the west side.

At the request of Denny Foutz, Philip collected two samples on the down gradient side of the excavation and sent them to Onsite Laboratory in Farmington, New Mexico. The samples were analyzed for Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX) by USEPA method 8020, and Total Petroleum Hydrocarbons (TPH) by USEPA method 8015 modified for gasoline and diesel range. Sample No. Cozzen-01 was collected from the south side of the excavation and sample No. Cozzen-02 was collected from the west. Laboratory analysis indicated BTEX and TPH results to be below NMOCD standards for soil. Results of laboratory analysis are included in Attachment A.

The excavation was approximately 50 feet long, 30 feet wide and approximately 6 feet deep. Philip estimates 334 cubic yards of contaminated soil were removed. No groundwater was encountered. All impacted soil excavated was landfarmed on site.

Once the excavation was complete, Mr. Foutz approved backfilling to the sample locations. Once backfilling was completed, Philip personnel and equipment demobilized from the site.

Philip appreciates the opportunity to provide Burlington with professional services and looks forward to providing additional services in the future. If you have any questions or require additional information, please contact Robert Thompson or Martin Nee at (505) 326-2262.

Respectfully submitted,
PHILIP SERVICES CORPORATION

Robert Thompson
Project Manager

J:\19914\PM\cozzrpt.doc

Attachment A

Results of Laboratory Analysis

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	12-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17062*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-01***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:10
Analyzed by:	DC/HR	GRO Date:	10-Dec-97		
Sample Matrix:	*Soil*	DRO Date:	11-Dec-97		

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.0	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD

DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: *SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography*

Approved by:

Date: 12/12/97

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	11-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17062*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-01***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:10
Analyzed by:	DC	Date:	10-Dec-97		
Sample Matrix:	*Soil*				

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	19	ug/kg	2	ug/kg
Toluene	55	ug/kg	2	ug/kg
Ethylbenzene	95	ug/kg	2	ug/kg
m,p-Xylene	497	ug/kg	2	ug/kg
o-Xylene	13	ug/kg	2	ug/kg
TOTAL	679	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 12/11/97

OFF: 505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	12-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17063*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-02***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:12
Analyzed by:	DC/HR	GRO Date:	10-Dec-97		
Sample Matrix:	*Soil*	DRO Date:	11-Dec-97		

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.5	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD

DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: *SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography*

Approved by:

Date: 12/12/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	*Scott Pope*	Date:	11-Dec-97
Company:	*Philip Environmental*	COC No.:	*G3688*
Address:	*4000 Monroe Road*	Sample No.:	*17063*
City, State:	*Farmington, NM 87401*	Job No.:	*2-1000*

Project Name:	***Burlington Resources - Cozzen B-1***				
Project Location:	***Cozzen-02***				
Sampled by:	DB	Date:	9-Dec-97	Time:	12:12
Analyzed by:	DC	Date:	10-Dec-97		
Sample Matrix:	*Soil*				

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	96	ug/kg	2	ug/kg
Toluene	43	ug/kg	2	ug/kg
Ethylbenzene	133	ug/kg	2	ug/kg
m,p-Xylene	508	ug/kg	2	ug/kg
o-Xylene	16	ug/kg	2	ug/kg
TOTAL	796	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved by: *Date:* 12/11/97

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 10-Dec-97

Internal QC No.: 0559-STD
Surrogate QC No.: 0556-STD
Reference Standard QC No.: 0529/30-QC

Method Blank

Parameter	*Result*	*Unit of Measure*
Average Amount of All Analytes In Blank	< 1.0	ppb

Calibration Check

Parameter	*Unit of Measure*	*True Value*	*Analyzed Value*	*RPD*	*Limit*
Benzene	ppb	60.0	62.1	3	15%
Toluene	ppb	60.0	63.3	5	15%
Ethylbenzene	ppb	60.0	62.0	3	15%
m,p-Xylene	ppb	120.0	120.9	1	15%
o-Xylene	ppb	60.0	62.1	3	15%

Matrix Spike

Parameter	*1- Percent Recovered*	*2 - Percent Recovered*	*Limit*	*RPD*	*Limit*
Benzene	91	85	(39-150)	7	20%
Toluene	88	83	(46-148)	6	20%
Ethylbenzene	86	82	(32-160)	4	20%
m,p-Xylene	75	70	(35-145)	6	20%
o-Xylene	89	87	(35-145)	3	20%

Surrogate Recoveries

Laboratory Identification	*S1 Percent Recovered*	*S2 Percent Recovered*	*Laboratory Identification*	*S1 Percent Recovered*	*S2 Percent Recovered*
Limit Percent Recovered	(70-130)		*Limit Percent Recovered*	(70-130)	
17062-G3688	84				
17063-G3688	84				
				12/15/97	12/11/97

S1: Flourobenzene

PHILIP

Chain of Custody Record — Nonchemical Samples

210 West Sand Bank Road
P.O. Box 230
Columbia, IL 62236-0230

(618) 281-7173 Phone
(618) 281-5120 FAX

COC Serial No. G 3688

Project Name	Burlington Res. Cozzen B-1			Lab	Name	ONSITE				
Project Number	Phase . Task ~~3000~~ 1000 . 77				Location	FARMINGTON				
Samplers	DAVID BROWN			Analysis Type						
Sample Number	Date	Time	Matrix	TPH	BTX				Comments	
Cozzen - 01	12-9-97	12:10		X	X				17062-63688	
Cozzen - 02	12-9-97	12:12		X	X				17063-	↓

Relinquished by:

Signature	Date	Time
[signature]	12-9-97	14:25

Received By:

Signature	Date	Time
[signature]	12/9/97	14:30

Carrier: Airbill No.

Shipping and Lab Notes:

ROBERT 326-2262 - Philip Services

PE-211 (4/95)