

3R - 190

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' followed by a stylized flourish.

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

HAMNER #9
Meter/Line ID - 97213

SITE DETAILS

Legals - Twn: 29N Rng: 9W Sec: 20 Unit: A
NMOCD Hazard Ranking: 30 Land Type: FEDERAL
Operator: AMOCO PRODUCTION COMPANY

PREVIOUS ACTIVITIES

Site Assessment: May-94 Excavation: May-94 (70 cy) Soil Boring: Aug-95
Monitor Well: Aug-95 Geoprobe: Oct-96 Quarterly Sampling Initiated: Nov-96
Additional Monitor Wells: Sep-99

1999 ACTIVITIES

Quarterly Groundwater Monitoring - Quarterly groundwater samples were collected through 1999.

Monitor Well Installation - The groundwater gradient was estimated based on topography and additional wells were drilled.

SUMMARY TABLES

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

SITE MAP

A site map and groundwater gradient map is presented as Figure 1.

GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS

The September 24, 1999, geologic logs and well completion diagrams for MW-2 and MW-3 are included as Attachment 2.

DISPOSITION OF GENERATED WASTES

There were no wastes generated at this site in 1999.

ISOCONCENTRATION MAPS

BTEX parameters are at or below regulatory standards and no maps were generated.

CONCLUSIONS

Analytical results of groundwater samples collected from MW-1 show levels of benzene to be above NMWQCC Standards for all four sampling events in 1999.

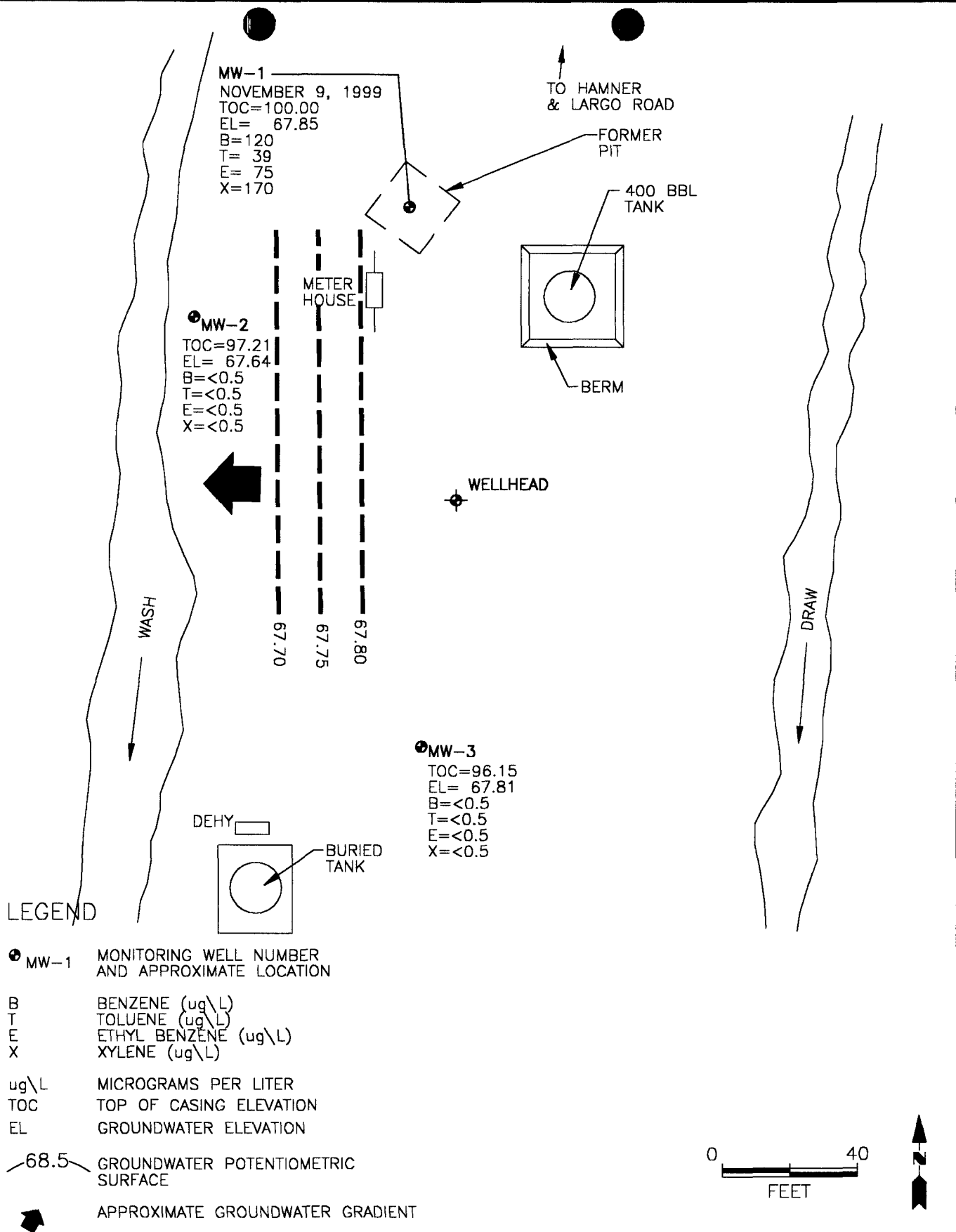
Recently installed monitor wells MW-2 and MW-3 are below detection limits for all BTEX constituents. Groundwater gradient is to the west at this site (Figure 1).

EPFS GROUNDWATER PITS 1999 ANNUAL GROUNDWATER REPORT

Pertinent data from past groundwater reports include the following: Two Geoprobe groundwater samples collected downgradient of MW-1 show BTEX analysis below standards. One Geoprobe groundwater sample collected downgradient of MW-1 show benzene and xylene above standards. Although benzene is still above the standards, natural attenuation has reduced benzene levels by more than 20 percent since monitoring began at 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 on an annual basis.
- Following OCD approval for closure, MW-1, MW-2, and MW-3 will be abandoned using OCD approved abandonment procedures.



COL 628000188-01 	TITLE: HAMNER #9 97213 OCTOBER 15, 1999	DWN: CJG	DES.: CI	PROJECT NO.: 62800018 EPFS GW PITS
		CHKD: CI	APPD:	
		DATE: 02/24/00	REV.: 0	FIGURE 1

EPFS Groundwater Pits
1999 Annual Groundwater Report

TABLE 1

Sample #	Meter/ Line #	Site Name	Sample Date	MW #	Project	Benzene (PPB)	Toluene (PPB)	Ethyl Benzene (PPB)	Total Xylenes (PPB)	Total BTEX
990022	97213	Hamner #9	02/02/99	1	Sample 4 - 10th Quarter	= 153	= 64.80	= 89.7	= 217	= 525
990246	97213	Hamner #9	05/19/99	1	Sample 4 - 11th Quarter	= 137	= 89.40	= 67.3	= 141	= 435
990339	97213	Hamner #9	08/04/99	1	Sample 4 - 12th Quarter	= 105	= 32.60	= 63.0	= 113	= 314
990442	97213	Hamner #9	11/09/99	1	Sample 4 - 13th Quarter	= 120	= 39.00	= 75.0	= 170	= 404
990420	97213	Hamner #9	10/15/99	2	Sample 4 - 1st Quarter	< 0.5	< 0.5	< 0.5	< 0.5	< 2
990421	97213	Hamner #9	10/15/99	3	Sample 4 - 1st Quarter	< 0.5	< 0.5	< 0.5	< 0.5	< 2

ATTACHMENT 1
1999 GROUNDWATER ANALYTICAL

CHAIN OF CUSTODY RECORD

[illegible]



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990022
MTR CODE SITE NAME:	97213	Hamner #9
SAMPLE DATE TIME (Hrs):	2/2/99	1223
PROJECT:	Sample 4 10th Quarter	
ATE OF BTEX EXT. ANAL.:	NA	2/3/99
TYPE DESCRIPTION:	MW-1	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	153	PPB	2	D		
TOLUENE	64.8	PPB	2	D		
ETHYL BENZENE	89.7	PPB	2	D		
TOTAL XYLENES	217	PPB	2	D		
TOTAL BTEX	525	PPB				

--BTEX is by EPA Method 8020 --

The Surrogate Recovery was at 87.7 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:

Approved By:

John Swick

Date:

2-16-99

990022BTEXMonitorWel, 2/16/99



EL PASO FIELD SERVICES

QUALITY CONTROL REPORT
EPA METHOD 8020 - BTEX
Samples: 990021 to 990025

QA/QC for 02/03/99 Sample Set

LABORATORY CALIBRATION CHECKS / LABORATORY CONTROL SAMPLES:

SAMPLE NUMBER	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE	
					YES	NO
ICV LA-52589 50 PPB					RANGE	
Benzene	Standard	50.0	46.4	92.7	75 - 125 %	X
Toluene	Standard	50.0	46.9	93.8	75 - 125 %	X
Ethylbenzene	Standard	50.0	47.7	95.4	75 - 125 %	X
m & p - Xylene	Standard	100	93.9	93.9	75 - 125 %	X
o - Xylene	Standard	50.0	48.1	96.2	75 - 125 %	X
SAMPLE NUMBER	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE	
					YES	NO
LCS LA-45476 25 PPB					RANGE	
Benzene	Standard	25.0	29.8	119	39 - 150	X
Toluene	Standard	25.0	29.8	119	46 - 148	X
Ethylbenzene	Standard	25.0	29.6	118	32 - 160	X
m & p - Xylene	Standard	50.0	61.3	123	Not Given	X
o - Xylene	Standard	25.0	31.2	125	Not Given	X

Narrative: Acceptable.

LABORATORY DUPLICATES:

SAMPLE ID	TYPE	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	ACCEPTABLE	
					YES	NO
990024					RANGE	
Benzene	Matrix Duplicate	7.9	8.4	5.96	+/- 20 %	X
Toluene	Matrix Duplicate	21.0	22.3	6.07	+/- 20 %	X
Ethylbenzene	Matrix Duplicate	389	413	5.91	+/- 20 %	X
m & p - Xylene	Matrix Duplicate	3422	3519	2.81	+/- 20 %	X
o - Xylene	Matrix Duplicate	1175	1213	3.19	+/- 20 %	X

Narrative: Acceptable.

LABORATORY SPIKES:

SAMPLE ID	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACCEPTABLE	
					YES	NO
2nd Analysis 990024					RANGE	
Benzene	25	7.9	32.8	100	75 - 125 %	X
Toluene	25	21.0	46.8	104	75 - 125 %	X
Ethylbenzene	25	389	437	192	75 - 125 %	X
m & p - Xylene	50	3422	3530	216	75 - 125 %	X
o - Xylene	25	1175	1235	241	75 - 125 %	X

Narrative: Acceptable. Sample result for EB, MPX and OX exceeded spike by > 5X.

AUTO BLANK	SOURCE	PPB (1 analyzed with 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.

SOIL VIAL BLANK	SOURCE Lot MB1461	PPB (one 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

Narrative: Acceptable.

CONTAMINATION CARRYOVER CHECK	SOURCE	PPB (one 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	3.2	ACCEPTABLE

Narrative: Acceptable.

TRIP BLANK 020299	SOURCE	PPB (one 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

Narrative: Acceptable.

Reported By: JAL

Approved By: John Sander

Date: 2-4-99

Well Development and Purging Data

Site Name HAMNER #9

Development	☐
Purging	☒

Well Number

Meter Code 97213

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) 40.91

Initial Depth to Water (feet) 32.43

Height of Water Column in Well (feet) 8.49

4
Diameter (inches): Well
Gravel Pack

Item	Water Volume In Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		5.6	16.8
Gravel Pack			
Drilling Fluids			
Total			

Instruments

- | | |
|-------------------------------------|---------------------|
| ☒ | pH Meter |
| ☐ | DO Monitor |
| ☒ | Conductivity Meter |
| ☒ | Temperature Meter |
| ☒ | Other <i>D.O. C</i> |

Water Disposal

KUTZ SEPARATOR

Water Removal Data

[illegible]

Comments THE WELL BAILED ONLY 6.0 GALLONS, THE WATER HAD A LIGHT HYDROGEN SULFIDE SMELL.

Developer's Signature Dennis Bred

Date 2-2-99

Reviewer

John F. Lee

Date 2-4-99

CHAIN OF CUSTODY RECORD

[illegible]



FIELD SERVICES LABORATORY
ANALYTICAL REPORT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	NA	990246
MTR CODE SITE NAME:	97213	Hamner #9
SAMPLE DATE TIME (Hrs):	5/19/99	1500
PROJECT:	Sample 4 - 11th Quarter	
DATE OF BTEX EXT. ANAL.:	NA	5/21/99
TYPE DESCRIPTION:	MW-1	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	137	PPB				
TOLUENE	89.4	PPB				
ETHYL BENZENE	67.3	PPB				
TOTAL XYLENES	141	PPB				
TOTAL BTEX	435	PPB				

—BTEX is by EPA Method 8021 —

The Surrogate Recovery was at 101.1 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By:

John Foubler

Date:

5/24/99

Well Development and Purging Data

Site Name **HAMNER #9**

☐	Development
☒	Purging

Well Number M4-1

Meter Code 97213

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 |

Water Volume Calculation

Initial Depth of Well (feet) 40.9
Initial Depth to Water (feet) 33.28
Height of Water Column in Well (feet) 8.63

Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		5.7	17.1
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Temperature Meter
Other *D.O. CHEMETS KIT*

Water Disposal

K072 SEPANA TOP

Water Removal Data

[illegible]

Comments THE WELL BAVED APPROX 6.0 GALLONS. THE WATER HAD A LIGHT HYDROGEN SULFIDE SMELL.

Developer's Signature
Ennio Bied

Date 5-19-99 Reviewer John Lath

Date 5/24/99

EL PASO FIELD SERVICES

QUALITY CONTROL REPORT

EPA METHOD 8020 - BTEX

Samples: 990245 to 990247

QA/QC for 05/21/99 Sample Set

LABORATORY CALIBRATION CHECKS / LABORATORY CONTROL SAMPLES:

SAMPLE NUMBER	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE	
					YES	NO
ICV LA-52589 50 PPB					RANGE	
Benzene	Standard	50.0	47.7	95.5	75 - 125 %	X
Toluene	Standard	50.0	47.4	94.7	75 - 125 %	X
Ethylbenzene	Standard	50.0	47.7	95.3	75 - 125 %	X
m & p - Xylene	Standard	100	97.2	97.2	75 - 125 %	X
o - Xylene	Standard	50.0	48.3	96.6	75 - 125 %	X
SAMPLE NUMBER	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE	
					YES	NO
LCS LA-45476 25 PPB					RANGE	
Benzene	Standard	25.0	23.5	94.0	39 - 150	X
Toluene	Standard	25.0	23.4	93.7	46 - 148	X
Ethylbenzene	Standard	25.0	23.7	95.0	32 - 160	X
m & p - Xylene	Standard	50.0	47.9	95.9	Not Given	X
o - Xylene	Standard	25.0	24.0	96.1	Not Given	X

Narrative: Acceptable.

LABORATORY DUPLICATES:

SAMPLE ID	TYPE	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	ACCEPTABLE	
					YES	NO
990246					RANGE	
Benzene	Matrix Duplicate	136.7	141.5	3.47	+/- 20 %	X
Toluene	Matrix Duplicate	89.42	92.67	3.57	+/- 20 %	X
Ethylbenzene	Matrix Duplicate	67.25	69.68	3.54	+/- 20 %	X
m & p - Xylene	Matrix Duplicate	122.11	125.06	2.38	+/- 20 %	X
o - Xylene	Matrix Duplicate	18.46	18.57	0.60	+/- 20 %	X

Narrative: Acceptable.

LABORATORY SPIKES:

SAMPLE ID	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACCEPTABLE	
					YES	NO
2nd Analysis 990246					RANGE	
Benzene	50	68.4	110.5	84	75 - 125 %	X
Toluene	50	44.7	87.9	86	75 - 125 %	X
Ethylbenzene	50	33.6	82.1	97	75 - 125 %	X
m & p - Xylene	100	61.1	160.6	100	75 - 125 %	X
o - Xylene	50	9.23	54.1	90	75 - 125 %	X

Narrative: Acceptable.

LABORATORY AND FIELD BLANKS:

AUTO BLANK	SOURCE	PPB (one analyzed with 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.

SOIL VIAL BLANK	SOURCE Lot MB1461	PPB (one 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

Narrative: Acceptable.

CONTAMINATION CARRYOVER CHECK	SOURCE	PPB (one 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

Narrative: Acceptable.

TRIP BLK 05/19/99	SOURCE	PPB (one 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

Narrative: Acceptable.

Reported By: J.F.

Approved By: J. L. Lida

Date: 5/24/99



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990339
MTR CODE SITE NAME:	97213	Hamner #9
SAMPLE DATE TIME (Hrs):	08/04/1999	1442
PROJECT:	Sample 4 12th Quarter	
DATE OF BTEX EXT. ANAL.:	NA	08/10/1999
TYPE DESCRIPTION:	MW-1	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	105	PPB	2	D		
TOLUENE	32.6	PPB	2	D		
ETHYL BENZENE	63.0	PPB	2	D		
TOTAL XYLENES	113	PPB	2	D		
TOTAL BTEX	314	PPB				

—BTEX is by EPA Method 8020—

The Surrogate Recovery was at 104.5 % 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:

Approved By:

John Fawcett

Date:

9-1-99



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990340
MTR CODE SITE NAME:	97213	Hamner #9
SAMPLE DATE TIME (Hrs):	08/04/1999	1442
PROJECT:	Sample 4 12th Quarter	
DATE OF BTEX EXT. ANAL:	NA	08/10/1999
TYPE DESCRIPTION:	MW-1 Field Duplicate	Water

Field Remarks: Field Duplicate

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	103	PPB	2	D		
TOLUENE	32.6	PPB	2	D		
ETHYL BENZENE	61.6	PPB	2	D		
TOTAL XYLENES	113	PPB	2	D		
TOTAL BTEX	310	PPB				

—BTEX is by EPA Method 8020—

The Surrogate Recovery was at 101.0 % for this sample All QA/QC was acceptable.

DF = Dilution Factor Used

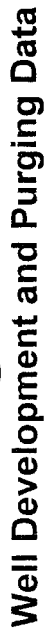
The "D" qualifier indicates that the analyte calculated is based on a secondary dilution factor.

Narrative:

Approved By: John L. Linder Date: 9-1-99

CHAIN OF CUSTODY RECORD

[illegible]



Well Development and Purging Data

☐	Development
☒	Purging

Well Number 9W-1

Meter Code 97213

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 |

Water Volume Calculation

Initial Depth of Well (feet) 40.91
Initial Depth to Water (feet) 32.28
Height of Water Column in Well (feet) 8.63

4
Diameter (inches): Well Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		5.7	17.1
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Water Disposal

KUTZ SEPARATOR

Water Removal Data

[illegible]

Comments

THE WELL BAKED ONE 6.0 GALLONS. THE WATER HAD A LIGHT HYDROGEN SULFIDE SMELL.

Developer's Signature

Rennia Bird

Date 8-4-99

Reviewer John Fendrich

Date 8/18/99



QUALITY CONTROL REPORT

EPA METHOD 8020 - BTEX

Samples: 990334 to 990340 and 990349 to 990354

QA/QC for 08/10/99 Sample Set

LABORATORY CALIBRATION CHECKS / LABORATORY CONTROL SAMPLES:

SAMPLE NUMBER	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE	
					YES	NO
ICV LA-67475 50 PPB					RANGE	
Benzene	Standard	50.0	46.5	93.0	75 - 125 %	X
Toluene	Standard	50.0	47.5	94.9	75 - 125 %	X
Ethylbenzene	Standard	50.0	47.1	94.1	75 - 125 %	X
m & p - Xylene	Standard	100	95.8	95.8	75 - 125 %	X
o - Xylene	Standard	50.0	47.8	95.6	75 - 125 %	X
LCS LA-53560 25 PPB					RANGE	
Benzene	Standard	25.0	21.3	85	39 - 150	X
Toluene	Standard	25.0	22.5	90	46 - 148	X
Ethylbenzene	Standard	25.0	23.0	92	32 - 160	X
m & p - Xylene	Standard	50.0	46.3	93	Not Given	X
o - Xylene	Standard	25.0	23.0	92	Not Given	X

Narrative: Acceptable.

LABORATORY DUPLICATES:

SAMPLE ID	TYPE	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	ACCEPTABLE	
					YES	NO
990349					RANGE	
Benzene	Matrix Duplicate	<1.0	<2.5	NA	+/- 20 %	X
Toluene	Matrix Duplicate	2.66	<2.5	NA	+/- 20 %	X
Ethylbenzene	Matrix Duplicate	72.0	63.5	12.45	+/- 20 %	X
m & p - Xylene	Matrix Duplicate	249	224.4	10.37	+/- 20 %	X
o - Xylene	Matrix Duplicate	55.0	49.3	10.84	+/- 20 %	X

Narrative: Dilution Error on Benzene and Toluene. Acceptable.

LABORATORY SPIKES:

SAMPLE ID	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACCEPTABLE	
					YES	NO
2nd Analysis 990349					RANGE	
Benzene	25	<1.0	20.4	82	75 - 125 %	X
Toluene	25	2.66	23.4	83	75 - 125 %	X
Ethylbenzene	25	72.0	95.6	94	75 - 125 %	X
m & p - Xylene	50	249	291.2	85	75 - 125 %	X
o - Xylene	25	55.0	76.0	84	75 - 125 %	X

Narrative: Acceptable.

SAMPLE ID 990334	TYPE	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	ACCEPTABLE	
					YES	NO
RANGE						
Benzene	Matrix Duplicate	<1.0	<1.0	NA	+/- 20 %	X
Toluene	Matrix Duplicate	<1.0	<1.0	NA	+/- 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

Narrative: Acceptable.

LABORATORY SPIKES:

SAMPLE ID 2nd Analysis 990334	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACCEPTABLE	
					YES	NO
					RANGE	
Benzene	25	<1.0	22.1	88	75 - 125 %	X
Toluene	25	<1.0	22.4	89	75 - 125 %	X
Ethylbenzene	25	<1.0	21.7	87	75 - 125 %	X
m & p - Xylene	50	<2.0	45.1	90	75 - 125 %	X
o - Xylene	25	<1.0	22.5	90	75 - 125 %	X

Narrative: Acceptable.

AUTO BLANK	SOURCE	PPB (1 analyzed with 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.

SOIL VIAL BLANK	SOURCE Lot MB1461	PPB (one 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

Narrative: Acceptable.

CONTAMINATION CARRYOVER CHECK	SOURCE	PPB (one 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

Narrative: Acceptable.

TRIP BLANK(s) 8/3, 8/4, 8/5	SOURCE	PPB (three 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

Narrative: Acceptable.

Reported By: J.L.

Approved By: John Lambert

Date: 8/24/99

Project No. 028000018

Phase.Task.No.

Serial No. (If applicable)

- ☐ pH Meter
- ☐ DO Monitor

James C. Brown

[illegible]

Circle the date and time that the development criteria are met

Date _____



Water Sampling Data

Location No. _____

Group List Number _____

Sample Type: ☒ Groundwater ☐ Surface Water ☐ Other _____Date 10/15/99Project Name EPAS GROUNDWATERProject No. C 2800018Project Manager C. JABY

Phase/Task No. _____

Site Name HAMNER #9 97213

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) 29.57'
Nonaqueous Liquids Present (Describe) _____

Water Quality/Water Collection

DO = Dissolved Oxygen; Cond. = Conductivity

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

Sample Containers

Container Type: G = Clear Glass; A = Amber Glass; P = Plastic; V = VOA Vial (Glass); O = Other (Specify)
Preservatives: H = HCl; N = HNO₃; S = H₂SO₄; A = NaOH; O = Other (Specify); — = None

Analytical Parameter List	Container			Field Filtered		Preserved	Cooled During Collection		Comments
	Number	Type	Volume (mL)	Yes	No		Yes	No	
BTEX	2	VOA			X	HCl	X		12:50

Filter Type _____ Chain-of-Custody Form Number C 2393

Comments _____

Signature Cathy Culbert Date 10/15/99 Reviewer _____ Date _____

PHILIP

Well Number WU-2

☒ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA

ENVIRONMENTAL

Serial No. WDPO

Page 1 of 1

Project Name FPS Groundwater

Client Company EPES

Project Manager C. ILLBY

Project No. 62800018

Site Name HAWEE #9

Site Address Q7213

Phase/Task No.

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 34'
Initial Depth to Water (feet) 25.53'
Height of Water Column in Well (feet) 4.43'
Diameter (inches): Well Gravel Pack

Instruments

Serial No. (If applicable)

Methods of Development

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

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

Water Disposal

Dump on Ground

- ☒ pH Meter
☐ DO Monitor
☒ Conductivity Meter
☒ Temperature Meter
☐ Other

Water Removal Data

Date	Time	Development Method	Pump	Boiler	Removal Rate (gal/min)	Initial Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (galons)	Product Volume Removed (galons)	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/l)	Comments
10/15/99	12:35		X					.75	.75	18.1	6.90	6720		WATER IS USED
10/15/99			X					.75	1.5	17.9	7.63	8150		SUGGESTED
10/15/99			X					.75	2.25	17.8	7.17	8630		HAS A SLIGHT
10/15/99	12:41		X					.75	3.0	17.9	7.17	8750		ODOR.
10/15/99	12:43		X					.75	3.75	17.9	7.26	9000		
10/15/99	12:44		X					.75	4.50	17.8	7.23	7900		
10/15/99	12:47		X					.75	5.25	17.9	7.53	8420		
10/15/99			X					.75	6.0	17.9	7.25	8020		
10/15/99	12:56		X					.75	6.75	17.9	7.35	9180		

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

Comments Sample Id Hammer WU-2

Developer's Signature(s) Cathy Culbreth

Date 10/15/99

Reviewer

Date

H¹ mvel mws2 p2072



Water Sampling Data

Location No. _____

Serial No. WSD- _____

Group List Number _____

Sample Type: ☒ Groundwater ☐ Surface Water ☐ Other _____

Date 10/15/99

Project Name EPAS GROUNDWATER

Project No. 67800018

Project Manager C. IRBY

Phase/Task No. _____

Site Name Hammer #9 # 97213

Sampling Specifications

Initial Measurements

Requested Sampling
Depth Interval (feet) _____
Requested Wait Following
Development/Purging (hours) _____

Time Elapsed From Final Development/Purging (hours) _____
Initial Water Depth (feet) 28.34
Nonaqueous Liquids Present (Describe) _____

Water Quality/Water Collection

DO = Dissolved Oxygen; Cond. = Conductivity

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

Sample Containers

Container Type: G = Clear Glass; A = Amber Glass; P = Plastic; V = VOA Vial (Glass); O = Other (Specify)
Preservatives: H = HCl; N = HNO₃; S = H₂SO₄; A = NaOH; O = Other (Specify); — = None

Analytical Parameter List	Container			Field Filtered		Preserved	Cooled During Collection		Comments
	Number	Type	Volume (mL)	Yes	No		Yes	No	
BTEX	2	VOA				X HCl	X		13:35 sampled

Filter Type _____

Chain-of-Custody Form Number 02393

Comments _____

Signature Cathy Cullicott Date 10/15/99

Reviewer _____ Date _____

PHILIP

Well Number MW-3

☐ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA

KEMMERER

Serial No. WDPD

Page 1 of 1

Project Name EPES Groundwater

Project Manager C. J. EBY

Project No. 62800015

Client Company EPES

Site Address 97213

Phase/Task No.

Site Name HAMMER #9

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 35'
Initial Depth to Water (feet) 28.34'
Height of Water Column in Well (feet) 6.66'
Diameter (inches): Well Gravel Pack

Instruments

Serial No. (If applicable)

☒ pH Meter

☒ DO Monitor, NO

☒ Conductivity Meter

☒ Temperature Meter

☐ Other

Water Disposal

Disposal on Ground

Methods of Development

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

Item	Water Volume in Well	Gallons to be Removed
Well Casing	Cubic Feet	Gallons
Gravel Pack		1.4
Drilling Fluids		
Total		

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
						Incremental	Cumulative	Incremental	Cumulative					
10/15/99	13:11	X				1	1			18.1	7.00	6870		WATER CLEAR TO
10/15/99	13:14	X				2	2			17.7	7.06	7470		START, TIE IN
10/15/99	13	X				3	3			17.7	7.13	6750		SLIGHTLY MURKY
10/15/99	13	X				4	4			17.8	7.14	7180		
10/15/99	13:24	X				5	5			18.3	7.13	6590		
10/15/99	13:30	X				6	6			17.8	7.16	7000		

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

Comments Sample 1335

Sample ID Hammer MW-3

Developer's Signature(s) Cathy Culbert

Date 10/15/99

Reviewer

Date



FIELD SERVICES LABORATORY

ANALYTICAL REPORT

PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990420
MTR CODE SITE NAME:	97213	Hamner #9
SAMPLE DATE TIME (Hrs):	10/15/1999	1250
PROJECT:	Sample 4 - 1st Quarter	
DATE OF BTEX EXT. ANAL.:	N/A	10/25/1999
TYPE DESCRIPTION:	MW-2	Water

Field Remarks: _____

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	<0.5	PPB				
TOLUENE	<0.5	PPB				
ETHYL BENZENE	<0.5	PPB				
TOTAL XYLENES	<0.5	PPB				
TOTAL BTEX	<2.0	PPB				

--BTEX is by EPA Method 8021 --

The Surrogate Recovery was at 104 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Sample Analyzed by Pinnacle Laboratories, Albuquerque, NM.

Approved By: _____

Date: _____



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990421
MTR CODE SITE NAME:	97213	Hamner #9
SAMPLE DATE TIME (Hrs):	10/15/1999	1335
PROJECT:	Sample 4 - 1st Quarter	
DATE OF BTEX EXT. ANAL:	N/A	10/25/1999
TYPE DESCRIPTION:	MW-3	Water

Field Remarks: _____

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	<0.5	PPB				
TOLUENE	<0.5	PPB				
ETHYL BENZENE	<0.5	PPB				
TOTAL XYLENES	<0.5	PPB				
TOTAL BTEX	<2.0	PPB				

—BTEX is by EPA Method 8021 —

The Surrogate Recovery was at 101 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Sample Analyzed by Pinnacle Laboratories, Albuquerque, NM.

Approved By: _____

Date: _____

11/2/99

Chain of Custody Record

4000 Monroe Road
Farmington, NM 87401

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

COC Serial No. C 2393

Project Name		EPFS GROUNDWATER	
Project Number		C2800018 Phase 1 Task	
Samplers		C. CULLICOTT	
Laboratory		Name	
		Location	
Sample Number (and depth)	Date	Time	Matrix
MILES FEDERAL MW 2	10/15/99	0955	AO
MILES FEDERAL MW 3		1025	
TRIP BLANK		1045	
HAMMOND MW 2		1125	
HAMMOND MW 3		1150	
HAMNER MW 2		1250	
HAMNER MW 3		1335	
MESACPO MW 2		1450	
MESACPO MW 3		1505	

Relinquished by:

Received By:

Signature		Date	Time	Signature		Date	Time
Carley Culver		10/15/99	1540	REFUGERATOR			
				Dennis Bird		10-20-99	10:05

Samples Iced: ☒ Yes ☐ No		Carrier:	Airbill No.
Preservatives (ONLY for Water Samples)			
☐ Cyanide Sodium hydroxide (NaOH)		Shipping and Lab Notes:	
☐ Volatile Organic Analysis Hydrochloric acid (HCl)			
☐ Metals Nitric acid (HNO ₃)			
☐ TPH (418.1) Sulfuric acid (H ₂ SO ₄)			
☐ Other (Specify) _____			
☐ Other (Specify) _____			

PINNACLE
LABORATORIES



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

Pinnacle Lab ID number 910073
October 28, 1999

EL PASO FIELD SERVICES
770 WEST NAVAJO
FARMINGTON, NM 87401

Project Name PIT MONITOR WELLS
Project Number (none)

Attention: JOHN LAMBDIN

On 10/21/99 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

MR: jt

Enclosure

H. Mitchell Rubenstein, Ph. D.
General Manager

Reviewed & Accepted
J. L. Linder 11/2/99

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	: 910073
PROJECT #	: (none)	DATE RECEIVED	: 10/21/99
PROJECT NAME	: PIT MONITOR WELLS	REPORT DATE	: 10/28/99

PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	990416	AQUEOUS	10/15/99
02	990417	AQUEOUS	10/15/99
03	990418	AQUEOUS	10/15/99
04	990419	AQUEOUS	10/15/99
05	990420	AQUEOUS	10/15/99
06	990421	AQUEOUS	10/15/99
07	990422	AQUEOUS	10/15/99
08	990423	AQUEOUS	10/15/99
09	TRIP BLANK	AQUEOUS	10/15/99
10	990424	AQUEOUS	10/19/99
11	990425	AQUEOUS	10/19/99

**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.: 910073

SAMPLE		MATRIX	DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.		SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	990416	AQUEOUS	10/15/99	NA	10/25/99	1
02	990417	AQUEOUS	10/15/99	NA	10/25/99	1
03	990418	AQUEOUS	10/15/99	NA	10/25/99	1
PARAMETER		DET. LIMIT	UNITS	990416	990417	990418
BENZENE		0.5	UG/L	< 0.5	< 0.5	< 0.5
TOLUENE		0.5	UG/L	2.1	0.9	< 0.5
ETHYLBENZENE		0.5	UG/L	5.5	< 0.5	< 0.5
TOTAL XYLENES		0.5	UG/L	2.8	3.1	< 0.5

SURROGATE:

BROMOFLUOROBENZENE (%)

102

96

94

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

N/A

GAS CHROMATOGRAPHY RESULTS

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

PINNACLE I.D.: 910073

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
04	990419	AQUEOUS	10/15/99	NA	10/25/99	1
05	990420	AQUEOUS	10/15/99	NA	10/25/99	1
06	990421	AQUEOUS	10/15/99	NA	10/25/99	1
PARAMETER		DET. LIMIT	UNITS	990419	990420	990421
BENZENE		0.5	UG/L	< 0.5	< 0.5	< 0.5
TOLUENE		0.5	UG/L	< 0.5	< 0.5	< 0.5
ETHYLBENZENE		0.5	UG/L	< 0.5	< 0.5	< 0.5
TOTAL XYLENES		0.5	UG/L	< 0.5	< 0.5	< 0.5

SURROGATE:
BROMOFLUOROBENZENE (%) 103 104 101
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.: 910073

SAMPLE		MATRIX	DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.		SAMPLED	EXTRACTED	ANALYZED	FACTOR
07	990422	AQUEOUS	10/15/99	NA	10/25/99	1
08	990423	AQUEOUS	10/15/99	NA	10/25/99	1
09	TRIP BLANK	AQUEOUS	10/15/99	NA	10/25/99	1
PARAMETER		DET. LIMIT	UNITS	990422	990423	TRIP BLANK
BENZENE		0.5	UG/L	< 0.5	< 0.5	< 0.5
TOLUENE		0.5	UG/L	< 0.5	< 0.5	< 0.5
ETHYLBENZENE		0.5	UG/L	< 0.5	< 0.5	< 0.5
TOTAL XYLENES		0.5	UG/L	< 0.5	< 0.5	< 0.5

SURROGATE:
BROMOFLUOROBENZENE (%) 102 100 97
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A

GAS CHROMATOGRAPHY RESULTS

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

PINNACLE I.D.: 910073

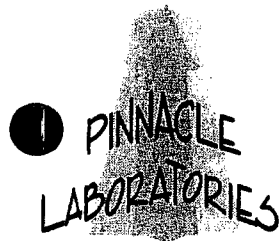
SAMPLE		MATRIX	DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.		SAMPLED	EXTRACTED	ANALYZED	FACTOR
10	990424	AQUEOUS	10/19/99	NA	10/25/99	1
11	990425	AQUEOUS	10/19/99	NA	10/25/99	1

PARAMETER	DET. LIMIT	UNITS	990424	990425
BENZENE	0.5	UG/L	< 0.5	< 0.5
TOLUENE	0.5	UG/L	< 0.5	< 0.5
ETHYLBENZENE	0.5	UG/L	< 0.5	< 0.5
TOTAL XYLENES	0.5	UG/L	< 0.5	< 0.5

SURROGATE:

BROMOFLUOROBENZENE (%)	103	101
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.	: 910073
BLANK I. D.	: 102599	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 10/25/99
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 (%) 102
SURROGATE LIMITS: (80 - 120)
CHEMIST NOTES:
I/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 # : 910073-03
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : PIT MONITOR WELLS

PINNACLE I.D. : 910073
DATE EXTRACTED : NA
DATE ANALYZED : 10/25/99
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	19.7	99	19.8	99	1	(80 - 120)	20
TOLUENE	<0.5	20.0	20.7	104	20.3	102	2	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	21.0	105	20.8	104	1	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	64.7	108	64.0	107	1	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

PROJECT MANAGER:

COMPANY:

ADDRESS:

PHONE:

FAX:

BILL TO:

COMPANY:

ADDRESS:

SAMPLED	DATE	TIME	MATERIAL	DEPTH
990416	10-15-99	0935	WATER	0
990417	10-15-99	1025	WATER	10
990418	10-15-99	1125	WATER	20
990419	10-15-99	1150	WATER	30
990420	10-15-99	1250	WATER	40
990421	10-15-99	1335	WATER	50
990422	10-15-99	1450	WATER	60
990423	10-15-99	1505	WATER	70
TRIP BLANK	10-15-99		WATER	80

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT INFORMATION:

PROJ. NO.:

PROJ. NAME: P17 MONITOR WELLS

P.O. NO.:

SHIPPED VIA: **FEDEX**

SAMPLE RECEIPT

NO CONTAINERS

CUSTOMYSEAL®

RECEIVED NEWS

BELEVED

PRIOR AUTHORIZATION IS REQUIRED FOR 'HUSH' PROJECTS

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

CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER

METHANOL PRESERVATION ☐

COMMENTS: FIXED FEE ☐

REINFORCED BY

Signature: _____ Time: 1258

Printed Name: Robert A. Smith Date: 1-23-88

Company: F/S Inc. 01/20/20

RECEIVED BY: Mr. J. H. Smith 1.5

Signature:	Time:	S
------------	-------	---

Printed Name: _____ Date: _____

Company:

DECLASSIFIED BY

Signature:

Printed Name _____

Company:

RECEIVED BY: (LAB)

Signature: _____

Printed Name: _____ Date: _____

100

American Environmental Ne...



American
Environmental
Network (Arizona), Inc.

CHAIN OF CUSTODY

DATE 10-20-99 PAGE 1 OF 1

AEN LAB I.D.

91673

REPORT: Attn. to: JOHN CAMBRIA

COMPANY: EL PASO FIELD SERVICES
ADDRESS: 170 WEST NAVARO
FARMINGTON NM 87401
PHONE: (505) 599-2142
FAX: (505) 599-2267

BILL TO: SAMBAS ABOVE

COMPANY:
ADDRESS:

ANALYSIS REQUEST

	NUMBER OF CONTAINERS
RCRA Metals by TCLP (1311)	2
RCRA Metals by Total Digestion	2
Polynuclear Aromatics (610/8310)	
Volatile Organics GC/MS (624/8240/8260)	
Semi-Volatiles GC/MS (Tics/No Tics)	
Herbicides (615/8150/515)	
Pesticides/PCB (608/8080/505/508)	
Volatiles 502.2 (SDWA/UST)	
Aromatic Hydrocarbons (602/8020)	
Chlorinated Hydrocarbons (601/8010)	
BTXE/MTBE (8020/602)	X
(BLS-191) Diesel	X
(M8015) Gas	
(MOD.8015) Fuel Fingerprint	
Petroleum Hydrocarbons (418.1)	

COMPOSITE OR GRAB

SAMPLE ID DATE TIME MATRIX LAB ID

990424 10/19/99 1532 WATER -10
990425 10/19/99 1600 WATER -11

PROJECT INFORMATION

PROJ. NO.:
PROJ. NAME: PTT NEW TAP WELLS
P.O. NO.:
SHIPPED VIA: FED-X

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒ 2 WEEKS

Comments:

3.6

SAMPLE RECEIPT

NO. CONTAINERS 4
CUSTODY SEALS Y/N/NA
RECEIVED INTACT Y/N/NA
RECEIVED ICE Y/N/NA

☐ JUST (72 hr. est.)
☐ NPDES
☐ SDWA
☐ RCRA
☐ OTHER

SAMPLED & RELINQUISHED BY:

1. Signature: DENNIS BIRD
Printed Name: DENNIS BIRD
Date: 10-20-99
Company: EL PASO FIELD SERVICES

2.

Signature: Time: Date: Company:

3.

Signature: Time: Date: Company:

RECEIVED BY:

1. Signature: Time: Date: Company:

2.

Signature: Time: Date: Company:

3.

Signature: Time: Date: Company:

American Environmental Network

PLEASE FILL THIS FORM IN COMPLETELY. SHADED AREAS ARE FOR LAB USE ONLY.

**MC# LD169, D Loop Line Drip,
MW-1 : Sample 4 - 13th Quarter**

**MC#70445, Standard Oil Com
#1, MW-1 : Sample 4 - 13th Qtr.**

**● MC#97213, Hamner #9, MW-1 :
Sample 4 - 13th Quarter**

**MC# LD146, Lat. 3B-39 Line
Drip, MW-1 : Sample 4 - 11th
Quarter**

☐	Development
☒	Purging

Well Number MW-1
Meter Code LD169

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

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

☐ Other _____

Initial Depth of Well (feet) 43.48
Initial Depth to Water (feet) 34.66
Height of Water Column in Well (feet) 8.82

Diameter (inches): Well 4 Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		5.8	17.5
Gravel Pack			
Drilling Fluids			
Total			

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

Water Disposal
KUTZ SEPARATOR

[illegible]

Comments THE WATER HAD A LIGHT HYDROGEN SULFIDE SMELL.

Developer's Signature
Dennis Bied

Date 11-9-99

Reviewer John Tuck

Date 11/30/99



**EL PASO
FIELD SERVICES**

☐	Development
☒	Purging

Meter Code 70445

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

Initial Depth of Well (feet) 32.93
Initial Depth to Water (feet) 19.91
Height of Water Column in Well (feet) 13.02

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

☒	pH Meter
☐	DO Monitor
☒	Conductivity Meter
☒	Temperature Meter
☒	Other <i>D.O. Controller</i>

KUTZ SEPARATOR

[illegible]

Developer's Signature *Dennis Bird*

Date 11-9-99 Reviewer John Finkler Date 11/30/99



Well Number MW-1
Meter Code 972/3

Site Name HAMMER #9

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

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

Initial Depth of Well (feet) 40.9
Initial Depth to Water (feet) 32.19
Height of Water Column in Well (feet) 8.23

Diameter (inches): Well 4 Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		5.8	17.3
Gravel Pack			
Drilling Fluids			
Total			

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

10/2 SEP 1979

[illegible]

Comments THE WELL BAILED ONLY 6.0 GALLONS. THE WATER HAD A LIGHT HYDROGEN SULFIDE SMELL.

Developer's Signature Dennis Bird Date 11-9-99 Reviewer John Judd Date 11/30/99



Well Number MW-1
Meter Code LD146

Site Name LATEPAL 38-39 LWE DRIP

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) 41.31
Initial Depth to Water (feet) 32.99
Height of Water Column in Well (feet) 8.32
Diameter (inches): Well 4 Gravel Pack

Diameter (inches): Well 4 Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		5.5	16.5
Gravel Pack			
Drilling Fluids			
Total			

Instruments

- ☒ pH Meter
☐ DO Monitor
☒ Conductivity Meter
☒ Temperature Meter
☒ Other 200

Water Disposal

KOTZ SEPARATOR

Water Removal Data

[illegible]

Comments THE WATER HAD A STRONG HYDROCARBON SMELL.

Developer's Signature Dennis Bied

Date 11-9-99

Reviewer John Gardner

Date 11/30/99

PINNACLE
LABORATORIES

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

Pinnacle Lab ID number 911051
November 19, 1999



EL PASO FIELD SERVICES
770 WEST NAVAJO
FARMINGTON, NM 87401

Project Name PIT MONITOR WELLS
Project Number (none)

*Multiple wells
shown on Next Page*

Attention: JOHN LAMBDIN

On 11/16/99 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

*Reviewed & Accepted
J-Lambdin 11/30/99*



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	: 911051
PROJECT #	: (none)	DATE RECEIVED	: 11/16/99
PROJECT NAME	: PIT MONITOR WELLS	REPORT DATE	: 11/19/99
PIN			DATE
D. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	990440 - mc# 2D169, D Loop Line Drip	AQUEOUS	11/9/99
02	990441 - mc# 70445, Standard Oil Co. #1	AQUEOUS	11/9/99
03	990442 - mc# 97213, Hammer #9	AQUEOUS	11/9/99
04	990443 - mc# 2D146, Lateral 3B-39 Line Drip	AQUEOUS	11/9/99
05	TRIP BLANK	AQUEOUS	11/9/99

GAS CHROMATOGRAPHY RESULTS

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

PINNACLE I.D.: 911051

SAMPLE		MATRIX	DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.		SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	990440	AQUEOUS	11/9/99	NA	11/16/99	10
02	990441	AQUEOUS	11/9/99	NA	11/16/99	20
03	990442	AQUEOUS	11/9/99	NA	11/16/99	20
PARAMETER		DET. LIMIT	UNITS	990440	990441	990442
BENZENE		0.5	UG/L	410	240	120
TOLUENE		0.5	UG/L	21	98	39
ETHYLBENZENE		0.5	UG/L	330	180	75
TOTAL XYLENES		0.5	UG/L	230	1500	170

SURROGATE:

BROMOFLUOROBENZENE (%) 107 95 101
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A

LD 169
D Loop Line Drip
Sample 4 13th Qtr
70445
Standard Oil
Com #1
Sample 4
13th Qtr
97213
Hammer #9
Sample 4
13th Qtr

GAS CHROMATOGRAPHY RESULTS

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

PINNACLE I.D.: 911051

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	990443	AQUEOUS	11/9/99	NA	11/16/99	10
05	TRIP BLANK	AQUEOUS	11/9/99	NA	11/17/99	1
PARAMETER	DET. LIMIT	UNITS	990443	TRIP BLANK		
BENZENE	0.5	UG/L	< 5.0	< 0.5		
TOLUENE	0.5	UG/L	21	< 0.5		
ETHYLBENZENE	0.5	UG/L	340	< 0.5		
TOTAL XYLENES	0.5	UG/L	5900(D50)	< 0.5		

SURROGATE:

BROMOFLUOROBENZENE (%)

98

111

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

(D50) = 50 X DILUTION ANALYZED ON 11/17/99.

LD 146
Lateral 3B-39
Line Drip
Sample 4
11th Qtr

**GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK**

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 911051
BLANK I. D.	: 111699	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 11/16/99
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:
 BF 1 OFLUOROBENZENE (%) 100
 SURROGATE LIMITS: (80 - 120)
 CHEMIST NOTES:
 N/A

**GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK**

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 911051
BLANK I. D.	: 111799	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 11/17/99
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 (%) 103
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	PINNACLE I.D.	: 911051
MSMSD #	: 111699	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 11/17/99
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	20.0	17.5	88	17.4	87	1	(80 - 120)	20
TOLUENE	<0.5	20.0	18.9	95	18.5	93	2	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	19.6	98	19.5	98	1	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	59.6	99	59.1	99	1	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

PLEASE FILL THIS FORM IN COMPLETELY.

SHADED AREAS ARE FOR LAB USE ONLY.

Immacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: 11-9-99 PAGE: 1 OF 1

Accession #

911051

PROJECT MANAGER: DENNIS BIRD

COMPANY: EL PASO FIELD SERVICES

ADDRESS: 720 WEST MAHARD

PHONE: (505) 599-2144

FAX: (505) 599-8261

BILL TO: SAME AS ABOVE

COMPANY:

ADDRESS:

SAMPLE ID DATE TIME MATRIX LAB ID

990440 11-9-99 1232 WATER 01

990441 11-9-99 1217 WATER 02

990442 11-9-99 1428 WATER 03

990443 11-9-99 1610 WATER 04

TRIP BLANKS 11-9-99 WATER 09

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:

PROJECT INFORMATION

PROJ. NO:

PROJ. NAME: PT MASTER WELLS

P.O. NO:

SHIPPED VIA: FED-X

SAMPLE RECEIPT

NO. CONTAINERS

CUSTODY SEALS

RECEIVED INTACT

BLUE ICE/ICE

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK

CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER

METHANOL PRESERVATION ☐

COMMENTS: FIXED FEE ☐

RELINQUISHED BY

Signature: Dennis Bird

Printed Name: DENNIS BIRD

Date: 11-9-99

Company: EL PASO FIELD SERVICES

RECEIVED BY:

Signature:

Printed Name:

Date:

Company:

RELINQUISHED BY:

Signature:

Printed Name:

Date:

Company:

RECEIVED BY (LAB)

Signature:

Printed Name:

Date:

Company:

ATTACHMENT 2
MONITOR WELL INSTALLATION

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

4000 Monroe Road

Frederick, New Mexico 87401

(505) 622-2262 FAX (505) 326-2388

Borehole #

Well #

Page

1
MW2
1 of 2

Project Name

Project Number

Project Location

EPAS GROUNDWATER

Phase

HAMNER #9

Well Logged By

Personnel On-Site

Contractors On-Site

Client Personnel On-Site

C. CULLICOTT

K. PADILLA & D. PADILLA

0

0

Drilling Method

Air Monitoring Method

AUGER

PID

Elevation

Borehole Location

GWL Depth

Logged By

Drilled By

Date/Time Started

Date/Time Completed

MECH 97213

Depth (Feet)	Sample Interval	Sample Type & Recovery (Inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU			Drilling Conditions & Blow Counts
						BZ	BH	S	
0									
5	① 5-6'		① FULL RECOVERY. LOOSE ORANGISH BROWN POORLY SORTED SAND (FINE TO COARSE) WITH SMALL GRAVEL. CLEAN.						① 14 BLOWS SS 0.0 PPM HS PPM
10	② 9'-12'		② 10" RECOVERY SILTY FINE SAND W/ SOME COARSE GRAINS, CONSOLIDATED. CLEAN						② 10 BLOWS SS 0.0 PPM
15	③ 15'-17'		③ 12" RECOVERY CONSOLIDATED SILTY FINE SAND W/ SOME COARSE GRAINS TAN, CLEAN.						③ 14 BLOWS SS 0.0 PPM
20	④ 20'-22'		④ FULL RECOVERY - ALL UPPER 6": DAMP BROWN LOOSE POORLY SORTED SAND W/ SILT MIDDLE 12": DAMP TAN LOOSE POORLY SORTED SAND BOTTOM 6": DAMP BROWN SOMEWHAT PLASTIC SANDY SILT.						④ 13 BLOWS SS 0.0 PPM
25	⑤ 25'-27'		⑤ FULL RECOVERY LOOSE TAN SAND, DAMP POORLY SORTED CLEAN.						⑤ 31 BLOWS SS 0.0 PPM
30	⑥ 30'-32'		⑥ OVER						⑥ 55+ BLOWS SS PPM
35	⑦ 33'-35'								⑦ 35+ BLOWS SS 0.0 PPM
40									

Comments:

FOGGY, COOL, BREEZY

TD 34' - WENT THROUGH PERCHED WATER TABLE

Geologist Signature

Cathy Cullcott

MONITORING WELL INSTALLATION RECORD

Environmental Services Corp.
 4000 Monroe Road
 Farmington, New Mexico 87401
 (505) 326-2282 FAX (505) 326-2388

Borehole # 1
 Well # MW2
 Page 2 of 2

Project Name EPFS GROUNDWATER

Project Number 62800 Phase
 Project Location HAMNER #9

Elevation
 Well Location T29N R9W S20A
 GWL Depth 29.31
 Installed By K. PADILLA & N. PADILLA

On-Site Geologist C. CULLICOTT
 Personnel On-Site K. PADILLA & N. PADILLA
 Contractors On-Site
 Client Personnel On-Site

Date/Time Started 9/24/99 8:10 am
 Date/Time Completed 9/24/99 10:30 am

METER 97213

Depths in Reference to Ground Surface		
Item	Material	Depth
Top of Protective Casing		
Bottom of Protective Casing		
Top of Permanent Borehole Casing		
Bottom of Permanent Borehole Casing		
Top of Concrete		
Bottom of Concrete		
Top of Grout		
Bottom of Grout		
Top of Well Riser	2"	+1'
Bottom of Well Riser	2"	19'
Top of Well Screen	2"	19'
Bottom of Well Screen	2"	34'
Top of Peltonite Seal	BENT.	17'
Bottom of Peltonite Seal	CHIPS	19'
Top of Gravel Pack	CO	19'
Bottom of Gravel Pack	SAND	34'
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		
Total Depth of Borehole		34'



Top of Protective Casing

Top of Riser +6"

Ground Surface

OPEN

Top of Seal 15'

Top of Gravel Pack 17'

Top of Screen 19'

Bottom of Screen 34'

Bottom of Borehole 34'

Comments: INITIAL DTW 29.37' DTW 12:30 29.31' DTW AFTER BAILING 29.85' 12
5 gallons Removed 12:35-12:55
WELL IS GOOD PRODUCER
 Geologist Signature Cathy Cullcott
WATER IS TASTY W/ BROWN TAN
SUSPENDED SEDS
NO SKIFFEN OR ODOR

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

4000 Monroe Road

Farallon, New Mexico 87401

(505) 226-2282 FAX (505) 326-2388

Borehole # 2
Well # MW 3
Page 1 of 2

Project Name EPPS GROUNDWATER
Project Number 028000 Phase
Project Location HAMNER #9

Elevation
Borehole Location T29N R9W S20A
GWL Depth
Logged By C. CULLICOTT
Drilled By K. PADILLA & D. PADILLA
Date/Time Started 9/24/99 10:40am
Date/Time Completed 9/24/99 12:15pm

Well Logged By C. CULLICOTT
Personnel On-Site K. PADILLA & D. PADILLA
Contractors On-Site
Client Personnel On-Site

Drilling Method AUGER
Air Monitoring Method P10

Met 97217

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									
5	① 5-7'		① FULL RECOVERY. CLEAN FINE BROWN/TAN SAND WITH VARYING DEGREES OF SILT (LOOSER W/ LESS SILT). COARSER TOWARDS BOTTOM OF SPOON. 1 LARGE "PEBBLE"						① 10 BLOWS SS 0.0 ppm
10	② 10-12'		② 6" RECOVERY. CLEAN BROWN SILT, DRY, SLIGHTLY CONSOLIDATED						② 8 BLOWS SS 0.0 ppm
15	③ 15-17'		③ 12" RECOVERY. CLEAN UPPER 6": CONSOLIDATED SLIGHTLY STIFF BROWN SANDY SILT. LOWER 6": LOOSE TAN FINE TO MEDIUM SAND WITH SMALL GRAVEL.						③ 18 BLOWS SS 0.0 ppm
20	④ 20-22'		④ FULL RECOVERY. CLEAN LOOSE, DRY, TAN. POORLY SORTED SAND, COARSE → FINE, MOST FINE TO MED. NO GRAVEL.						④ 15 BLOWS SS 0.0 ppm
25	⑤ 25-27'		⑤ FULL RECOVERY. CLEAN UPPER 18" LOOSE, POORLY SORTED SAND W/ SMALL GRAVEL. TAN. LOWER 6": LOOSE, DAMP, ORANGEISH BROWN FINE TO MEDIUM SAND, NO GRAVEL.						⑤ 43 BLOWS SS 0.0 ppm
30	⑥ 30-32'								⑥ 50+ BLOWS SS 0.0 ppm
35	⑦ 35-37'								⑦ 50+ BLOWS SS 0.0 ppm
40									

Comments:

OVERCAST, COOL, OCCASIONAL SUNSHINE (BY END OF DRILLING - WARM, MOSTLY SUNNY)

TO 35' WENT THROUGH PERCHED WATER TABLE

Geologist Signature

Cathy Cullcott

MONITORING WELL INSTALLATION RECORD

Billin Environmental Services Corp.
 3000 E. Road
 Farmington, New Mexico 87401
 (505) 326-2262 FAX (505) 326-2388

Borehole # 2
 Well # MW3
 Page 2 of 2

Project Name EPFS GROUNDWATER

Project Number 028000 Phase
 Project Location HAMNER #9

On-Site Geologist C. CULLICOTT
 Personnel On-Site K. PADILLA & D. PADILLA
 Contractors On-Site 0
 Client Personnel On-Site 0

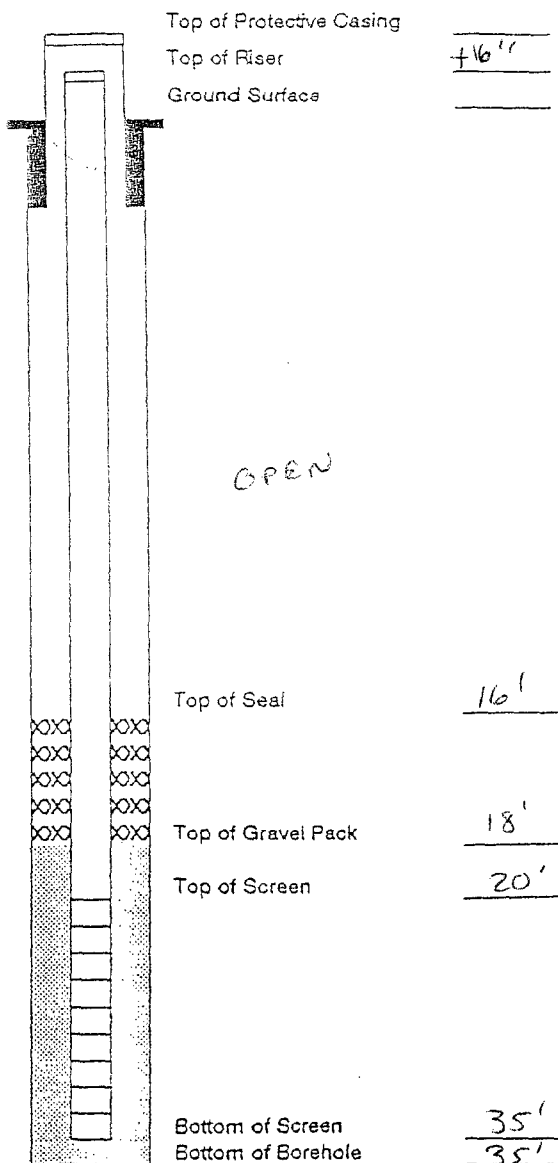
Elevation
 Well Location T29N R9W S20A
 BWL Depth
 Installed By K. PADILLA & D. PADILLA

Date/Time Started 9/24/99 10:40am
 Date/Time Completed 9/24/99 1:15pm

METC-97213

Depths in Reference to Ground Surface

Item	Material	Depth
Top of Protective Casing		
Bottom of Protective Casing		
Top of Permanent Borehole Casing		
Bottom of Permanent Borehole Casing		
Top of Concrete		
Bottom of Concrete		
Top of Grout		
Bottom of Grout		
Top of Well Riser	2"	+16'
Bottom of Well Riser	2"	20'
Top of Well Screen	2"	20'
Bottom of Well Screen	2"	35'
Top of Peltonite Seal	BENT.	16'
Bottom of Peltonite Seal	CHIPS	18'
Top of Gravel Pack	CO	18'
Bottom of Gravel Pack	SAND	35'
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		28.25'
Total Depth of Borehole		35'



Comments: DTW 28.25' 1:15 DTW 29.55' AFTER BAILING 1:40
5 gallons removed 1:20-1:40 WELL IS GOOD PRODUCER
WATER MODERATELY
TURBID AFTER ~2 gal
removed, much less suspended
sed than MW2. WATER HAD NO ODOOR OR SMELL

Geologist Signature

Cathy Cullicott