

3R - 197

REPORTS

DATE:

1999



Certified Mail: #Z 213 707 666 (Box 1 of 2)
#Z 213 707 664 (Box 2 of 2)

March 24, 2000

Mr. William C. Olson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87504

RECEIVED

MAR 23 2000

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

RE: 1999 Pit Project Annual Groundwater Report

Dear Mr. Olson:

In accordance with reporting requirements, El Paso Field Services (EPFS) has enclosed annual updates for the 32 remaining groundwater impacted locations that were identified during our pit closure project of 1994 / 1995.

Of the 32 reports, EPFS hereby requests closure of 4 of these locations. The 4 sites EPFS is requesting closure on are presented in one separate binder entitled "San Juan Basin Pit Closures, El Paso Field Services, Pit Closure Reports".

The Jaquez Com. C #1 and Jaquez Com. E #1 site is included in a separate report which is entitled "Jaquez Com. C #1 and Jaquez Com. E #1 Annual Report for Soil and Groundwater Remediation".

EPFS has also included for your information five Navajo sites in a separate binder and a separate report for the Bisti Flare Pit #1.

If you have any questions concerning the enclosed reports or closure requests, please call me at (505) 599-2124.

Sincerely,

A handwritten signature in dark ink that reads "Scott T. Pope".

Scott T. Pope P.G.
Senior Environmental Scientist

xc: Mr. Denny Foust, NMOCD, Aztec - w / enclosures; **Certified Mail # Z 213 707 667**
Mr. Bill Liesse, BLM - w / enclosures; **Certified Mail # Z 213 707 668**
Mr. John Jaquez, - w / Jaquez enclosures; **Certified Mail # Z 213 707 669**
Ms. Charmaine Tso, Navajo EPA - w / enclosures; **Certified Mail # Z 213 707 670**

bc: J. A. Lambdin w / enclosures

Philip Services Corp. – Cecil Irby, w / o enclosures

B. B. McDaniel / 24321 – NMOCD Regulatory w / o

SAN JUAN BASIN PIT CLOSURES
San Juan Basin, New Mexico

El Paso Field Services Pit Project Groundwater Report
Annual Report

March 2000

RECEIVED

MAR 29 2000

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

Prepared For

El Paso Field Services
Farmington, New Mexico

Project 62800158



EPFS GROUNDWATER PITS 1999 ANNUAL GROUNDWATER REPORT

**JENNAPAH #1
Meter/Line ID - 71816**

SITE DETAILS

Legals - Twn: 28N Rng: 9W Sec: 36 Unit: H
NMOCD Hazard Ranking: 40 Land Type: NAVAJO
Operator: AMOCO PRODUCTION COMPANY

PREVIOUS ACTIVITIES

Site Assessment: May-94 Excavation: Jun-94 (70 cy) Re-Excavation: Nov-95 (234 cy)
Soil Boring: Feb-97 Monitor Well: Feb-97 Quarterly Sampling Initiated: Jun-97
ORC Nutrient Injection: Jul-98 Additional Monitor Wells: May-99

1999 ACTIVITIES

Quarterly Groundwater Monitoring - Quarterly groundwater monitoring at MW-1 continued through 1999 and annual groundwater monitoring was completed at MW-2 and MW-3.

Additional Monitoring Wells - The groundwater gradient was estimated based on topography and additional wells, MW-2 and MW-3, were drilled as requested in OCD correspondence dated July 28, 1999 and EPA correspondence dated October 26, 1998.

SUMMARY TABLES

Groundwater analytical data are presented in Table 1. Copies of the laboratory data sheets and associated quality assurance/quality control data are presented in Attachment 1.

SITE MAP

A site map showing the groundwater gradient is presented as Figure 1.

GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS

The May 4, 1999, geologic logs and well completion diagrams for MW-1 and MW-2 are included as Attachment 2.

DISPOSITION OF GENERATED WASTES

There were no generated wastes at this site in 1999.

ISOCONCENTRATION MAPS

BTEX parameters were below regulatory standards and isoconcentration maps were not generated.

CONCLUSIONS

Analytical results of groundwater samples collected from MW-1 show levels of hydrocarbon constituents below New Mexico Groundwater Standards for all constituents during the last sampling event in 1999. Natural attenuation has reduced benzene levels by more than 50 percent since monitoring began at this site.

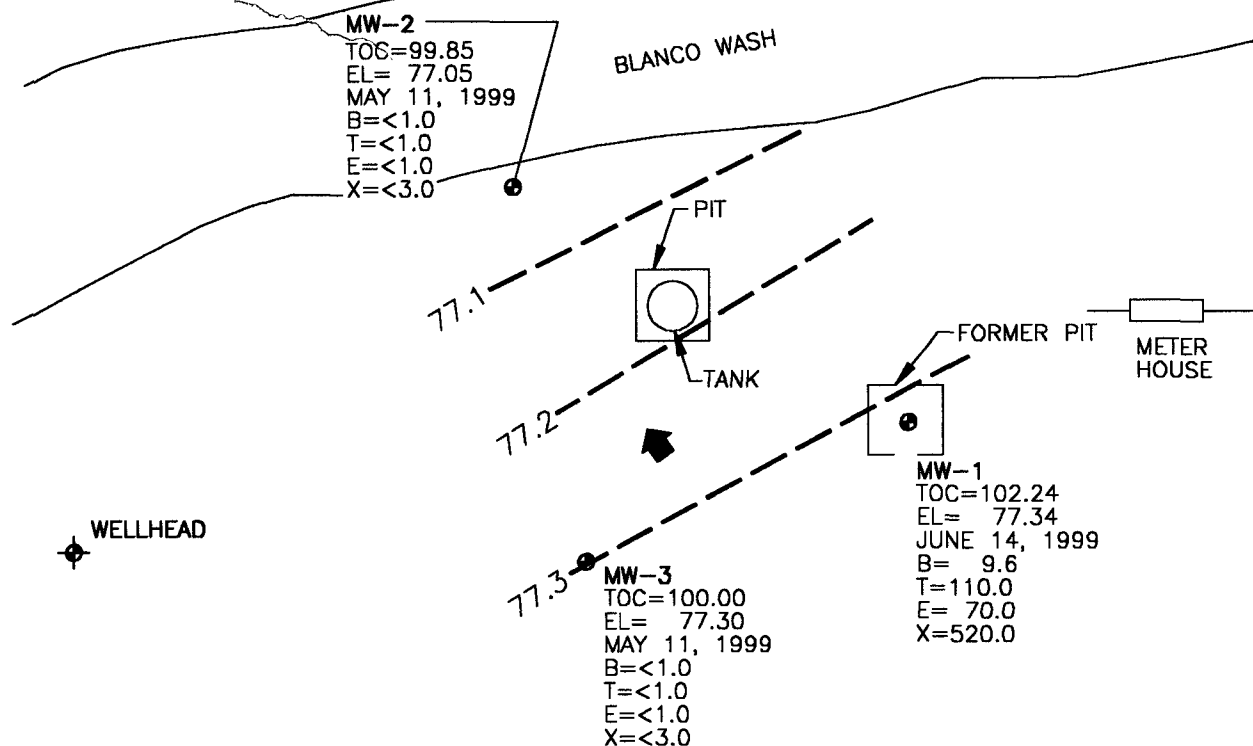
EPFS GROUNDWATER PITS 1999 ANNUAL GROUNDWATER REPORT

Recently installed monitor wells MW-2 and MW-3, are below detection limits for all BTEX constituents. Groundwater gradient is to the northwest at this site (Figure 1).

Since this site is on Navajo land, EPFS assumes the Navajo Environmental Protection Agency has jurisdiction of this site and will either approve or deny closure of this site.

RECOMMENDATIONS

- Quarterly sampling will continue at MW-1 until analytical results show hydrocarbon constituents are below New Mexico Groundwater Standards for four consecutive quarters.
- Monitor wells MW-2 and MW-3 will be sampled annually until the site is approved for closure.
- EPFS will continue to work with the operator of this site.
- Following approval for closure, MW-1, MW-2, and MW-3 will be abandoned using OCD approved abandonment procedures.



LEGEND

- MW-1 MONITORING WELL NUMBER AND APPROXIMATE LOCATION
- TOC TOP OF CASING ELEVATION
- EL GROUNDWATER ELEVATION
- ➔ APPROXIMATE GROUNDWATER GRADIENT
- 77.1 GROUNDWATER POTENTIOMETRIC SURFACE
- B BENZENE (ug\L)
- T TOLUENE (ug\L)
- E ETHYL BENZENE (ug\L)
- X XYLENE (ug\L)

NOTE: Well locations are to scale,
production equipment location
and dimensions are approximate.

0 40
FEET



COL 20990B-104



TITLE:
JENNEPAH #1
METER 71816
MAY 11, 1999

DWN: CJG	DES.: CI
CHKD: CI	APPD:
DATE: 03/13/00	REV.: 0

PROJECT NO.: 20990
EPFS GW PITS

FIGURE 1

TABLE 1

Sample #	Meter/ Line #	Site Name	Sample Date	MW #	Project	Benzene (PPB)	Toluene (PPB)	Ethyl Benzene (PPB)	Total Xylenes (PPB)	Total BTEX
990089	71816	Jennapah #1	03/16/99	1	Sample 4 - 8th Quarter	= 8.2	= 79.5	= 64.7	= 437.0	= 589
990283	71816	Jennapah #1	06/14/99	1	Sample 4 - 9th Quarter	= 9.6	= 110.0	= 70.0	= 520.0	= 710
990386	71816	Jennapah #1	09/20/99	1	Sample 4 - 10th Quarter	= 9.0	= 310.0	= 200.0	= 1900.0	= 2419
990475	71816	Jennapah #1	12/13/99	1	Sample 4 - 11th Quarter	< 2.5	= 17.0	= 73.0	= 550.0	= 643
990213	71816	Jennapah #1	05/11/99	2	Sample 4 - 1st Quarter	< 1.0	< 1.0	< 1.0	< 3.0	< 6
990214	71816	Jennapah #1	05/11/99	3	Sample 4 - 1st Quarter	< 1.0	< 1.0	< 1.0	< 3.0	< 6

ATTACHMENT 1
1999 GROUNDWATER ANALYTICAL



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990089
MTR CODE SITE NAME:	71816	Jennapah #1
SAMPLE DATE TIME (Hrs):	3/16/99	1243
PROJECT:	Sample 4 8th Quarter	
DATE OF BTEX EXT. ANAL.:	NA	3/22/99
TYPE DESCRIPTION:	MW-1	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	8.20	PPB				
TOLUENE	79.5	PPB				
ETHYL BENZENE	64.7	PPB				
TOTAL XYLENES	437	PPB				
TOTAL BTEX	589	PPB				

—BTEX is by EPA Method 8020 —

The Surrogate Recovery was at 106.8 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By:

John L. Linder

Date:

4/5/99



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990090
MTR CODE SITE NAME:	71816	Jennapah #1
SAMPLE DATE TIME (Hrs):	3/16/99	1243
PROJECT:	Sample 4 8th Quarter	
DATE OF BTEX EXT. ANAL:	NA	3/22/99
TYPE DESCRIPTION:	MW-1 Field Duplicate	Water

Field Remarks: Field Duplicate

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	8.78	PPB				
TOLUENE	86.9	PPB				
ETHYL BENZENE	69.5	PPB				
TOTAL XYLENES	472	PPB				
TOTAL BTEX	637	PPB				

--BTEX is by EPA Method 8020 --

The Surrogate Recovery was at 122.0 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By: John Lurdi

Date: 4/5/99

SAMPLE 4 8TH QTR



Natural Gas Company

A 2438

CHAIN OF CUSTODY RECORD

Project No.		Project Name		Requested Analysis		Remarks									
Samplers: (Signature)		Date: 3-15-99		Type and No. of Sample Containers		Preservation Technique									
Date	Time	Comp.	GRAB	Sample Number											
3-15-99	1243		X	990089		JENNAPAH #1 MW-1									
3-15-99	1243		X	990090		JENNAPAH #1 MW-1 F1500 OUP									
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Date/Time									
Dennis Bied		3-15-99 1648													
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Date/Time									
Relinquished by: (Signature)		Date/Time		Received for Laboratory by: (Signature)		Remarks: Ctd + In the									
				John F. L...		3-22-99 1030									
Carrier Co:		Carrier Phone No.		Date Results Reported / by: (Signature)											
Air Bill No.:															

Well Development and Purging Data

Well Number NW-1

Meter Code 71816

☐ Development
☒ Purging

Site Name JENNAPAH #1

Development Criteria

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

Methods of Development

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

Water Volume Calculation

Initial Depth of Well (feet) 3450
Initial Depth to Water (feet) 2437
Height of Water Column in Well (feet) 1013

Instruments

- ☒ pH Meter
☐ DO Monitor
☒ Conductivity Meter
☒ Temperature Meter
☒ Other D.O. CHEMETS KIT

Water Disposal

KUTZ SEPARATOR

Diameter (inches): Well _____ Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>6.7</u>	<u>20.1</u>
Gravel Pack			
Drilling Fluids			
Total			

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gal)		Product Volume Removed (gallons)		pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative				
3-16-99	1150										<u>4.50</u>	<u>1361</u>		
3-16-99	1157						<u>5.0</u>	<u>5.0</u>			<u>4.78</u>	<u>1429</u>		
3-16-99	1205						<u>5.0</u>	<u>10.0</u>			<u>5.57</u>	<u>1549</u>		
3-16-99	1212						<u>5.0</u>	<u>15.0</u>			<u>6.27</u>	<u>1613</u>		
3-16-99	1220						<u>5.0</u>	<u>20.0</u>			<u>6.54</u>	<u>1682</u>		
3-16-99	1228						<u>5.0</u>	<u>25.0</u>			<u>6.68</u>	<u>1644</u>	<u>0.5</u>	

Comments THE WATER HAD A LIGHT HYDROGEN SULFIDE SMELL.

Developer's Signature Donna Bied

Date 3-16-99

Reviewer _____

John Jordan

Date

4/5/99



QUALITY CONTROL REPORT - EPA METHOD 8021 BTEX

Samples: 990213, 214, 218 - 224

QA/QC for 05/18/99 & 05/19/99 Sample Set

LABORATORY CALIBRATION CHECKS / LABORATORY CONTROL SAMPLES:

SAMPLE NUMBER ICV LA-52589 5/18/99 50 PPB	TYPE	EXPECTED	ANALYTICAL	%R	ACCEPTABLE	
		RESULT	RESULT		YES	NO
		PPB	PPB		RANGE	
Benzene	Standard	50.0	48.4	96.8	75 - 125 %	X
Toluene	Standard	50.0	48.2	96.3	75 - 125 %	X
Ethylbenzene	Standard	50.0	48.3	96.7	75 - 125 %	X
m & p - Xylene	Standard	100	97.0	97.0	75 - 125 %	X
o - Xylene	Standard	50.0	48.5	96.9	75 - 125 %	X
SAMPLE NUMBER CCV LA-52589 5/19/99 50 PPB	TYPE	EXPECTED	ANALYTICAL	%R	ACCEPTABLE	
		RESULT	RESULT		YES	NO
		PPB	PPB		RANGE	
Benzene	Standard	50.0	47.7	95.5	75 - 125 %	X
Toluene	Standard	50.0	47.6	95.2	75 - 125 %	X
Ethylbenzene	Standard	50.0	47.9	95.7	75 - 125 %	X
m & p - Xylene	Standard	100	97.4	97.4	75 - 125 %	X
o - Xylene	Standard	50.0	48.1	96.1	75 - 125 %	X
SAMPLE NUMBER LCS LA-45476 5/18/99 25 PPB	TYPE	EXPECTED	ANALYTICAL	%R	ACCEPTABLE	
		RESULT	RESULT		YES	NO
		PPB	PPB		RANGE	
Benzene	Standard	25.0	23.3	93	39 - 150	X
Toluene	Standard	25.0	23.3	93	46 - 148	X
Ethylbenzene	Standard	25.0	23.7	95	32 - 160	X
m & p - Xylene	Standard	50.0	47.4	95	Not Given	X
o - Xylene	Standard	25.0	23.6	94	Not Given	X

Narrative: Acceptable.

LABORATORY DUPLICATES:

SAMPLE ID	TYPE	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	ACCEPTABLE	
					YES	NO
					RANGE	
990218						
Benzene	Matrix Duplicate	<1.0	<1.0	0.00	+/- 20 %	X
Toluene	Matrix Duplicate	<1.0	<1.0	0.00	+/- 20 %	X
Ethylbenzene	Matrix Duplicate	<1.0	<1.0	0.00	+/- 20 %	X
m & p - Xylene	Matrix Duplicate	<2.0	<2.0	0.00	+/- 20 %	X
o - Xylene	Matrix Duplicate	<1.0	<1.0	0.00	+/- 20 %	X
SAMPLE ID	TYPE	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	ACCEPTABLE	
					YES	NO
					RANGE	
990223						
Benzene	Matrix Duplicate	376.9	366.1	2.90	+/- 20 %	X
Toluene	Matrix Duplicate	17.75	18.29	2.97	+/- 20 %	X
Ethylbenzene	Matrix Duplicate	142.93	153.12	6.88	+/- 20 %	X
m & p - Xylene	Matrix Duplicate	599.51	583.60	2.69	+/- 20 %	X
o - Xylene	Matrix Duplicate	5.57	8.31	39.42	+/- 20 %	X

Narrative: Acceptable. O-Xylene out due to matrix interference.

LABORATORY SPIKES:

SAMPLE ID 2nd Analysis 990218	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACCEPTABLE	
					YES	NO
					RANGE	
Benzene	25	<1.0	23.9	96	75 - 125 %	X
Toluene	25	<1.0	23.2	93	75 - 125 %	X
Ethylbenzene	25	<1.0	23.1	92	75 - 125 %	X
m & p - Xylene	50	<2.0	45.9	92	75 - 125 %	X
o - Xylene	25	<1.0	23.4	93	75 - 125 %	X
SAMPLE ID 2nd Analysis 990223	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACCEPTABLE	
					YES	NO
					RANGE	
Benzene	25	376.9	374.1	-11	75 - 125 %	X
Toluene	25	17.75	37.2	78	75 - 125 %	X
Ethylbenzene	25	142.93	155.2	49	75 - 125 %	X
m & p - Xylene	50	599.51	562.8	-73	75 - 125 %	X
o - Xylene	25	5.57	37.6	128	75 - 125 %	X

Narrative: Acceptable. SPK 990223 out due to matrix interference and high levels.

LABORATORY AND FIELD BLANKS:

AUTO BLANK	SOURCE	PPB (none analyzed with set)	STATUS
Benzene	Boiled Water		ACCEPTABLE
Toluene	Boiled Water		ACCEPTABLE
Ethylbenzene	Boiled Water		ACCEPTABLE
Total Xylenes	Boiled Water		ACCEPTABLE
SOIL VIAL BLANK	SOURCE Lot MB1461	PPB (two analyzed with set)	STATUS
Benzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Toluene	Vial + Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Vial + Boiled Water	<3.0	ACCEPTABLE
CONTAMINATION CARRYOVER CHECK	SOURCE	PPB (two analyzed with this set)	STATUS
Benzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Toluene	Vial + Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Vial + Boiled Water	<3.0	ACCEPTABLE
TRIP: 5/11, 5/17 and 5/19/99	SOURCE	PPB (three analyzed with this set)	STATUS
Benzene	Boiled Water	<1.0	ACCEPTABLE
Toluene	Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

Reported By: JDApproved By: John L. LinderDate: 5/20/99

Natural Gas Company

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FM-08-0565 A (Rev. 05-94)



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	PC001	990213
MTR CODE SITE NAME:	71816	Jennapah #1
SAMPLE DATE TIME (Hrs):	5/11/99	1023
PROJECT:	Temporary Well Installation	
DATE OF BTEX EXT. ANAL.:	NA	5/18/99
TYPE DESCRIPTION:	TW2	Water

Field Remarks: Sample container labeled as 71816 TW2

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	<1.0	PPB				
TOLUENE	<1.0	PPB				
ETHYL BENZENE	<1.0	PPB				
TOTAL XYLENES	<3.0	PPB				
TOTAL BTEX	<6.0	PPB				

—BTEX is by EPA Method 8021 —

The Surrogate Recovery was at 84.7 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By:

John L. Ladd

Date:

5/20/99



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	PC002	990214
MTR CODE SITE NAME:	71816	Jennapah #1
SAMPLE DATE TIME (Hrs):	5/11/99	1031
PROJECT:	Temporary Well Installation	
DATE OF BTEX EXT. ANAL.:	NA	5/18/99
TYPE DESCRIPTION:	TW3	Water

Field Remarks: Sample container labeled as 71816 TW3

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	<1.0	PPB				
TOLUENE	<1.0	PPB				
ETHYL BENZENE	<1.0	PPB				
TOTAL XYLENES	<3.0	PPB				
TOTAL BTEX	<6.0	PPB				

—BTEX is by EPA Method 8021 —

The Surrogate Recovery was at 102.6 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By: John Larch

Date: 5/20/99



Page:

FAX: 505-599-2261

QUALITY CONTROL REPORT - EPA METHOD 8021 BTEX

Samples: 990213, 214, 218 - 224

QA/QC for 05/18/99 & 05/19/99 Sample Set

LABORATORY CALIBRATION CHECKS / LABORATORY CONTROL SAMPLES:

SAMPLE NUMBER	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE	
					YES	NO
					RANGE	
ICV LA-52589 5/18/99 50 PPB						
Benzene	Standard	50.0	48.4	96.8	75 - 125 %	X
Toluene	Standard	50.0	48.2	96.3	75 - 125 %	X
Ethylbenzene	Standard	50.0	48.3	96.7	75 - 125 %	X
m & p - Xylene	Standard	100	97.0	97.0	75 - 125 %	X
o - Xylene	Standard	50.0	48.5	96.9	75 - 125 %	X
SAMPLE NUMBER	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE	
					YES	NO
					RANGE	
CCV LA-52589 5/19/99 50 PPB						
Benzene	Standard	50.0	47.7	95.5	75 - 125 %	X
Toluene	Standard	50.0	47.6	95.2	75 - 125 %	X
Ethylbenzene	Standard	50.0	47.9	95.7	75 - 125 %	X
m & p - Xylene	Standard	100	97.4	97.4	75 - 125 %	X
o - Xylene	Standard	50.0	48.1	96.1	75 - 125 %	X
SAMPLE NUMBER	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE	
					YES	NO
					RANGE	
CS LA-45476 5/18/99 25 PPB						
Benzene	Standard	25.0	23.3	93	39 - 150	X
Toluene	Standard	25.0	23.3	93	46 - 148	X
Ethylbenzene	Standard	25.0	23.7	95	32 - 160	X
m & p - Xylene	Standard	50.0	47.4	95	Not Given	X
o - Xylene	Standard	25.0	23.6	94	Not Given	X

Narrative: Acceptable.

LABORATORY DUPLICATES:

SAMPLE ID	TYPE	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	ACCEPTABLE	
					YES	NO
					RANGE	
990218						
Benzene	Matrix Duplicate	<1.0	<1.0	0.00	+/- 20 %	X
Toluene	Matrix Duplicate	<1.0	<1.0	0.00	+/- 20 %	X
Ethylbenzene	Matrix Duplicate	<1.0	<1.0	0.00	+/- 20 %	X
m & p - Xylene	Matrix Duplicate	<2.0	<2.0	0.00	+/- 20 %	X
o - Xylene	Matrix Duplicate	<1.0	<1.0	0.00	+/- 20 %	X

SAMPLE ID	TYPE	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	ACCEPTABLE	
					YES	NO
					RANGE	
990223						
Benzene	Matrix Duplicate	376.9	366.1	2.90	+/- 20 %	X
Toluene	Matrix Duplicate	17.75	18.29	2.97	+/- 20 %	X
Ethylbenzene	Matrix Duplicate	142.93	153.12	6.88	+/- 20 %	X
m & p - Xylene	Matrix Duplicate	599.51	583.60	2.69	+/- 20 %	X
o - Xylene	Matrix Duplicate	5.57	8.31	39.42	+/- 20 %	X

Narrative: Acceptable. O-Xylene out due to matrix interference.

LABORATORY SPIKES:

SAMPLE ID 2nd Analysis 990218	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACCEPTABLE	
					RANGE	YES NO
Benzene	25	<1.0	23.9	96	75 - 125 %	X
Toluene	25	<1.0	23.2	93	75 - 125 %	X
Ethylbenzene	25	<1.0	23.1	92	75 - 125 %	X
m & p - Xylene	50	<2.0	45.9	92	75 - 125 %	X
o - Xylene	25	<1.0	23.4	93	75 - 125 %	X
SAMPLE ID 2nd Analysis 990223	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACCEPTABLE	
					RANGE	YES NO
Benzene	25	376.9	374.1	-11	75 - 125 %	X
Toluene	25	17.75	37.2	78	75 - 125 %	X
Ethylbenzene	25	142.93	155.2	49	75 - 125 %	X
m & p - Xylene	50	599.51	562.8	-73	75 - 125 %	X
o - Xylene	25	5.57	37.6	128	75 - 125 %	X

Narrative: Acceptable. SPK 990223 out due to matrix interference and high levels.

LABORATORY AND FIELD BLANKS:

AUTO BLANK	SOURCE	PPB (none analyzed with set)	STATUS
Benzene	Boiled Water		ACCEPTABLE
Toluene	Boiled Water		ACCEPTABLE
Ethylbenzene	Boiled Water		ACCEPTABLE
Total Xylenes	Boiled Water		ACCEPTABLE
SOIL VIAL BLANK	SOURCE Lot MB1461	PPB (two analyzed with set)	STATUS
Benzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Toluene	Vial + Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Vial + Boiled Water	<3.0	ACCEPTABLE
CONTAMINATION CARRYOVER CHECK	SOURCE	PPB (two analyzed with this set)	STATUS
Benzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Toluene	Vial + Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Vial + Boiled Water	<3.0	ACCEPTABLE
TRIP: 5/11, 5/17 and 5/19/99	SOURCE	PPB (three analyzed with this set)	STATUS
Benzene	Boiled Water	<1.0	ACCEPTABLE
Toluene	Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

Reported By: JL

Approved By: John Falden

Date: 5/20/99



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	NA	990283
MTR CODE SITE NAME:	71816	Jennapah #1
SAMPLE DATE TIME (Hrs):	6/14/99	1203
PROJECT:	Sample 4 - 9th Quarter	
DATE OF BTEX EXT. ANAL.:	NA	6/21/99
TYPE DESCRIPTION:	MW-1	Water

Field Remarks: _____

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	9.6	PPB	5	D		
TOLUENE	110	PPB	5	D		
ETHYL BENZENE	70	PPB	5	D		
TOTAL XYLENES	520	PPB	5	D		
TOTAL BTEX	710	PPB				

--BTEX is by EPA Method 8021 Modified --

The Surrogate Recovery was at 93 % for this sample All QA/QC was acceptable.

DF = Dilution Factor Used

The "D" qualifier indicates that the analyte calculated is based on a secondary dilution factor.

Narrative:

This sample was analyzed by Pinnacle Laboratories, Albuquerque, NM.

Approved By: _____

Date: _____

6/24/99



Well Development and Purging Data

Site Name JENNAPAH #1

☐ Development
☒ Purging

Well Number MW-1
Meter Code 71816

Development Criteria

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

Methods of Development

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

Water Volume Calculation

Initial Depth of Well (feet) 34.50
Initial Depth to Water (feet) 24.54
Height of Water Column in Well (feet) 9.96
Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>6.6</u>	<u>19.8</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

- ☒ pH Meter
- ☐ DO Monitor
- ☒ Conductivity Meter
- ☒ Temperature Meter
- ☒ Other D.D. CHEMETS KIT

Water Disposal

KUTZ SEPARATOR

Water Removal Data

Date	Time	Development Method		Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gal)		Product Volume Removed (gallons)		pH	Conductivity $\mu\text{mho/cm}$	Dissolved Oxygen mg/L	Comments
		Pump	Bailer			Increment	Cumulative	Increment	Cumulative				
6-14-99	1110									3.90	1225		
6-14-99	1117					5.0	5.0			4.30	1482		
6-14-99	1125					5.0	10.0			5.52	1589		
6-14-99	1134					5.0	15.0			6.36	1589		
6-14-99	1141					5.0	20.0			6.53	1577		
6-14-99	1150					5.0	25.0			6.73	1589	1.5	

Comments THE WATER HAD A LIGHT HYDROGEN SULFIDE SMELL.

Developer's Signature Lennis Bird Date 6-14-99 Reviewer John Fadden Date 6/24/99

PINNACLE
LABORATORIES



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

Pinnacle Lab ID number 906067
June 22, 1999

EL PASO FIELD SERVICES
770 WEST NAVAJO
FARMINGTON, NM 87401

Project Name PIT MONITOR WELLS
Project Number (none)

Attention: JOHN LAMBDIN

On 6/18/99 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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

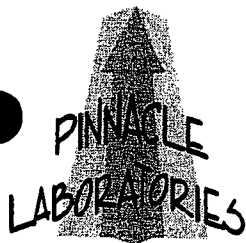
Kimberly D. McNeill
Project Manager

MR: mt

Enclosure

H. Mitchell Rubenstein, Ph. D.
General Manager

Reviewed + Accepted
J. Lander
6/24/99



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

CLIENT	: EL PASO FIELD SERVICES	PINNACLE ID	: 906067
PROJECT #	: (none)	DATE RECEIVED	: 6/18/99
PROJECT NAME	: PIT MONITOR WELLS	REPORT DATE	: 6/22/99

PIN	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	990282 - Mc# 75155, Ramente et al #1 -mw-1	AQUEOUS	6/14/99
02	990283 - Mc# 71816, Jernsupah #1, mw-1	AQUEOUS	6/14/99
03	990284 - Mc# 4087, Lat-K-31 Line Drip	AQUEOUS	6/14/99
04	990285 (TRIP BLANK) mw-1	AQUEOUS	6/14/99



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
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : PIT MONITOR WELLS

PINNACLE I.D.: 906067

RESULTS SUMMARY						
SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	990282	AQUEOUS	6/14/99	NA	6/21/99	2
02	990283	AQUEOUS	6/14/99	NA	6/21/99	5
03	990284	AQUEOUS	6/14/99	NA	6/21/99	1
PARAMETER		DET. LIMIT	UNITS	990282	990283	990284
BENZENE		0.5	UG/L	5.6	9.6	65
TOLUENE		0.5	UG/L	11	110	3.7
ETHYLBENZENE		0.5	UG/L	75	70	4.2
TOTAL XYLENES		0.5	UG/L	510	520	10

SURROGATE:
BROMOFLUOROBENZENE (%) 104 93 99
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A



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

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : PIT MONITOR WELLS

PINNACLE I.D.: 906067

SAMPLE		MATRIX	DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.		SAMPLED	EXTRACTED	ANALYZED	FACTOR
04	990285 (TRIP BLANK)	AQUEOUS	6/14/99	NA	6/21/99	1
PARAMETER		DET. LIMIT	UNITS	990285 (TRIP BLANK)		
BENZENE		0.5	UG/L	< 0.5		
TOLUENE		0.5	UG/L	< 0.5		
ETHYLBENZENE		0.5	UG/L	< 0.5		
TOTAL XYLENES		0.5	UG/L	< 0.5		

SURROGATE:

BROMOFLUOROBENZENE (%)

92

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

N/A



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

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 906067
BLANK I. D.	: 062199	DATE EXTRACTED	: N/A
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 6/21/99
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: PIT MONITOR WELLS		

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 (%) 93
SURROGATE LIMITS: (80 - 120)
CHEMIST NOTES:
N/A



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

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 062199
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : PIT MONITOR WELLS

PINNACLE I.D. : 906067
DATE EXTRACTED : N/A
DATE ANALYZED : 6/21/99
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	22.1	111	22.0	110	0	(80 - 120)	20
TOLUENE	<0.5	20.0	19.8	99	20.1	101	2	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	21.4	107	20.5	103	4	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	61.2	102	59.1	99	3	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

American Environmental Network (NM), Inc.

CHAIN OF CUSTODY

DATE: 5-16-99 PAGE: 1 OF 1

AE(NM) Accession #

900001

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: <u>5/16/99 10:35 AM</u>		COMPANY: <u>AE(NM) - NM</u>		ADDRESS: <u>700 WEST 14th Street</u>		PHONE: <u>(505) 577-3111</u>		FAX: <u>(505) 577-3111</u>		BILL TO: <u>AMERICAN ENVIRONMENTAL NETWORK (NM), INC.</u>		COMPANY: <u></u>		ADDRESS: <u></u>	
PROJECT INFORMATION		PRIOR AUTHORIZATIONS REQUIRED FOR RUSH PROJECTS		SAMPLE ID		DATE		TIME		MATRIX		LAB ID		ANALYSIS REQUEST	
PROJ. NO:		(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK	(NORMAL) ☒												Petroleum Hydrocarbons (418.1) TRPH
PROJ. NAME:		CERTIFICATION REQUIRED: ☐ NM ☐ SOWA ☐ OTHER													(MOD.8015) Diesel/Direct Inject
P.O. NO:		METHANOL PRESERVATION ☐													(M8015) Gas/Purge & Trap
SHIPPED VIA:		COMMENTS: FIXED FEE ☐													8021 (BTEX)/8015 (Gasoline)
SAMPLE RECEIPT															8021 (BTEX) ☐ MTBE ☐ TMB ☐ PCE
NO. CONTAINERS															8021 (TCL)
CUSTODY SEALS															8021 (EDX)
RECEIVED INTACT															8021 (HALO)
RECEIVED															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)
															Herbicides (615/8151)
															Base/Neutral/Acid Compounds GC/MS (625/8270)
															Polynuclear Aromatics (610/8310)
															General Chemistry:
															Priority Pollutant Metals (13)
															Target Analyte List Metals (23)
															RCRA Metals (8)
															RCRA Metals by TCLP (Method 1311)
															Metals:
															NUMBER OF CONTAINERS
RELINQUISHED BY:		RELINQUISHED BY:		Signature:		Time:		Signature:		Time:		Signature:		Time:	
Signature:		Signature:		Signature:		Signature:		Signature:		Signature:		Signature:		Signature:	
Printed Name:		Printed Name:		Printed Name:		Printed Name:		Printed Name:		Printed Name:		Printed Name:		Printed Name:	
Date:		Date:		Date:		Date:		Date:		Date:		Date:		Date:	
Company:		Company:		Company:		Company:		Company:		Company:		Company:		Company:	



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990386
MTR CODE SITE NAME:	71816	Jennapah #1
SAMPLE DATE TIME (Hrs):	09/20/1999	1215
PROJECT:	Sample 4 - 10th Quarter	
DATE OF BTEX EXT. ANAL.:	N/A	09/24/1999
TYPE DESCRIPTION:	MW-1	Water.

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	9.0	PPB	5	D		
TOLUENE	310	PPB	5	D		
ETHYL BENZENE	200	PPB	5	D		
TOTAL XYLENES	1900	PPB	5	D		
TOTAL BTEX	2419	PPB				

—BTEX is by EPA Method 8021—

The Surrogate Recovery was at 81.0 % for this sample All QA/QC was acceptable.

DF = Dilution Factor Used

The "D" qualifier indicates that the analyte calculated is based on a secondary dilution factor.

Narrative:

Sample Analyzed by Pinnacle Laboratories, Albuquerque, NM.

Approved By:

John Linder

Date:

10-12-99



Well Development and Purging Data

1# HADAMC
TENAPAH

☐	Development
☒	Purging

Well Number MW-1

Meter Code 71816

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

Initial Depth of Well (feet) 34.50
Initial Depth to Water (feet) 26.05
Height of Water Column in Well (feet) 8.45

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

☒	pH Meter
☐	DO Monitor
☒	Conductivity Meter
☒	Temperature Meter
☒	Other <u>D.O. CH</u>

Water Disposal

KUTZ SEPARATOR

[illegible]

Comments THE WELL HAD 0.06' OF FREE FLOATING PRODUCT.

Developer's Signature Dennis Bird

Date 9-20-99

Reviewer

John Fadden

Date 10-11-99

PINNACLE
LABORATORIES

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

Pinnacle Lab ID number 909066
September 30, 1999

EL PASO FIELD SERVICES
770 WEST NAVAJO
FARMINGTON, NM 87401



Project Name PIT MONITOR WELLS
Project Number (none)

Attention: JOHN LAMBDIN

On 9/22/99 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.

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

Reviewed & Approved

10-11-99

J. Lambdin

PINNACLE
LABORATORIES

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

CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : PIT MONITOR WELLS

PINNACLE ID : 909066
DATE RECEIVED : 9/22/99
REPORT DATE : 9/30/99

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	990385 Ramenta Et Al #1 - mc# 75165	AQUEOUS	9/20/99
02	990386 Jennapah #1 - mc# 71816	AQUEOUS	9/20/99
03	990387 Hammond #41 A - mc# 89894	AQUEOUS	9/20/99
04	TRIP BLANK	AQUEOUS	9/20/99

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 : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : PIT MONITOR WELLS

PINNACLE I.D.: 909066

SAMPLE		MATRIX	DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.		SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	990385	AQUEOUS	9/20/99	NA	9/24/99	20
02	990386	AQUEOUS	9/20/99	NA	9/24/99	5
03	990387	AQUEOUS	9/20/99	NA	9/24/99	5

PARAMETER	DET. LIMIT	UNITS	990385	990386	990387
BENZENE	0.5	UG/L	66	9.0	460
TOLUENE	0.5	UG/L	< 10	310	16
ETHYLBENZENE	0.5	UG/L	74	200	78
TOTAL XYLENES	0.5	UG/L	400	1900	440

SURROGATE:

TRIFLUOROTOLUENE (%)

98

81

92

SURROGATE LIMITS (69 - 117)

CHEMIST NOTES:

N/A

PINNACLE
LABORATORIES

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

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : PIT MONITOR WELLS

PINNACLE I.D.: 909066

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	TRIP BLANK	AQUEOUS	9/20/99	NA	9/24/99	1
PARAMETER	DET. LIMIT	UNITS	TRIP BLANK			
BENZENE	0.5	UG/L	< 0.5			
TOLUENE	0.5	UG/L	< 0.5			
ETHYLBENZENE	0.5	UG/L	< 0.5			
TOTAL XYLENES	0.5	UG/L	< 0.5			

SURROGATE:

TRIFLUOROTOLUENE (%)

104

SURROGATE LIMITS (69 - 117)

CHEMIST NOTES:

N/A



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.	: 909066
BLANK I. D.	: 092499	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 9/24/99
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: PIT MONITOR WELLS		

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

SURROGATE:		
TRIFLUOROTOLUENE (%)		103
SURROGATE LIMITS	(69 - 117)	

N/A



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GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 909066
BLANK I. D.	: 092999	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 9/29/99
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: PIT MONITOR WELLS		

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

SURROGATE:
TRIFLUOROTOLUENE (%) 116
SURROGATE LIMITS (69 - 117)

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	PINNACLE I.D.	: 909066
MSMSD #	: 000909	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 9/24/99
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: PIT MONITOR WELLS	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	10.0	11.4	114	11.8	118	3	(80 - 120)	20
TOLUENE	<0.5	10.0	11.0	110	11.1	111	1	(80 - 120)	20
ETHYLBENZENE	<0.5	10.0	10.1	101	10.1	101	0	(80 - 120)	20
TOTAL XYLENES	<0.5	30.0	32.4	108	31.9	106	2	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

SHADED AREAS ARE FOR LAB USE ONLY

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: JOHN LAMBORN		DATE		TIME		MATRIX		LAB ID	
COMPANY:	EL PASO FIELD SERVICES	990385	9-20-99	1030					
ADDRESS:	770 WEST NAVARRO	990386	9-20-99	1215					
PHONE:	FARMINGTON, NM 87401	990387	9-20-99	1445					
FAX:	(505) 599-2144	TRIP BLANK	9-20-99						
BILL TO:	(505) 599-2267								
COMPANY:	STATE AS ABOVE								
ADDRESS:									

PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS		RECEIVED BY		RECEIVED BY	
PROJ. NO.:		(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK	(NORMAL) ☒	Signature:	Time:	Signature:	Time:
PROJ. NAME:	PIT MONITOR WELLS	CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER		Printed Name:	Date:	Printed Name:	Date:
P.O. NO.:		METHANOL PRESERVATION ☐		Company:		Company:	
SHIPPED VIA:	FED-X	COMMENTS: FIXED FEE ☐		EL PASO FIELD SERVICES			

SAMPLE RECEIPT		RECEIVED BY (LAB)	
NO. CONTAINERS	7	Signature:	Time:
CUSTOMER SEALS	YES (NM)	Printed Name:	Date:
RECEIVED INTACT	YES	Company:	
BLUE (CEC)	YES		

Well Development and Purging Data

Site Name VENNAOAH #1

Development ☐ Purging ☒

Well Number 22W-1

Meter Code 71816

Development Criteria

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

Methods of Development

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

☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 34.50
Initial Depth to Water (feet) 26.13
Height of Water Column in Well (feet) 8.37

Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		5.5	16.6
Gravel Pack			
Drilling Fluids			
Total			

Instruments

- | | |
|-------------------------------------|--------------------|
| ☒ | pH Meter |
| ☐ | DO Monitor |
| ☒ | Conductivity Meter |
| ☒ | Temperature Meter |
| ☒ | Other <u>2.0.0</u> |

Water Disposal

K072 56PAPAP

Water Removal Data

[illegible]

Comments THE WATER HAD A LIGHT HYDROGEN SULFIDE SMELL.

Developer's Signature Dennis Bird

Date 12-13-99 Reviewer _____

John Fuller

Date 12/29/95

PINNACLE
LABORATORIES

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

Pinnacle Lab ID number 912042
December 21, 1999

EL PASO FIELD SERVICES
770 WEST NAVAJO
FARMINGTON, NM 87401

Project Name PIT MONITOR WELLS
Project Number (none)

Attention: JOHN LAMBDIN

On 12/14/99 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



MAC# 75155 - Ramona ET AL #1
MAC# 71816 - Jannah #1

Reviewed & Approved
J. Jander
12/29/99

PINNACLE
LABORATORIES

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

CLIENT : EL PASO FIELD SERVICES PINNACLE ID : 912042
PROJECT # : (none) DATE RECEIVED : 12/14/99
PROJECT NAME : PIT MONITOR WELLS REPORT DATE : 12/21/99

PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	990474 - mcd 75155, Ramona ET AL #1 - MW1	AQUEOUS	12/13/99
02	990475 - mcd 71816, Jannapah #1 - MW-1	AQUEOUS	12/13/99
03	TRIP BLANK	AQUEOUS	12/13/99

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 : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : PIT MONITOR WELLS

PINNACLE I.D.: 912042

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	990474	AQUEOUS	12/13/99	NA	12/17/99	5
02	990475	AQUEOUS	12/13/99	NA	12/17/99	5
03	TRIP BLANK	AQUEOUS	12/13/99	NA	12/17/99	1
PARAMETER		DET. LIMIT	UNITS	990474	990475	TRIP BLANK
BENZENE		0.5	UG/L	< 2.5	< 2.5	< 0.5
TOLUENE		0.5	UG/L	9.0	17	< 0.5
ETHYLBENZENE		0.5	UG/L	31	73	< 0.5
TOTAL XYLENES		0.5	UG/L	190	550	< 0.5

SURROGATE:

BROMOFLUOROBENZENE (%)

97

96

98

SURROGATE LIMITS (80 - 120)

mc# 75155
Ramenta ET AL #1
MW-1
mc# 71816
Jennings #1
MW-1

CHEMIST NOTES:

N/A



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.	: 912042
BLANK I. D.	: 121799	DATE EXTRACTED	: N/A
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 12/17/99
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: PIT MONITOR WELLS		

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 (%) 105
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 # : 121799
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : PIT MONITOR WELLS

PINNACLE I.D. : 912042
DATE EXTRACTED : N/A
DATE ANALYZED : 12/17/99
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	22.2	111	22.1	111	0	(80 - 120)	20
TOLUENE	<0.5	20.0	20.9	105	20.9	104	0	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	21.8	109	21.7	108	1	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	65.8	110	64.7	108	2	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

Acceptable
12/29/99
J. Sanchez

Pinnacle Laboratories Inc.

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY
DATE: 12-13-99 PAGE: 1 OF 1

PL Accession #

912042

PLEASE FILL THIS FORM IN COMPLETELY.

SHADED AREAS ARE FOR LAB USE ONLY.

PROJECT INFORMATION		PRIORITY AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS		RELINQUISHED BY		RELINQUISHED BY	
PROJ. NO.	PROJ. NAME	(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK	(NORMAL) ☒	Signature:	Time:	Signature:	Time:
990474	PT MOUNTAIN WELLS	12-13-99	11/21	Walter	01		
990475		12-13-99	1305	WATER	02		
TRIP BROWN		12-13-99		WATER	03		
SHIPPED VIA: FED-X		COMMENTS: FIXED FEE ☐		RECEIVED BY: (LAB)		RECEIVED BY: (LAB)	
NO. CONTAINERS: 5				Signature:		Signature:	
CUSTODY SEALS: Y/N (NA)				Time:		Time:	
RECEIVED INTACT: YES				Date:		Date:	
BLUE: YES				Date:		Date:	

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	ANALYSIS REQUEST
990474	12-13-99	11/21	WATER	01	Petroleum Hydrocarbons (418.1) TRPH
990475	12-13-99	1305	WATER	02	(MOD.8015) Diesel/Direct Inject
TRIP BROWN	12-13-99		WATER	03	(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

11/10/98 P.L. Inc., Pinnacle Laboratories, Inc. • 2709 D Pan American Freeway, NE • Albuquerque, New Mexico 87107 • (505) 344-3777 • Fax (505) 344-4411 • E-mail: P.L. LAB@P.L. LAB.NET ATTN: P.L. LAB

ATTACHMENT 2
MONITOR WELL INSTALLATION

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

4000 Monroe Road

Farmington, New Mexico 87401

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

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

Project Name _____
Project Number _____ Phase _____
Project Location Jennapah

Well Logged By P. Cheney
Personnel On-Site K. Padilla, D. Padilla
Contractors On-Site _____
Client Personnel On-Site _____

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

Elevation _____
Borehole Location _____
GWL Depth 22.5'
Logged By P. Cheney
Drilled By K. Padilla
Date/Time Started 5/4/99
Date/Time Completed 5/4/99 - temp. completion

Depth (Feet)	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU			Drilling Conditions & Blow Counts
						BZ	BH	SS	S/HS = Sample Headspace
0			Surface: reddish yellow medium grained sand, unconsolidated			0			
5			5' (from cuttings) med. grained reddish brown sand, unconsolidated, damp						
10	10-12	20"	med. to coarse grained sand, reddish brown w/pea gravel			0			BC = 14 S/HS = 0.1
15	15-17		reddish brown sandy clay w/ limonite staining. Moist, low plasticity, soft			0			BC = 14 S/HS = 0.6
20	20-22		reddish brown coarse sand, unconsolidated			0			BC = 24 S/HS = 0.3
25	25-27		yellowish brown coarse sand, unconsolidated, wet at 25' water level rose to 22.5' after five minutes			0			BC = 15 S/HS = 0.7
30			TD = 30'						
35									
40									

Comments: Saturated at 25'. After ~ 5 minutes, WL rose to 22.5'. Set temp. well with 15' screen, 15' riser. Sand packs to 13'. Open BH to surface. Bailed 10 gallons from well.

Geologist Signature Paul Cheney

MONITORING WELL INSTALLATION RECORD

Phillip Environmental Services Corp.
 1000 Monroe Road
 Farmington, New Mexico 87401
 5061 326-2262 FAX (506) 326-2388

Borehole # 2
 Well # MWZ
 Page 1 of 1

Project Name EPFS GW Inv.

Project Number 20990 Phase 1000

Project Location Jennyfarr #1

On-Site Geologist P. Cheney

Personnel On-Site K. Paulilla, A. Paulilla

Contractors On-Site -

Client Personnel On-Site -

Elevation -

Well Location -

GWL Depth 22

Installed By K. Paulilla

Date/Time Started 5/4/99

Date/Time Completed 5/4/99

Depths in Reference to Ground Surface				
Item	Material	Depth		
Top of Protective Casing		N.A.		Top of Protective Casing <u>-</u>
Bottom of Protective Casing		N.A.		Top of Riser <u>+1</u>
Top of Permanent Borehole Casing		N.A.		Ground Surface <u>-</u>
Bottom of Permanent Borehole Casing		N.A.		
Top of Concrete		N.A.		
Bottom of Concrete		N.A.		
Top of Grout		N.A.		
Bottom of Grout		N.A.		
Top of Well Riser		+1		
Bottom of Well Riser		15		
Top of Well Screen		15		Top of Seal <u>N.A.</u>
Bottom of Well Screen		30		
Top of Peltonite Seal		N.A.		Top of Gravel Pack <u>13</u>
Bottom of Peltonite Seal		N.A.		Top of Screen <u>15</u>
Top of Gravel Pack		13		
Bottom of Gravel Pack		30		
Top of Natural Cave-In		N.A.		
Bottom of Natural Cave-In		N.A.		
Top of Groundwater		22		Bottom of Screen <u>30</u>
Total Depth of Borehole		30		Bottom of Borehole <u>30</u>

Comments: Temporary Completion

Geologist Signature

Paul Cheney

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

4000 Monroe Road

Farmington, New Mexico 87401

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

Borehole #

3

Well #

MW-3

Page

of

Project Name

EPFS

Project Number

Phase

Project Location

Jenhepah #1

Well Logged By

P. Cheney

Personnel On-Site

K. Padilla, D. Padilla

Contractors On-Site

Client Personnel On-Site

Drilling Method

4 1/2" HSA

Air Monitoring Method

PIV

Elevation

Borehole Location

GWL Depth

Logged By

P. Cheney

Drilled By

K. Padilla

Date/Time Started

5/4/99

Date/Time Completed

5/4/99

Depth (Feet)	Sample Interval	Sample Type & Recovery (Inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU			Drilling Conditions & Blow Counts
						BZ	BH	SS	
0			surface: reddish yellow medium grained sand						
5			5' (from cuttings) reddish brown sand, uncon solidated						
10	1-10	2 1/2"	yellowish brown med. grained sand, uncon solidated			0	0		BC = 22 S/Hs = 5.4
15	2-15	18"	yellowish brown medium grained sand			0	0		BC = 20 S/Hs = 3.2
20	3-20	18"	yellowish brown coarse grained sand, $\approx$ 5% pea-gravel			0	0		BC = 21 S/Hs = 1
25	25-27	2 1/2"	very coarse grained yellowish brown sand. Saturated at 25' several 1" + 1 1/2" gravel rocks						
30			TD = 30'						
35									
40									

Comments:

Saturated at 25' WL Rose to $\approx$ 23' after 5 minutes. Set run well with 15' screen, 15' riser, sand pack to 13' open bit to surface. Used 5 gallon bucket as a well protector

Geologist Signature

Paul Cheney

MONITORING WELL INSTALLATION RECORD

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

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

Project Name EPFS GW Inv.

Project Number 20990 Phase 1000

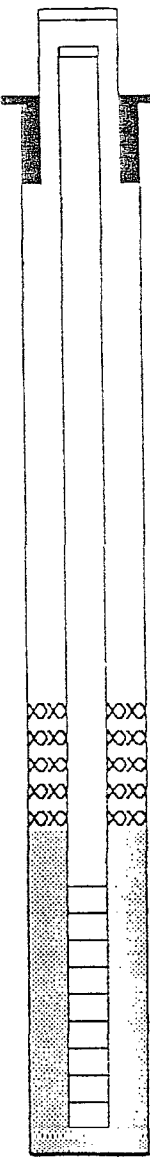
Project Location Jennepah #1

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

Elevation _____
 Well Location _____
 GWL Depth 23
 Installed By K. Padilla

Date/Time Started 5/4/99
 Date/Time Completed 5/4/99

Depths in Reference to Ground Surface		
Item	Material	Depth
Top of Protective Casing		N.A.
Bottom of Protective Casing		N.A.
Top of Permanent Borehole Casing		N.A.
Bottom of Permanent Borehole Casing		N.A.
Top of Concrete		N.A.
Bottom of Concrete		N.A.
Top of Grout		N.A.
Bottom of Grout		N.A.
Top of Well Riser		+1
Bottom of Well Riser		15
Top of Well Screen		15
Bottom of Well Screen		30
Top of Peltonite Seal		N.A.
Bottom of Peltonite Seal		N.A.
Top of Gravel Pack		13
Bottom of Gravel Pack		30
Top of Natural Cave-In		N.A.
Bottom of Natural Cave-In		N.A.
Top of Groundwater		23
Total Depth of Borehole		30



Top of Protective Casing N.A.
 Top of Riser +1
 Ground Surface _____

Top of Seal N.A.
 Top of Gravel Pack 13
 Top of Screen 15
 Bottom of Screen 30
 Bottom of Borehole 30

Comments: Temporary Completion

Geologist Signature

Paul Cheney