

3R - 192

REPORTS

DATE:

2/26/2004

Certified Mail: #7002 0510 0000 0307 7497

February 26, 2004

RECEIVED

Mr. William C. Olson
New Mexico Oil Conservation Division
1220 St. Francis Dr.
Santa Fe, NM 87504

MAR 03 2004

**Oil Conservation Division
Environmental Bureau**

RE: 2003 Pit Project Annual Groundwater Report

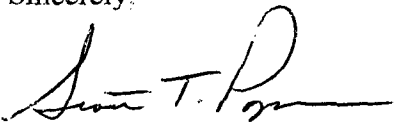
Dear Mr. Olson:

In accordance with reporting requirements, El Paso Field Services (EPFS) has enclosed annual reports for the 24 remaining groundwater impacted sites that were identified during our pit closure project of 1994 / 1995.

EPFS has organized the 24 Annual Reports (Volumes 1, 2 and 3) by land type. Volume 1 contains Annual Reports for sites found on Federal land. Volume 2 contains Non Federal sites and Volume 3 contains sites on Navajo land. Of the 24 reports submitted, EPFS is requesting closure of one site located on Navajo lands (Jennepah #1). EPFS understands closure of groundwater sites on Navajo lands falls under jurisdiction of the Navajo Nation Environmental Protection Agency and original documents have been submitted to them for review. Other Navajo sites are included in the report for your information.

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

Sincerely,



Scott T. Pope P.G.
Senior Environmental Scientist

xc: Mr. Denny Foust, NMOCD, Aztec - w / enclosures; Certified Mail # 7002 0510 0000 0307 7473
Mr. Bill Llesse, BLM - w / enclosures (federal sites only), Certified Mail # 7002 0510 0000 0307 7466

**2003 ANNUAL GROUNDWATER REPORT
NON-FEDERAL SITES VOLUME II**

EL PASO FIELD SERVICES

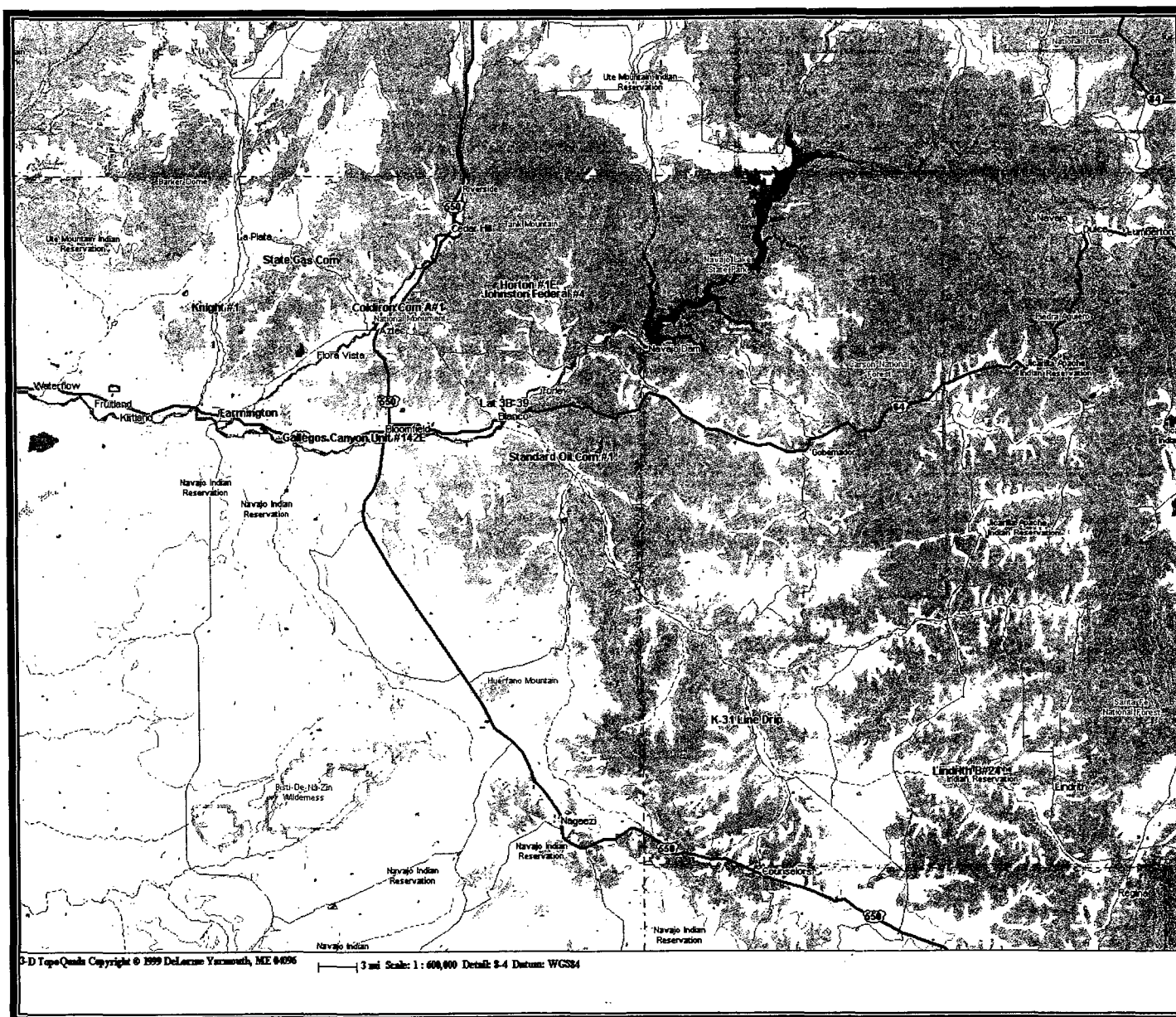
TABLE OF CONTENTS

METER or LINE ID	SITE NAME	TOWNSHIP	RANGE	SECTION	UNIT
71669	State Gas Com N #1	31N	12W	16	H
70194	Johnston Fed #4	31N	09W	33	H
93388	Horton #1E	31N	09W	28	H
72556	Knight #1	30N	13W	5	A
73551	Coldiron A #1	30N	11W	2	K
03906	GCU Com A #142E	29N	12W	25	G
70445	Standard Oil Com #1	29N	09W	36	N
LD087	K-31 Line Drip	25N	06W	16	N
94967	Lindrith B #24	24N	03W	9	N



MWH
MONTGOMERY WATSON HARZA

Non - Federal Groundwater Site Map



LIST OF ACRONYMS

B	benzene
btoc	below top of casing
E	ethylbenzene
EPFS	El Paso Field Services
ft	foot/feet
GWEL	groundwater elevation
ID	identification
MW	monitoring well
PSH	phase-separated hydrocarbons
NMWQCC	New Mexico Water Quality Control Commission
T	toluene
TOC	top of casing
NA	not applicable
NE	not established
NM	not measured
NMOCD	New Mexico Oil Conservation Division
NS	not sampled
ORC	oxygen-releasing compound
ppb	parts per billion
µg/L	micrograms per liter
X	total xylenes

**EPFS GROUNDWATER SITES
2003 ANNUAL GROUNDWATER REPORT**

**Horton #1E
Meter Code: 93388**

SITE DETAILS

Legal Description:	Town: 31N	Range: 9W	Sec: 28	Unit: H
NMOCD Haz Ranking:	40	Land Type: Fee	Operator: Amoco Production Company	

PREVIOUS ACTIVITIES

Site Assessment:	8/94	Excavation:	9/94 (50 cy)	Soil Boring:	8/95
Monitor Well:	8/95	Geoprobe:	NA	Additional MWs:	10/99
Downgradient MWs:	10/99	Replace MW:	NA	Quarterly Initiated:	12/96
ORC Nutrient Injection:	NA	Re-Excavation:	NA	PSH Removal Initiated:	NA
Annual Initiated:	10/99	Quarterly Resumed:	NA		

SUMMARY OF 2003 ACTIVITIES

MW-1: Semi-annual groundwater sampling and water level measurements were performed during 2003. Eight ORC socks were placed in MW-1 in October 2003.

MW-2: Annual water level measurements were performed during 2003.

MW-3: Annual water level measurements were performed during 2003.

Site-Wide Activities: No other activities were performed at this site during 2003.

SITE MAPS

Site maps (March and September) are attached as Figures 1 and 2.

SUMMARY TABLES AND GRAPHS

- Analytical data from 2003 are summarized in Table 1, and historic data are presented graphically in Figures 3 through 5.
- Laboratory reports are presented in Attachment 1.
- Field documentation is presented in Attachment 2.

**EPFS GROUNDWATER SITES
2003 ANNUAL GROUNDWATER REPORT**

**Horton #1E
Meter Code: 93388**

GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS

No subsurface activities were performed at this site during 2003.

DISPOSITION OF GENERATED WASTES

No wastes were generated at this site during 2003.

ISOCONCENTRATION MAPS

No isoconcentration maps were prepared for this site, however, the attached site maps present both the water level and analytical data collected during 2003.

CONCLUSIONS

- The groundwater flow direction at this site trends toward the southeast.
- Benzene concentrations in MW-1 remained at 2001/2002 levels, ranging from 96 µg/L to 100 µg/L.
- Oxygen-releasing compound (ORC) was placed in MW-1 in October 2003 in order to enhance degradation of BTEX compounds.

RECOMMENDATIONS

- EPFS recommends that MW-1 be scheduled for semi-annual groundwater sampling (including dissolved oxygen measurement) until analytical results indicate that BTEX concentrations are approaching closure criteria. This well will then be scheduled for quarterly sampling until closure criteria have been met.
- Because sample results dating back to 1999 indicate that BTEX concentrations in samples collected from MW-2 and MW-3 have been below detection limits, EPFS recommends that these wells not be sampled until closure samples are scheduled.
- EPFS recommends that semi-annual water level measurements be collected from MW-2 and MW-3, with dissolved oxygen concentrations also measured in MW-3.
- EPFS recommends that the addition of ORC to MW-1 in 2003 be evaluated in 2004 in terms of the impact to BTEX concentrations at this well. If the ORC addition appears to have been effective, additional ORC will be placed in the well in 2004, as needed.

ROAD

MW-1	3/14/03
B	100
T	25.5
E	0.5
X	6.1

FORMER PIT

TOC=100.00
GWEL=51.00

MW-1

METER
HOUSE

MW-3
TOC=95.9
GWEL=NM
NS

SHEET #2
LOCATION

MW-2
TOC=95.76
GWEL=NM
NS

WELLHEAD

SEPARATOR

UNLINED EARTHEN
SEPARATOR PIT

UNLINED
EARTHEN PIT

LEGEND

-  MW-1
 Approximate Monitoring Well Location and Number
- B Benzene ($\mu\text{g/L}$)
- T Toluene ($\mu\text{g/L}$)
- E Ethylbenzene ($\mu\text{g/L}$)
- X Total Xylenes ($\mu\text{g/L}$)
- NS Not Sampled
- NM Not Measured
- GWEL Groundwater Elevation
(FT Above Mean Sea Level Unless Noted Otherwise)
- TOC Top of Casing

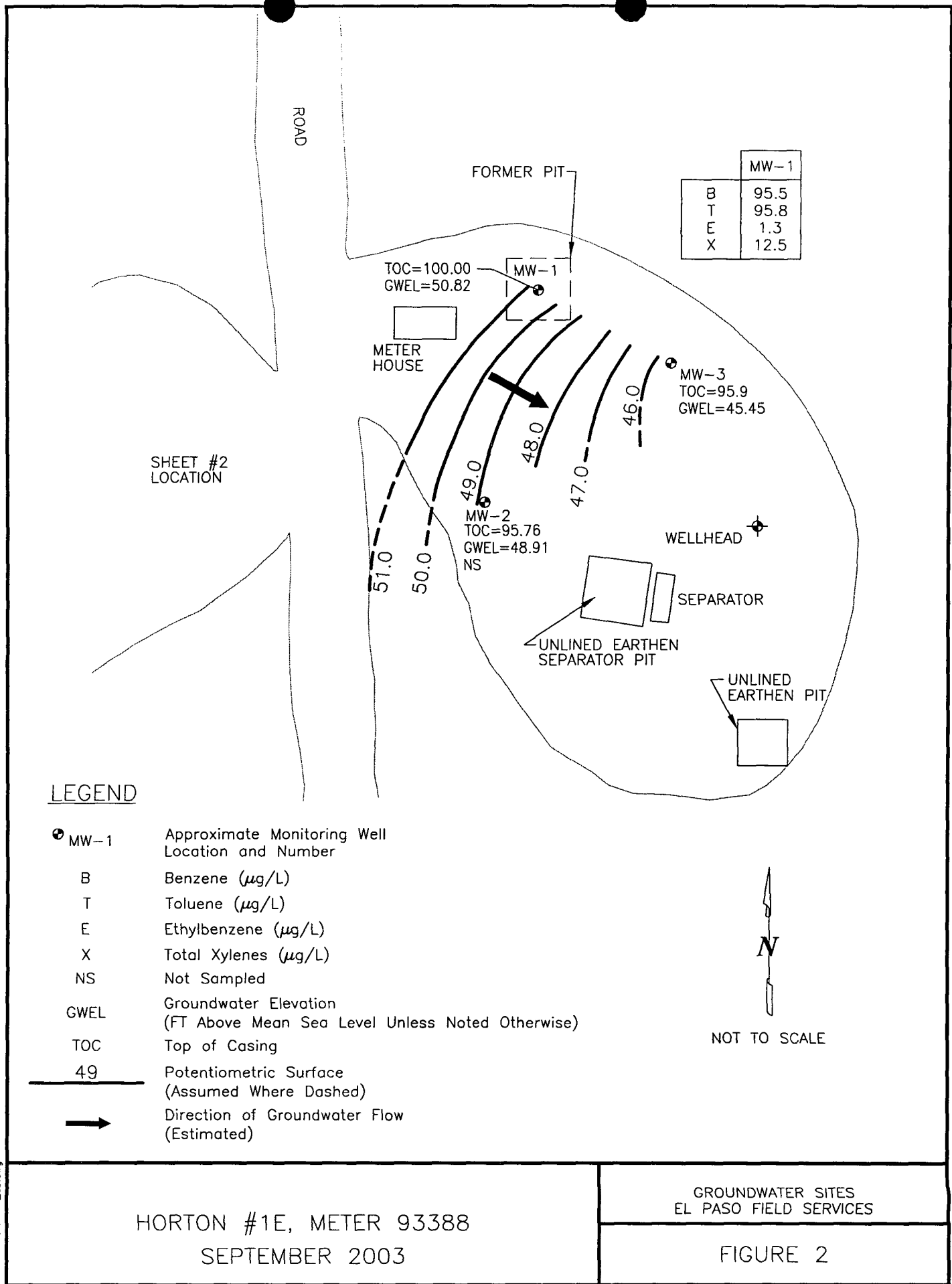


NOT TO SCALE

HORTON #1E, METER 93388
MARCH 2003

GROUNDWATER SITES
EL PASO CORPORATION

FIGURE 1



horton1e_03.dwg

TABLE 1
SUMMARY OF BTEX COMPOUNDS IN 2003 GROUNDWATER SAMPLES
HORTON #1E (METER #93388)

Site Name	Monitoring Well	Sample Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (ft btoc)
Horton #1E	MW-1	3/14/2003	100	25.5	0.5	6.1	49.00
Horton #1E	MW-1	9/16/2003	95.5	95.8	1.3	12.5	49.18

FIGURE 3
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
HORTON #1E
MW-1



FIGURE 4
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
HORTON #1E
MW-2

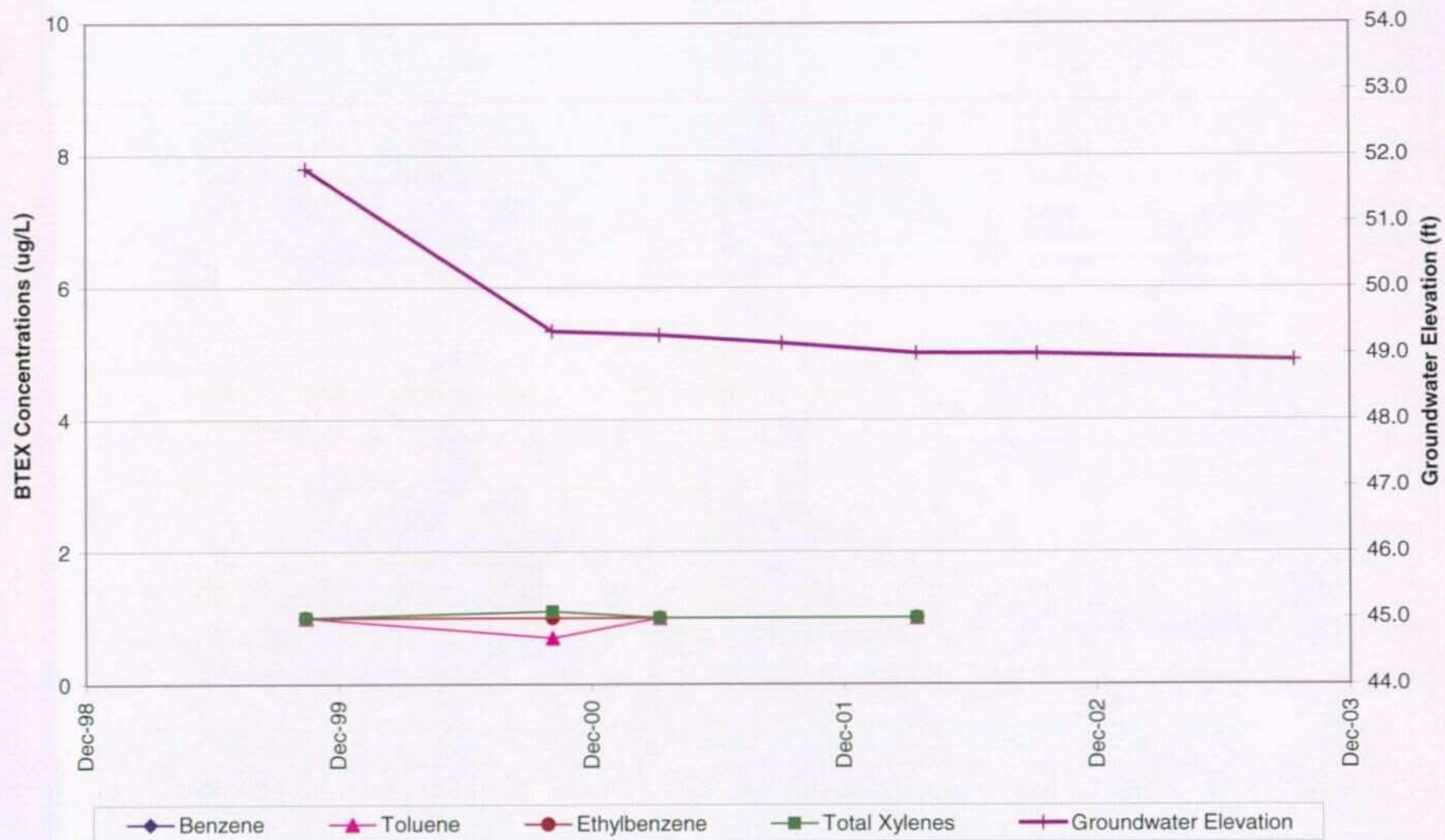


FIGURE 5
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
HORTON #1E
MW-3



ATTACHMENT 1
LABORATORY REPORTS

(Page 1 of 2)

Brian Butters 9-30-03
(Date/Signature)

[illegible]

DATA VALIDATION WORKSHEET

(Page 2 of 2)

Analytical Method: SW-846 8021B (BTEX) **MWH Job Number:** EPC-SJRB (Groundwater)

Laboratory: Accutest **Batch Identification:** T5401

Validation Criteria							
Sample ID	Horton 1E MW-1	160903TB 01					
Lab ID	T5401-01	T5401-02					
Holding Time	A	A					
Analyte List	A	A					
Reporting Limits	A	A					
Trip Blank	A	A					
Equipment Rinseate Blanks	N/A	N/A					
Field Duplicate/Replicate	N/A	N/A					
Surrogate Spike Recovery	A	A					
Initial Calibration	N	N					
Initial Calibration Verification (ICV)	N	N					
Continuing Calibration Verification (CCV)	N	N					
Laboratory Control Sample (LCS)	A	A					
Laboratory Control Sample Duplicate (LCSD)	N	N					
Method Blank	A	A					
Matrix Spike/Matrix Spike Dup. (MS/MSD)	A	N/A					
Retention Time Window	N	N					
Injection Time(s)	N	N					
Hardcopy vs. Chain-of-Custody	A	A					
EDD vs. Hardcopy	N	N					
EDD vs. Chain of Custody	N	N					

(a) List QC batch identification if different than Batch ID

A indicates validation criteria were met

A/L indicates validation criteria met based upon Laboratory's QC Summary Form

X indicates validation criteria were not met

N indicates data review were not a project specific requirement

N/A indicates criteria are not applicable for the specified analytical method or sample

N/R indicates data not available for review

NOTES:



CHAIN OF CUSTODY # 160903mNφ1

10165 Harwin Drive, Ste. 150, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #

842252414844

Accutest Quote #

Bottle Order Control #

Accutest Job #	
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[illegible]



Gulf Coast
ACCUTEST.
Laboratories

09/30/03

Technical Report for

Montgomery Watson

EPFS San Juan Basin Groundwater Site

Accutest Job Number: T5401

Report to:

MWH

pamela.j.anderson@us.mwhglobal.com

ATTN: Pam Anderson

Horton IE

Total number of pages in report: 11



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Ron Martino
Laboratory Manager

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

Sample Summary

Montgomery Watson

Job No: T5401

EPFS San Juan Basin Groundwater Site

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
T5401-1	09/16/03	11:20 MN	09/18/03	AQ	Water	HORTON 1E MW-1
T5401-2	09/16/03	00:00 MN	09/18/03	AQ	Trip Blank Water	160903TB01

Report of Analysis

Page 1 of 1

Client Sample ID:	HORTON 1E MW-1	Date Sampled:	09/16/03
Lab Sample ID:	T5401-1	Date Received:	09/18/03
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8021B		
Project:	EPFS San Juan Basin Groundwater Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK005811.D	1	09/23/03	BC	n/a	n/a	GKK312
Run #2	KK005852.D	5	09/29/03	BC	n/a	n/a	GKK315

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	95.5 ^a	5.0	ug/l	
108-88-3	Toluene	95.8	1.0	ug/l	
100-41-4	Ethylbenzene	1.3	1.0	ug/l	
1330-20-7	Xylenes (total)	12.5	3.0	ug/l	
95-47-6	o-Xylene	2.3	1.0	ug/l	
	m,p-Xylene	10.3	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	105%	76%	64-121%
98-08-8	aaa-Trifluorotoluene	96%	79%	71-121%

(a) Result is from Run# 2

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	160903TB01	Date Sampled:	09/16/03
Lab Sample ID:	T5401-2	Date Received:	09/18/03
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8021B		
Project:	EPFS San Juan Basin Groundwater Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK005808.D	1	09/22/03	BC	n/a	n/a	GKK312
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
	m,p-Xylene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%		64-121%
98-08-8	aaa-Trifluorotoluene	96%		71-121%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Blank Spike Summary

Page 1 of 1

Job Number: T5401
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin Groundwater Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK312-BS	KK005791.D	1	09/22/03	BC	n/a	n/a	GKK312

The QC reported here applies to the following samples:

Method: SW846 8021B

T5401-1, T5401-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	22.9	115	74-119
100-41-4	Ethylbenzene	20	22.9	115	82-115
108-88-3	Toluene	20	22.4	112	77-116
1330-20-7	Xylenes (total)	60	67.7	113	79-115
95-47-6	o-Xylene	20	22.4	112	78-114
	m,p-Xylene	40	45.2	113	79-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	115%	64-121%
98-08-8	aaa-Trifluorotoluene	106%	71-121%

Blank Spike Summary

Page 1 of 1

Job Number: T5401

Account: MWHSLCUT Montgomery Watson

Project: EPFS San Juan Basin Groundwater Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK315-BS ^a	KK005849.D 1		09/29/03	BC	n/a	n/a	GKK315

The QC reported here applies to the following samples:

Method: SW846 8021B

T5401-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	20.2	101	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	104%	64-121%
98-08-8	aaa-Trifluorotoluene	102%	71-121%

(a) Spike recoveries were adjusted for double spike.

Method Blank Summary

Page 1 of 1

Job Number: T5401
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin Groundwater Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK312-MB	KK005792.D 1		09/22/03	BC	n/a	n/a	GKK312

The QC reported here applies to the following samples:

Method: SW846 8021B

T5401-1, T5401-2

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
	m,p-Xylene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	104%	64-121%
98-08-8	aaa-Trifluorotoluene	101%	71-121%

Method Blank Summary

Page 1 of 1

Job Number: T5401
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin Groundwater Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK315-MB	KK005850.D 1		09/29/03	BC	n/a	n/a	GKK315

The QC reported here applies to the following samples:

Method: SW846 8021B

T5401-1

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	98%	64-121%
98-08-8	aaa-Trifluorotoluene	98%	71-121%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: T5401
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin Groundwater Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T5378-1MS	KK005800.D 10		09/22/03	BC	n/a	n/a	GKK312
T5378-1MSD	KK005801.D 10		09/22/03	BC	n/a	n/a	GKK312
T5378-1	KK005797.D 1		09/22/03	BC	n/a	n/a	GKK312
T5378-1	KK005799.D 10		09/22/03	BC	n/a	n/a	GKK312

The QC reported here applies to the following samples:

Method: SW846 8021B

T5401-1, T5401-2

CAS No.	Compound	T5378-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	125 ^a		200	345	110	346	111	0	64-124/16
100-41-4	Ethylbenzene	5.2		200	229	112	230	112	0	64-123/14
108-88-3	Toluene	2.6		200	228	113	227	112	0	64-120/13
1330-20-7	Xylenes (total)	3.0		600	700	116	697	116	0	66-118/18
95-47-6	o-Xylene	1.4		200	235	117	235	117	0	65-119/20
	m,p-Xylene	1.6	J	400	465	116	461	115	1	66-120/14

CAS No.	Surrogate Recoveries	MS	MSD	T5378-1	T5378-1	Limits
460-00-4	4-Bromofluorobenzene	111%	103%	103%	95%	64-121%
98-08-8	aaa-Trifluorotoluene	99%	90%	96%	89%	71-121%

(a) Result is from Run #2.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: T5401

Account: MWHSLCUT Montgomery Watson

Project: EPFS San Juan Basin Groundwater Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T5401-1MS	KK005853.D 5		09/29/03	BC	n/a	n/a	GKK315
T5401-1MSD	KK005854.D 5		09/29/03	BC	n/a	n/a	GKK315
T5401-1	KK005852.D 5		09/29/03	BC	n/a	n/a	GKK315

The QC reported here applies to the following samples:

Method: SW846 8021B

T5401-1

CAS No.	Compound	T5401-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	95.5		100	204	109	207	112	1	64-124/16

CAS No.	Surrogate Recoveries	MS	MSD	T5401-1	Limits
460-00-4	4-Bromofluorobenzene	87%	91%	76%	64-121%
98-08-8	aaa-Trifluorotoluene	87%	90%	79%	71-121%

Sample Custody must be documented below each time samples change possession, including courier delivery.									
Relinquished by Sampler:	Date/Time:	Received by:	Relinquished by:	Date Time:	Received by:				
1 <i>[Signature]</i> 11:00 hrs	9/17/03	1	2		2				
Relinquished by:	Date Time:	Received by:	Relinquished by:	Date Time:	Received by:				
3	9/18/03 09:00	3 <i>[Signature]</i>	4		4				
Relinquished by:	Date Time:	Received by:	Custody Seal #	Preserved where applicable ☐	On Ice <i>[Signature]</i>	Cooler Temp. 26°C			
5		5							


ACCUTEST.

SAMPLE RECEIPT LOG

OB #: 75401

DATE/TIME RECEIVED: 9/18/03 0900

CLIENT: EL Paso MWH

INITIALS: *K*

Condition/Variance (Circle "Y" for yes and "N" for no. If "N" is circled, see variance for explanation):

1. ☒ N Sample received in undamaged condition. 2. ☒ N Samples received within temp. range.
3. ☒ Y ☒ N Sample received with proper pH. 4. ☒ N Sample received in proper containers.
5. ☒ N Sample volume sufficient for analysis. 6. ☒ N Sample received with chain of custody.
7. ☒ N Chain of Custody matches sample IDs on containers.
8. ☒ N Custody seal received intact and tamper evident on cooler.
9. ☒ Y ☒ NA Custody seal received intact and tamper evident on bottles.

[illegible]

LOCATION: WI: Walk-In VR: Volatile Refrig. SUB: Subcontract EF: Encore Freezer

PRESERVATIVES: 1: None 2: HCL 3: HNO3 4: H2SO4 5: NAOH 6: Other

pH of waters checked excluding volatiles
pH of soils N/A

Comments: _____

Delivery method: Courier: _____
Tracking#: _____

COOLER TEMP: 2.6°C
COOLER TEMP: _____

COOLER TEMP: _____
COOLER TEMP: _____

Method of sample disposal: (circle one) **Accutest disposal** **Hold** **Return to Client**

Form: SM012

(Page 1 of 2)

[illegible]

DATA VALIDATION WORKSHEET
(Page 2 of 2)

Analytical Method: SW-846 8021B (BTEX) MWH Job Number: EPC-SJRB (Jaquez)
Laboratory: APCL Batch Identification: 03-02234

Validation Criteria								
Sample ID	Horton #1 MW-1	Rementa Et Al #1 MW-1	K-31 Line Drip MW-2	TB 130303-1	TB 140303-1			
Lab ID	03-02234- 01	03-02234- 03	03-02234- 04	03-02234- 05	03-02234- 06			
Holding Time	A	A	A	A	A			
Analyte List	A	A	A	A	A			
Reporting Limits	A	A	A	A	A			
Trip Blank	A ¹	A ²	A ²	A ²	A ¹			
Equipment Rinseate Blanks	N/A	N/A	N/A	N/A	N/A			
Field Duplicate/Replicate	N/A	N/A	N/A	N/A	N/A			
Initial Calibration	N	N	N	N	N			
Initial Calibration Verification (ICV)	N	N	N	N	N			
Continuing Calibration Verification (CCV)	A	A	A	A	A			
Method Blank	A	A	A	A	A			
Laboratory Control Sample (LCS)	A	A	A	A	A			
Laboratory Control Sample Duplicate (LCSD)	N	N	N	N	N			
Matrix Spike/Matrix Spike Dup. (MS/MSD)	N/A	N/A	N/A	N/A	N/A			
Surrogate Spike Recovery	A	A	A	A	A			
Retention Time Window	N	N	N	N	N			
Injection Time(s)	N	N	N	N	N			
Hardcopy vs. Chain-of-Custody	A	A	A	A	A			
EDD vs. Hardcopy	N	N	N	N	N			
EDD vs. Chain of Custody	N	N	N	N	N			

(a) List QC batch identification if different than Batch ID
A indicates validation criteria were met
A/L indicates validation criteria met based upon Laboratory's QC Summary Form
X indicates validation criteria were not met
N indicates data review were not a project specific requirement
N/A indicates criteria are not applicable for the specified analytical method or sample
N/R indicates data not available for review

NOTES:

- The following compounds were detected in the trip blank (TB 140303-1):
 - Toluene @ 0.2 T µg/l, qualify associated sample concentrations greater than 1.0 µg/l with "B" flags and associated sample concentrations less than 1.0 µg/l with "UB" flags.
- The following compounds were detected in the trip blank (TB 130303-1):
 - Toluene @ 0.2 T µg/l, qualify associated sample concentrations greater than 1.0 µg/l with "B" flags and associated sample concentrations less than 1.0 µg/l with "UB" flags.

Applied P & Ch Laboratory

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

Submitted to:

Montgomery Watson Harza

Attention: Brian Buttars

10619 South Jordan Gateway

Salt Lake City UT 84095

Tel: (801)617-3200 Fax: (801)617-4200

APCL Analytical Report

Service ID #: 801-032234

Collected by: M.J. Nee.

Collected on: 03/13-14/03

Received: 03/17/03

Extracted: N/A

Tested: 03/18-19/03

Reported: 03/24/03

Sample Description: Water

Project Description: 220013 San Juan Basin

Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result	
				MW-1 Horton #1 03-02234-1	MW-1 Remote 03-02234-3
BTXE					
Dilution Factor				1	1
BENZENE	8021B	µg/L	0.5	100	4.8
ETHYLBENZENE	8021B	µg/L	0.5	0.5	6.3
TOLUENE	8021B	µg/L	0.5	25.5	8.6
O-XYLENE	8021B	µg/L	0.5	1.0	2.9
M,P-XYLENE	8021B	µg/L	1	5.1	15

Component Analyzed	Method	Unit	PQL	Analysis Result		
				MW-2 Line Drip 03-02234-4	TB130303-1 03-02234-5	TB140303-1 03-02234-6
BTXE						
Dilution Factor				1	1	1
BENZENE	8021B	µg/L	0.5	25.4	<0.5	<0.5
ETHYLBENZENE	8021B	µg/L	0.5	3.5	<0.5	<0.5
TOLUENE	8021B	µg/L	0.5	5.6	0.2J	0.2J
O-XYLENE	8021B	µg/L	0.5	1.4	<0.5	<0.5
M,P-XYLENE	8021B	µg/L	1	<1	<1	<1

PQL: Practical Quantitation Limit. MDL: Method Detection Limit.

CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit.

"-": Analysis is not required.

J: Reported between PQL and MDL.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,

Dominic Lau

Laboratory Director

Applied P & Ch Laboratory

Applied P & Ch Laboratory

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

APCL QA/QC Report

Submitted to:
Montgomery Watson Harza
Attention: Brian Butters
10619 South Jordan Gateway
Salt Lake City, UT 84095
Tel: (801)617-3200 Fax: (801)617-4200

Service ID #: 801-032234 Received: 03/17/03
Collected by: M.J. Nee. Tested: 03/18-19/03
Collected on: 03/13-14/03 Reported: 04/01/03
Sample description:
Water
Project: San Juan Basin /220013

Analysis of Water

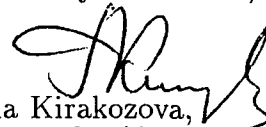
801-032234QC

Component Name	Analysis Batch #	CCV (µg/L)	CCV %Rec	M-Blank	Conc. Unit	SP Level	LCS %Rec	MS %Rec	MSD %Rec	MS/MSD %RPD	Control Limit %Rec	%Diff
BTXE												
Benzene	03G1758	100	94	N.D.	µg/L	18.0	96	97	92	5	71-126	28
Toluene	03G1758	100	99	N.D.	µg/L	70.0	98	96	93	4	70-117	24
Ethylbenzene	03G1758	100	102	N.D.	µg/L	18.0	104	97	94	4	65-131	33
m/p-Xylene	03G1758	200	95	N.D.	µg/L	70.0	99	90	87	3	66-122	28
o-Xylene	03G1758	100	95	N.D.	µg/L	25.0	96	88	85	3	65-130	33

Notation: ICV - Initial Calibration Verification
CCV - Continuation Calibration Verification
LCS - Lab Control Spike
MS - Matrix Spike
MSD - Matrix Spike Duplicate
ICS - Interference Check Standard
MD - Matrix Duplicate
N.D. - Not detected or less than PQL

CCB - Continuation Calibration Blank
M-blank - Method Blank
SP Level - Spike Level
%Rec - Recovery Percent
%RPD - Relative Percent Differences
%Diff - Control Limit for %RPD
ICP-SD - ICP Serial Dilution
N.A. - Not Applicable

Respectfully submitted,


Regina Kirakozova,
Associate QA/QC Director
Applied P & Ch Laboratory

FORM-2A

Applied P & Ch Laboratory

Surrogate Recovery Summary for Method 8021B

Client Name: Montgomery Watson Harza

Contract No:

Lab Code:

APCL

Case No:

SAS No:

SDG Number:

032234

Project ID: San Juan Basin

Project No: 220013

Sample Matrix:

Water

Batch No: 03G1758

#	Client Sample No	Lab Sample ID	S1 % #	TOT OUT
1		03G1758-LCS-01	91	0
2		03G1758-LSD-01	88	0
3		03G1758-MB-01	94	0
4	TB130303-1	03-2234-5	93	0
5	TB140303-1	03-2234-6	93	0
6	MW-1 HORTON	03-2234-1	94	0
7	MW-1 REMOTE	03-2234-3	111	0
8	MW-2 LINE DRIP	03-2234-4	94	0
9	21180-MW01-GW02	03-2197-5MS	91	0
10	21180-MW01-GW02	03-2197-5MSD	90	0
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

QC Control Limit

S1 = 4-BROMO-FLUOROBENZENE (PID)

66-133

Column to be used to flag recovery values:

* - Values outside of contract required QC Limits

D - Surrogate diluted out

I - Matrix Interference

Part 2: Sample Information

Seq. #	Sample ID (on COC)	Sample Sub-ID	APCL Sample ID	Matrix	Cont- tainer	Preser- vative	Vol, ml Am. g	# of Replica	Condition G, L, B	Collected mmddyy	Hold ?	Composite Group	TAT Days	
1	MW-2 Line Drip	VOA	03-02234-4	W	V	C	40	2	G	031303	N	0	6	☐
2	MW-1 Remote	VOA	03-02234-3	W	V	C	40	2	G	031303	N	0	6	☐
3	MW-1 Jennepah	VOA	03-02234-2	W	V	C	40	2	G	031303	N	0	6	☐
4	TB130303-1	VOA	03-02234-5	W	V	C	40	1	G	031303	N	0	6	☐
5	MW-1 Horton	VOA	03-02234-1	W	V	C	40	2	G	031403	N	0	6	☐
6	TB140303-1	VOA	03-02234-6	W	V	C	40	1	G	031403	N	0	6	☐

Part 3: Analysis Information

Test Items:

☒ 8021B

BTXE

Seq. #	Client's Sample ID (as given on COC)	Sample Sub-ID	APCL Sample ID	Matrix	BTXE	
1	MW-2 Line Drip	VOA	03-02234-4	W	X	☐
2	MW-1 Remote	VOA	03-02234-3	W	X	☐
3	MW-1 Jennepah	VOA	03-02234-2	W	.	☐
4	TB130303-1	VOA	03-02234-5	W	X	☐
5	MW-1 Horton	VOA	03-02234-1	W	X	☐
6	TB140303-1	VOA	03-02234-6	W	X	☐

Login By En-Yu Paul Kou

Check By DX

Applied P & Ch Laboratory

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

Sample Login: Check List

03-02234 (0984_1039) (2721900_1039)

03/17/03

Part 1: General Information

☐ Company Information	Name:	Montgomery Watson Harza
	Address:	10619 South Jordan Gateway ,Salt Lake City ,UT 84095
☐ Project Information	Project Description:	San Juan Basin
		Hill AFB
	Project #:	220013
☐ Billing Information	P.O. #:	
	Bill Address:	10619 South Jordan Gateway ,Salt Lake City ,UT 84095
	Lab Project ID:	1999-0746
	Client Database #:	04
☐ Receiving Information	Who Received Sample?	Paul Kou
	Receiving Date/Time:	03/17/03 1000
	COC No.	
☐ Shipping Information	Shipping Company	Express
	Packing Information:	Cooler/Ice Chester
	Cooler Temperature:	5.7 °C
☐ Container Information	Container Provider:	Client
☐ Sampling Information	Sampling Person:	
	Sampling Company:	Client
☐ Turn-Around-Time Option:		Rush 5 working day(s)
☐ QC Option:		QC and Surro. Rep.
☐ Disposal Option:		Not specify

Sample Receiving Checklist

APCL ServiceID:

2234

Client Name/Project:

Montgomery Watson

1. Sample Arrival

Date/Time Received 3/17/03 (055) Date/Time Opened 3/17/03 (055) By (name): Paul KarCustody Transfer: ☐ Client ☐ Golden State ☐ UPS ☐ US Mail ☒ FedEx ☐ APCL Empl: _____

2. Chain-of-Custody (CoC)

☒ With Samples? ☐ Faxed? ☒ Client has Copy? ☐ Signed, dated? By: _____
☒ Project ID? ☒ Analyses Clear? ☐ Hold Samples? # on Hold _____ # Received _____
☐ CoC/Docs Zip-Locked under lid? ☐ Compos.#: _____ ☒ #Samples OK? _____
☐ Discrepancies? ☐ Client notified? ☐ Response (attach docs): _____

3. Shipping Container/Cooler

☒ Cooler Used? # of 1 Cooled by: ☒ Ice ☐ Blue Ice ☐ Dry Ice ☐ None
 Temp °C 5.7°C

(Cooler temperature measured from temp blank if present, otherwise measured from the cooler).

Cooler Custody Seal? ☐ Absent ☒ Intact ☐ Tampered?

4. Sample Preservation

☐ pH <2 ☐ pH >12
 If Not, pH = _____ Preserved by: ☐ Client ☐ APCL ☐ Third Party _____

5. Holding-time Requirements

☐ pH 24hr ☐ BACT 6/24hr ☐ Cr^{VI} 24hr ☐ NO₃⁻ 48hr ☐ BOD 48hr
☐ Cl₂ ASAP ☐ Turbidity 48hr ☐ DO ASAP ☐ Fe(II) ASAP
☐ HT Expired? ☐ Client notified?

6. Sample Container Condition

☒ Intact? ☒ Broken? ☐ Documented? Number: _____
 Type: ☐ plastic ☒ glass ☐ Tube: brass/SS ☐ Tedlar Bag
☒ Quantity OK? ☐ Leaking? ☐ Anomaly?
☒ Caps tight? ☐ Air Bubbles? ☐ Anomaly?
 Labels: ☐ Unique ID? ☐ Date/Time ☐ Preserved?

7. Turn Around Time

☒ RUSH TAT: S&P ☐ Std (7-10 days) ☐ Not Marked

8. Sample Matrix

☐ Drinking H₂O ☒ Other Liq ☐ Soil ☐ Wipe ☐ Polymer ☐ Air ☐ Other: _____
☐ Ground H₂O ☐ Sludge ☐ Filter ☐ Oil/Petro ☐ Paint ☐ W. Water ☐ Extract ☐ Unknown

9. Pre-Login Check List Completed & OK?

☒ ALL OK? (if not, attach docs) ☐ Client Contact? (Name: _____) Date/Time: _____

Received/Checked by: Paul Kar Date: 17 Mar 2003 Time: 7:37 a.m.

*HT: Samples must be analyzed for results to reflect total concentrations. Results generated outside required of holding times are considered minimal values and may be used to define waste as hazardous but not as non-hazardous.

LABORATORY APCC
Contract El Paso Corp., San Juan River Basin

Chain of Custody ID # ^{MAN} 140303 ^{MAN}
Page 1 of 1
Air Bill No. 836557891528

Sampler's Name M J Nee
(print clearly)

[illegible]

North Flare Pit=NF
South Flare Pit=SF
San Juan River Plant=SJ

Relinquished by/Affiliation	Received by/Affiliation	Date	Time
	Paul C	3-14-02	1400
		3/17/03	1000

Y **N**
Notes:

ATTACHMENT 2
FIELD DOCUMENTATION

Site Vist

Martin J. Nee
PO Box 3861
Farmington, NM 87499-3861
(505)334-2791 (505)320-9675cell

Project Name San Juan Basin Ground Water **Project No.** 30001.0
Project Manager MJN
Client Company MWH **Date** 10-10-03
Site Name Horton 1E

Well	Time	Depth to Product (ft)	Depth to Water (ft)	DO (mg/L)	Comments
MW-1	1600	-	49.1	1.20	-
				-	-
				-	-

Comments
Installed 8 ORC socks.

Signature: Martin J. Nee Date: October 10, 2003

WELL DEVELOPMENT AND SAMPLING LOG

Project No.: 30001.0 Project Name: SJB Groundwater Client: MWH/EL Paso
 Location: Horton 1E Well No: MW-1 Development Sampling
 Project Manager MJN Date 9/16/03 Start Time 1039 Weather Sunny 80s
 Depth to Water 49.18 Depth to Product na Product Thickness na Measuring Point TOC
 Water Column Height 17.27 Well Dia. 4"

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

Criteria: 3 to 5 Casing Volumes of Water Removal ☒ stabilization of Indicator Parameters ☒ Other or bail dry

Gal/ft x ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
17.27 x 0.65	11.22 x 3		33.67

Time (military)	pH (su)	SC (umhos/cm)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gallons)	Comments/ Flow rate
1042	6.13	1560	18.8				0.5	clear
	6.62	1450	17.4				1	
	6.81	1690	16.9				1.5	
	6.73	1450	17.5				6	tan
	6.71	1800	17.4				12	
	6.78	1550	17.4				18	well is bailing down
	6.89	1480	17.4				20.5	
1110	6.92	1520	17.4				21	
1115	6.89	1430	17.4				21.5	well has bailed dry

Final: Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow Rate
1115	6.89	1430	17.4					21.5	well has bailed dry

COMMENTS:

INSTRUMENTATION: pH Meter ☒ _____ Temperature Meter ☒
 DO Monitor _____ Other _____
 Conductivity Meter ☒ _____
 Water Disposal Kutz Sample ID Horton 1E MW-1 Sample Time 1120
BTEX VOCs Alkalinity TDS Cations Anions Nitrate Nitrite Ammonia TKN NMWQCC Metals Total Phosphorus
 MS/MSD _____ BD _____ BD Name/Time _____ TB 160903tb01

PRODUCT RECOVERY/WATER LEVEL DATA

Martin J. Nee
PO Box 3861
Farmington, NM 87499-3861
(505)334-2791 (505)320-9675cell

Project Name	<u>San Juan Basin Ground Water</u>	Project No.	<u>30001.0</u>
Project Manager	<u>MJN</u>		
Client Company	<u>MWH</u>	Date	<u>9-16-03</u>
Site Name	<u>Horton 1E</u>		

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed (gal)
MW-1	1025	-	49.18	-	-
MW-2		-	46.855	-	-
MW-3		-	50.45	-	-

Comments

Signature:	<u>Martin J. Nee</u>	Date:	<u>September 16, 2003</u>
------------	----------------------	-------	---------------------------

WELL DEVELOPMENT AND SAMPLING LOG

Project No: 220013 Project Name: Santa Ana Basin Client: MWH
 Location: Horton #1 E Well No: MW-1 Development ☐ Sampling ☒
 Project Manager MTN Date 3-14-03 Start Time 6250 Weather 100/39 pc
 Depth to Water 49' Depth to Product - Product Thickness - Measuring Point TGC
 Water Column Height 1627 Well Dia. 4"

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐
 Bottom Valve Bailer ☒ Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐
 Criteria: 3 to 5 Casing Volumes of Water Removal ☒ Stabilization of Indicator Parameters ☒ Other no bail/dry

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
<u>1627 x 65</u>	<u>1051.8</u>	<u>x 3</u>	<u>31.726</u>

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
<u>0805</u>	<u>6.35</u>	<u>2350</u>	<u>11.7</u>				<u>1</u>	<u>clear</u>
	<u>6.67</u>	<u>2540</u>	<u>13.9</u>				<u>2</u>	
	<u>6.78</u>	<u>1720</u>	<u>14.6</u>				<u>3</u>	
	<u>6.74</u>	<u>1500</u>	<u>16.4</u>				<u>6</u>	
	<u>6.70</u>	<u>1420</u>	<u>16.7</u>				<u>9</u>	
	<u>6.69</u>	<u>1460</u>	<u>16.7</u>				<u>12</u>	
	<u>6.70</u>	<u>1490</u>	<u>16.0</u>				<u>15</u>	<u>milky green</u>
	<u>6.69</u>	<u>1470</u>	<u>16.3</u>				<u>20</u>	
<u>0917</u>	<u>6.71</u>	<u>1480</u>	<u>16.3</u>		<u>3.93</u>		<u>25</u>	<u>well bailed dry</u>

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate
<u>0917</u>	<u>6.71</u>	<u>1480</u>	<u>16.3</u>		<u>3.93</u>			<u>25</u>	<u>bailed dry</u>

COMMENTS: _____

INSTRUMENTATION: pH Meter ☒ Temperature Meter ☒
 DO Monitor ☒ Other ☐
 Conductivity Meter ☒

Water Disposal Kutz

Sample ID Horton #1 E MW-1 Sample Time 0923 BTEX ☒ VOCs ☐ Alkalinity ☐

TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Ammonia ☐ TKN ☐ NM WQCC Metals ☐

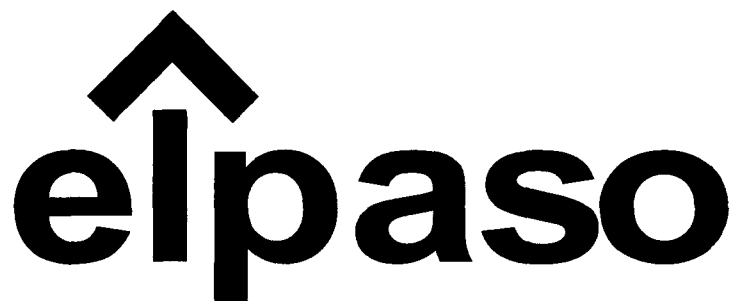
Total Phosphorus ☐ _____
 MS/MSD _____ BD _____ BD Name/Time _____ TB 140303-1

3R - 192

REPORTS

DATE:

3/2003



RECEIVED

MAR 05 2003

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

El Paso Field Services

**San Juan Basin Pit Program
Groundwater Sites Project**

**2002 Annual Report
Non-Federal Sites (Volume 2)**

March 2003



MWH

10619 South Jordan Gateway, Suite 100
Salt Lake City, Utah 84095

EL PASO FIELD SERVICES ANNUAL GROUNDWATER REPORT

NON-FEDERAL SITES VOLUME II

TABLE OF CONTENTS

Site Map

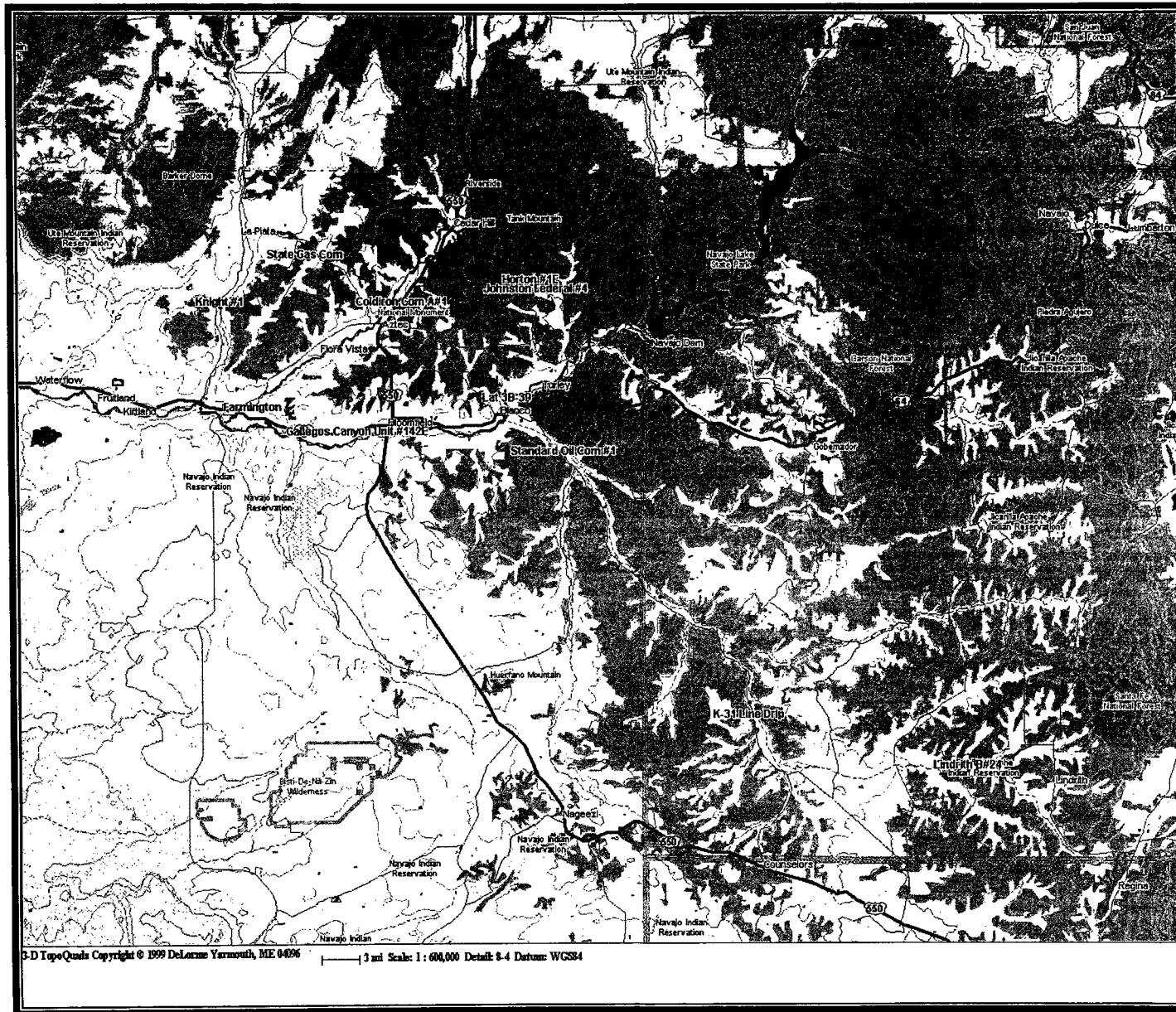
METER or LINE ID	SITE NAME	TOWNSHIP	RANGE	SECTION	UNIT
71669	State Gas Com N #1	31N	12W	16	H
70194	Johnston Fed #4	31N	09W	33	H
93388	Horton #1E	31N	09W	28	H
72556	Knight #1	30N	13W	5	A
73551	Coldiron A #1	30N	11W	2	K
03906	GCU Com A #142E	29N	12W	25	G
70445	Standard Oil Com #1	29N	09W	36	N
LD146	Lat 3B-39 Line Drip	29N	09W	10	M
LD087	K-31 Line Drip	25N	06W	16	N
94967	Lindrith B #24	24N	03W	9	N



MWH

MONTGOMERY WATSON HARZA

Non - Federal Groundwater Site Map



**EPFS GROUNDWATER SITES
2002 ANNUAL GROUNDWATER REPORT**

**Horton #1E
Meter Code: 93388**

SITE DETAILS

LEGAL DESCRIPTION: Twn: 31N Rng: 9W Sec: 28 Unit: H
NMOCD Haz Ranking: 40 **Land Type:** Fee **Operator:** Amoco Production Company

PREVIOUS ACTIVITIES

Site Assessment: 8/94	Excavation: 9/94 (50 cy)	Soil Boring: 8/95
Monitor Well: 8/95	Geoprobe: NA	Additional MWs: 10/99
Downgradient MWs: 10/99	Replace MW: NA	Quarterly Initiated: 12/96
ORC Nutrient Injection: NA	Re-Excavation: NA	PSH Removal Initiated: NA
Annual Initiated: 10/99	Quarterly Resumed: NA	

SUMMARY OF 2002 ACTIVITIES

- MW-1:** Semi-annual groundwater sampling and water level measurements were performed during 2002.
- MW-2:** Annual groundwater sampling and semi-annual water level measurements were performed during 2002.
- MW-3:** Semi-annual water level measurements were performed during 2002.
- Site-Wide Activities:** No other activities were performed at this site during 2002.

SUMMARY TABLES AND GRAPHS

- Analytical data is summarized in Table 1 and presented graphically in Figures 3 through 5.
- Laboratory reports are presented in Attachment 1.
- Field documentation are presented in Attachment 2.

SITE MAP

Site maps are attached as Figures 1 and 2.

GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS

No subsurface activities were performed at this site during 2002.

DISPOSITION OF GENERATED WASTES

No wastes were generated at this site during 2002.

**EPFS GROUNDWATER SITES
2002 ANNUAL GROUNDWATER REPORT**

**Horton #1E
Meter Code: 93388**

ISOCONCENTRATION MAPS

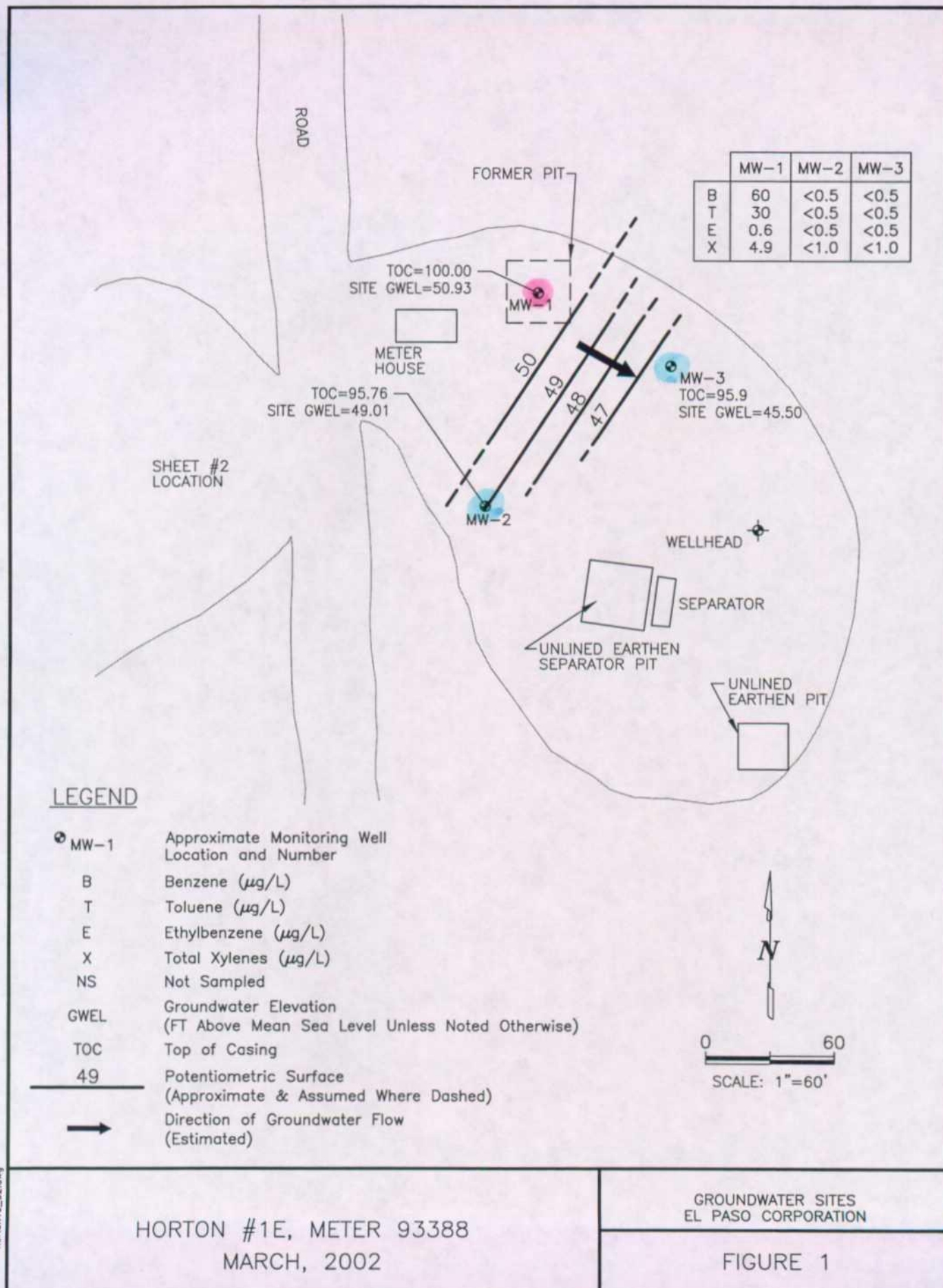
No isoconcentration maps were prepared for this site, however, the attached site maps present both the potentiometric surface and analytical data collected during 2002.

CONCLUSIONS

- The groundwater flow direction at this site trends toward the southeast.
- Benzene concentrations in MW-1 remained at 2001 levels ranging from 60 µg/l to 167 µg/l.
- The BTEX results from samples collected from MW-2 and MW-3 remained below analytical detection limits.
- The 2001 Annual Report for this site recommended the addition of oxygen-releasing compound (ORC) to MW-1. The decision to delay the addition of oxygen was made based on naturally declining concentrations of BTEX compounds through March 2002. Subsequent sampling has indicated a slight rebound in concentrations during September 2002.

RECOMMENDATIONS

- EPFS recommends that MW-1 be scheduled for semi-annual groundwater sampling until analytical results indicate that BTEX concentrations are approaching closure criteria. This well will then be scheduled for quarterly sampling until closure criteria have been met.
- Because sample results dating back to 1999 indicate that BTEX concentrations in samples collected from MW-2 and MW-3 have been below detection limits, EPFS recommends that these wells not be sampled until closure samples are scheduled.
- EPFS also recommends that semi-annual water level measurements be collected at MW-2 and MW-3.
- EPFS recommends that the addition of ORC to MW-1 be reconsidered.



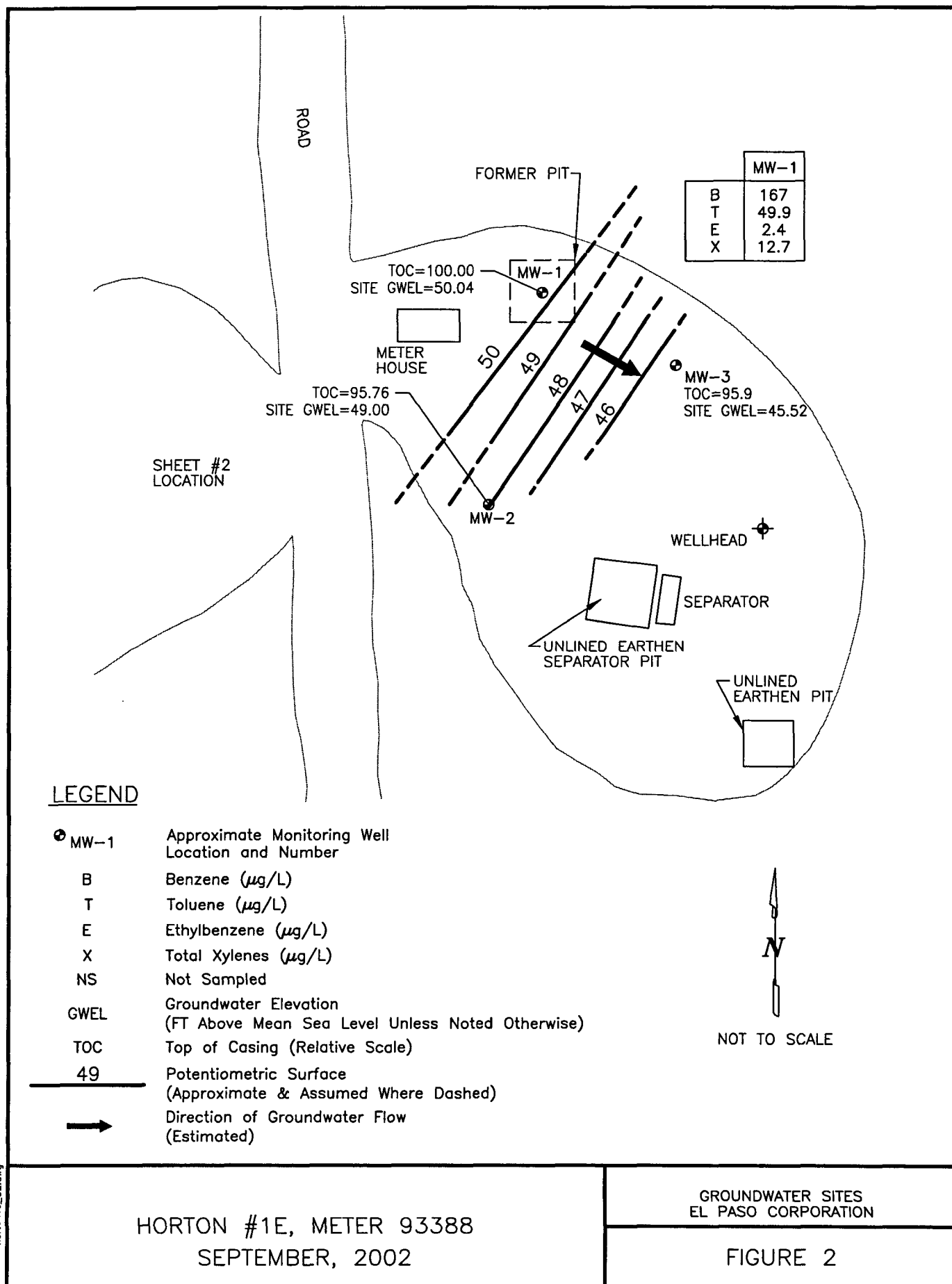


TABLE 1

**SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER
HORTON #1E (METER #93388)
(Page 1 of 1)**

Sample Identification	Sample Date	MW Identification	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	m,p-Xylene (µg/l)	o-Xylene (µg/l)	Total Xylenes (µg/l)
HOR-0203-MW1	20-Mar-2002	1	60	30	0.60	NA	NA	4.90
02-4813-1	10-Sep-2002	1	167	49.9	2.40	11	1.70	12.70
HOR-0203-MW2	20-Mar-2002	2	<0.50	<0.50	<0.50	NA	NA	<1.00
HOR-0203-MW3	20-Mar-2002	3	<0.50	<0.50	<0.50	NA	NA	<1.00

Figure 3
BTEX Concentration and Groundwater Elevation vs. Time
Horton #1E (Meter #93388)
MW-1

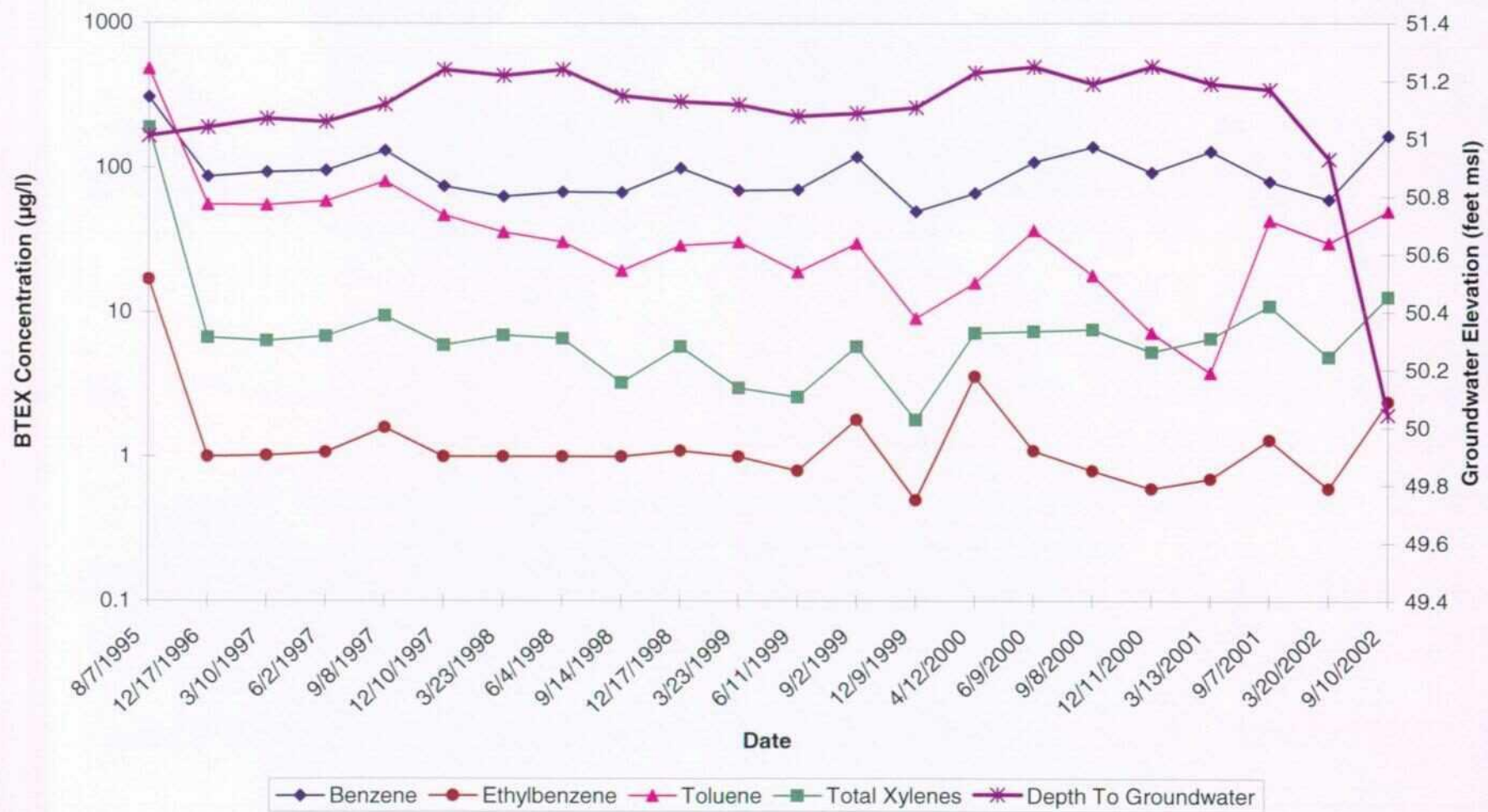


Figure 4
BTEX Concentration and Groundwater Elevation vs. Time
Horton #1E (Meter #93388)
MW-2

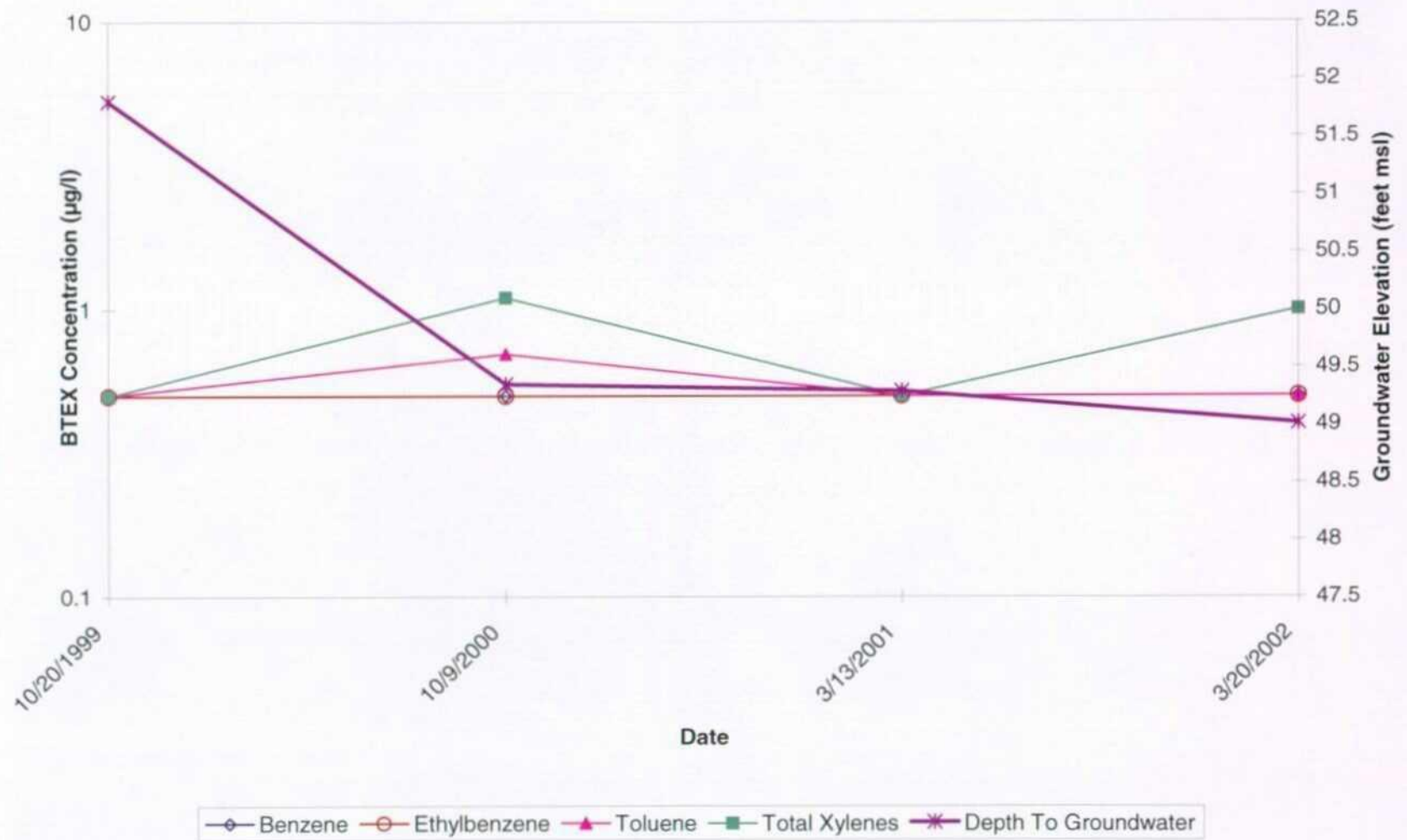
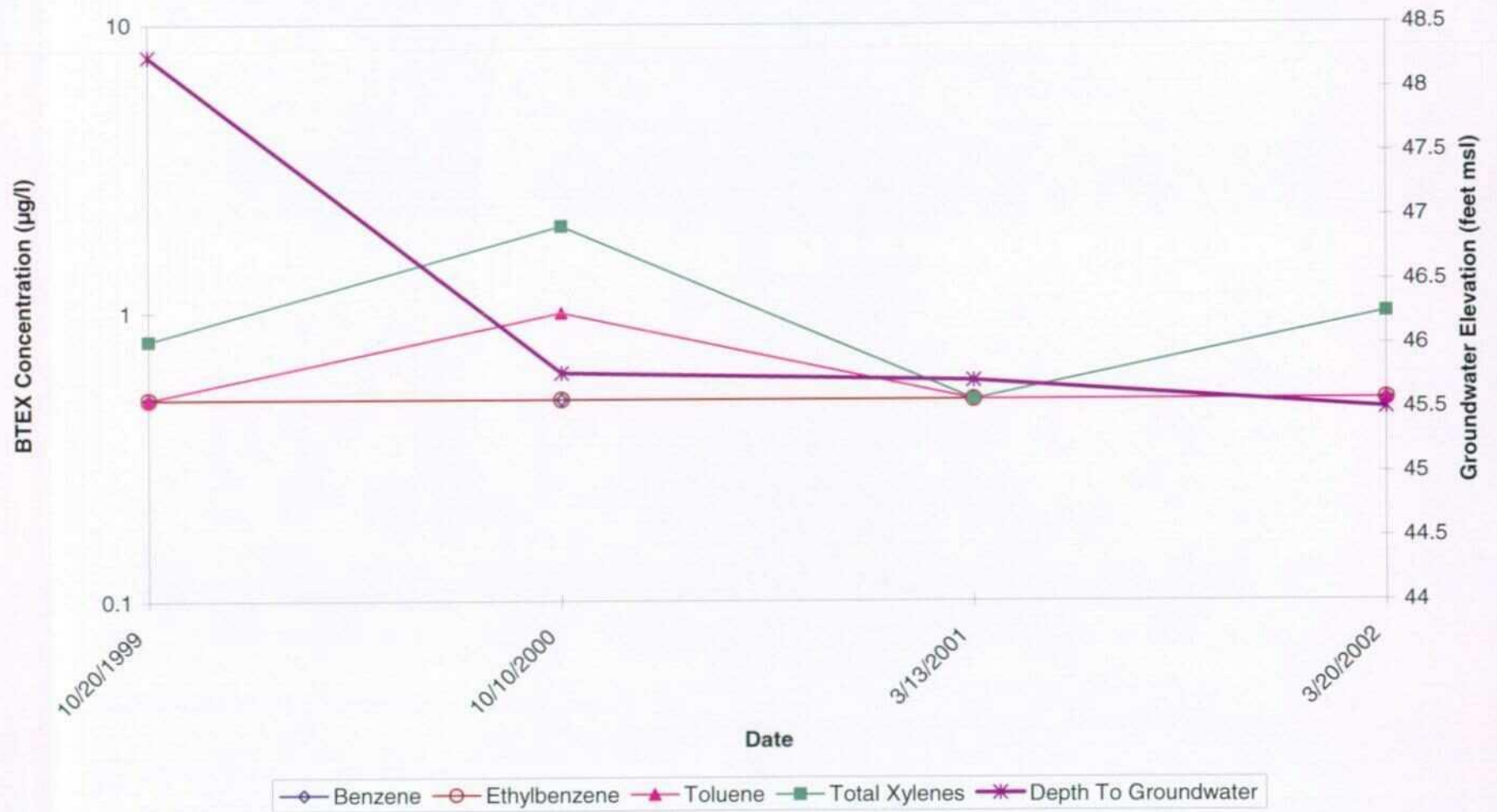


Figure 5
BTEX Concentration and Groundwater Elevation vs. Time
Horton #1E (Meter #93388)
MW-3



ATTACHMENT 1
LABORATORY REPORTS

DATA VALIDATION WORKSHEET

Analytical Method/Analytes: SW-846 8021B (BTEX) **Sample Collection Date(s):** 09/09-10/02

Laboratory: APCL **MWH Job Number:** **EPC-SJRB**
(Ground Water)

Batch Identification: 02-04813 **Matrix:** Water

QC Identification^(a): Page: 1 of 2

Validation Complete:

(Date/Signature)

[illegible]

DATA VALIDATION WORKSHEET

Analytical Method: SW-846 8021B (BTEX)

MWH Job Number:

EPC-SJRB
(Ground Water)

Laboratory: APCL

Batch Identification: 02-04813

Validation Criteria							
Sample ID	Horton 1E MW-1	Ohio Gov. MW-5					
Lab ID	02-04813- 01	02-04813- 02					
Hardcopy vs. Chain-of-Custody	A	A					
Holding Time	A	A					
Analyte List	A	A					
Reporting Limits	A	A					
Method Blank	A	A					
Trip Blank	A	A					
Equipment Rinseate Blanks	N/A	N/A					
Field Duplicate/Replicate	N/A	N/A					
Initial Calibration	N	N					
Initial Calibration Verification (ICV)	N	N					
Continuing Calibration Verification (CCV)	A	A					
Laboratory Control Sample (LCS)	A	A					
Laboratory Control Sample Duplicate (LCSD)	N	N					
Matrix Spike/Matrix Spike Dup. (MS/MSD)	N/A	N/A					
Surrogate Spike Recovery	A	A					
Retention Time Window	N	N					
Injection Time(s)	N	N					
EDD vs. Hardcopy	N	N					
EDD vs. Chain of Custody	N	N					

(a) List QC batch identification if different than Batch ID

A indicates validation criteria were met

A/L indicates validation criteria met based upon Laboratory's QC Summary Form

X indicates validation criteria were not met

N indicates data review were not a project specific requirement

N/A indicates criteria are not applicable for the specified analytical method or sample

N/R indicates data not available for review

NOTES:

1) The following analytes were detected in the trip blank:

- Ethylbenzene @ 0.9 µg/L, qualify all sample concentrations less than or equal to 4.5 µg/L with a "UB" flag and all sample concentrations greater than 4.5 µg/l with a "B" flag.
- Toluene @ 0.4T µg/L, qualify all sample concentrations less than or equal to 2.0 µg/L with a "UB" flag and all sample concentrations greater than 2.0 µg/l with a "B" flag.
- m/p-Xylene @ 0.9T µg/L, qualify all sample concentrations less than or equal to 4.5 µg/L with a "UB" flag and all sample concentrations greater than 4.5 µg/l with a "B" flag.

Applied P & Ch Laboratory

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:

Montgomery Watson Harza

Attention: Brian Buttars

10619 South Jordan Gateway

Salt Lake City UT 84095

Tel: (801)617-3200 Fax: (801)617-4200

Service ID #: 801-024813

Collected by: Ashley Lowe

Collected on: 09/09/02

Received: 09/11/02

Extracted: N/A

Tested: 09/13/02

Reported: 09/16/02

Sample Description: Water

Project Description: 4270032-020105 San Juan River Basin

Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result		
				MW-1 GW Horton 1E	MW-5 GW Ohio Gov	TB02090901
				02-04813-1	02-04813-2	02-04813-3
BTXE						
Dilution Factor				1	1	1
BENZENE	8021B	µg/L	0.5	167	1.1	<0.5
ETHYLBENZENE	8021B	µg/L	0.5	2.4	2.7	0.9
TOLUENE	8021B	µg/L	0.5	49.9	0.5	0.4J
O-XYLENE	8021B	µg/L	0.5	1.7	4.0	<0.5
M,P-XYLENE	8021B	µg/L	1	11	7.8	0.9J

PQL: Practical Quantitation Limit.

MDL: Method Detection Limit.

CRDL: Contract Required Detection Limit

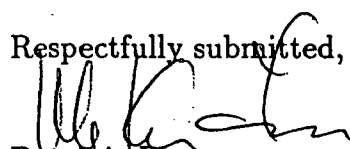
N.D.: Not Detected or less than the practical quantitation limit.

"-": Analysis is not required.

J: Reported between PQL and MDL.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,


Dominic Lau

Laboratory Director

Applied P & Ch Laboratory

Applied P & Ch Laboratory

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

APCL QA/QC Report

Submitted to:

Montgomery Watson Harza
Attention: Brian Buttars
10619 South Jordan Gateway
Salt Lake City, UT 84095
Tel: (801)617-3200 Fax: (801)617-4200

Service ID #: 801-024813

Collected by: Ashley Lowe

Collected on: 09/09/02

Sample description:

Water

Project: San Juan River Basin /4270032-020105

Received: 09/11/02

Tested: 09/13/02

Reported: 09/17/02

Analysis of Water

801-024813QC

Component Name	Analysis Batch #	CCV (µg/L)	CCV %Rec	M-Blank	Conc. Unit	SP Level	LCS %Rec	MS %Rec	MSD %Rec	MS/MSD %RPD	Control Limit %Rec	%Diff
BTXE												
Benzene	02G3843	100	99	N.D.	µg/L	18.0	85	85*	86*	2	65-129	31
Toluene	02G3843	100	100	N.D.	µg/L	7000	89	90	90	0	66-133	33
Ethylbenzene	02G3843	100	101	N.D.	µg/L	1800	97	96	94	2	65-134	35
m/p-Xylene	02G3843	200	94	N.D.	µg/L	7000	92	88	88	0	65-134	35
o-Xylene	02G3843	100	96	N.D.	µg/L	2500	91	97	94	4	65-134	35

*: LCS/LCSD is used.

Notation: ICV - Initial Calibration Verification
CCV - Continuation Calibration Verification
LCS - Lab Control Spike
MS - Matrix Spike
MSD - Matrix Spike Duplicate
ICS - Interference Check Standard
MD - Matrix Duplicate
N.D. - Not detected or less than PQL

CCB - Continuation Calibration Blank
M-blank - Method Blank
SP Level - Spike Level
%Rec - Recovery Percent
%RPD - Relative Percent Differences
%Diff - Control Limit for %RPD
ICP-SD - ICP Serial Dilution
N.A. - Not Applicable

Respectfully submitted,


Regina Kirakozova,
Associate QA/QC Director
Applied P & Ch Laboratory

FORM-2A

Applied P & Ch Laboratory

Surrogate Recovery Summary for Method 8021B

Client Name: Montgomery Watson Harza

Contract No:

Lab Code:

APCL

Case No:

SAS No:

SDG Number:

024813

Project ID: San Juan River Basin

Project No: 4270032-020105

Sample Matrix:

Water

Batch No: 02G3843

#	Client Sample No	Lab Sample ID	S1 % #	TOT OUT
1		02G3843-LCS-01	77	0
2		02G3843-LSD-01	84	0
3		02G3843-MB-02	87	0
4	TB02090901	02-4813-3	90	0
5	MW-5 GW STATE GAS	02-4725-5MS	88	0
6	MW-5 GW STATE GAS	02-4725-5MSD	85	0
7	MW-1 GW HORTON 1E	02-4813-1	87	0
8	MW-5 GW OHIO GOV	02-4813-2	92	0
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

QC Control Limit

S1 = 4-BROMO-FLUOROBENZENE (PID)

65-134

Column to be used to flag recovery values:

* - Values outside of contract required QC Limits

D - Surrogate diluted out

I - Matrix Interference

LABORATORY APCL
Contract El Paso Corp., San Jaun River Basin

Chain of Custody ID 020910 AL01
Page 1 of 1
Air Bill No. 834715209778

Phone (801) 617-3200 FAX (801) 617-4200

MWH Contact Brian Butters

Project San Juan River Basin

Project Number 4270032-020105

Date Due 21 DAYS

Sampler's Name Ashley Lowe
(print clearly)

[illegible]

North Flare Pit=NF
South Flare Pit=SF
San Juan River Plant=SJ

Relinquished by/Affiliation	Received by/Affiliation	Date	Time
Ashley L Lowe / AESE 14:00	[Signature] / APCL	09/10/02	14:00
		9/11/02	0930

SAMPLES WERE:

1 Shipped or hand delivered
Notes: Ed-Ex

2 Ambient or Chilled
Notes:

3 Temperature 4.4°C

4 Received Broken/Leaking
(Improperly Sealed)
Y N
Notes:

5 Properly Preserved
Y N
Notes:

6 Received Within Holding Times
Y N
Notes:

COC Tape Was:

1 Present on Outer Package	Y	N	NA
----------------------------	---	---	----

2 Unbroken on Outer
Package
Y N

3 Present on Sample
Y N

4 Unbroken on Sample
Y N

Discrepancies Between Sample Labels and COC Record?

Y Notes: 

PINNACLE
LABORATORIES

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

Pinnacle Lab ID number 203086
April 12, 2002

AMEC EARTH & ENVIRONMENTAL
2060 AFTON PLACE
FARMINGTON, NM 87401

EL PASO FIELD SERVICES
614 RIELLY STREET
FARMINGTON, NM 87401

Project Name HORTON #1E
Project Number 1517000121

Attention: LISA WINN/SCOTT POPE

On 03/22/02 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze aqueous samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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



H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE
LABORATORIES

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

CLIENT	: AMEC EARTH & ENVIRONMENTAL	PINNACLE ID	: 203086
PROJECT #	: 1517000121	DATE RECEIVED	: 03/22/02
PROJECT NAME	: HORTON #1E	REPORT DATE	: 04/12/02

PINNACLE ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
203086 - 01	HOR-0203-MW1	AQUEOUS	03/20/02
203086 - 02	HOR-0203-MW2	AQUEOUS	03/20/02
203086 - 03	HOR-0203-MW3	AQUEOUS	03/20/02

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 : AMEC EARTH & ENVIRONMENTAL
PROJECT # : 1517000121
PROJECT NAME : HORTON #1E

PINNACLE I.D.: 203086

SAMPLE			DATE	DATE	DATE	DIL.
D. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	HOR-0203-MW1	AQUEOUS	03/20/02	NA	03/22/02	1
02	HOR-0203-MW2	AQUEOUS	03/20/02	NA	03/23/02	1
03	HOR-0203-MW3	AQUEOUS	03/20/02	NA	03/23/02	1

PARAMETER	DET. LIMIT	UNITS	HOR-0203-MW1	HOR-0203-MW2	HOR-0203-MW3
BENZENE	0.5	UG/L	60	< 0.5	< 0.5
TOLUENE	0.5	UG/L	30	< 0.5	< 0.5
ETHYLBENZENE	0.5	UG/L	0.6	< 0.5	< 0.5
MONOXYLENES	1.0	UG/L	4.9	< 1.0	< 1.0

SURROGATE:

BROMOFLUOROBENZENE (%)

91

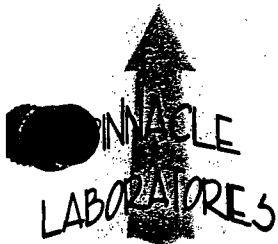
90

90

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

EST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 203086
LAB I. D.	: 032202A	DATE EXTRACTED	: N/A
CLIENT	: AMEC EARTH & ENVIRONMENTAL	DATE ANALYZED	: 03/22/02
PROJECT #	: 1517000121	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: HORTON #1E		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<1.0

SURROGATE:
BROMOFLUOROBENZENE (%) 91
SURROGATE LIMITS: (80 - 120)
ADDITIONAL NOTES:

PINNACLE
LABORATORIES

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

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 203086
BLANK I. D.	: 032202B	DATE EXTRACTED	: N/A
CLIENT	: AMEC EARTH & ENVIRONMENTAL	DATE ANALYZED	: 03/22/02
PROJECT #	: 1517000121	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: HORTON #1E		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<1.0

SURROGATE:
BROMOFLUOROBENZENE (%) 86
SURROGATE LIMITS: (80 - 120)
TEST NOTES:

PINNACLE
LABORATORIES

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

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS/LCSD

TEST : EPA 8021 MODIFIED
BATCH # : 032202
CLIENT : AMEC EARTH & ENVIRONMENTAL
PROJECT # : 1517000121
PROJECT NAME : HORTON #1E

PINNACLE I.D. : 203086
DATE EXTRACTED : N/A
DATE ANALYZED : 03/22/02
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	18.4	92	19.0	95	3	(80 - 120)	20
TOLUENE	<0.5	20.0	18.6	93	18.9	95	2	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	18.4	92	18.5	93	1	(80 - 120)	20
TOTAL XYLENES	<1.0	60.0	55.3	92	57.5	96	4	(80 - 120)	20

COMMENTS NOTES:
N/A

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

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



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

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

EST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 203086
MSMSD #	: 203078-03	DATE EXTRACTED	: N/A
CLIENT	: AMEC EARTH & ENVIRONMENTAL	DATE ANALYZED	: 03/22/02
PROJECT #	: 1517000121	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: HORTON #1E	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	18.2	91	17.3	87	5	(80 - 120)	20
OLUENE	<0.5	20.0	18.2	91	17.5	88	4	(80 - 120)	20
THYLBENZENE	<0.5	20.0	17.9	90	17.2	86	4	(80 - 120)	20
TOTAL XYLENES	<1.0	60.0	55.5	93	53.4	89	4	(80 - 120)	20

NOTES:

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

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

CHAIN OF CUSTODY

DATE: 3-20-02 PAGE: 1 OF 1

PLI Accession #

203006

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

[illegible]

PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS		RELINQUISHED BY: 1		RELINQUISHED BY:	
PROJ. NO.: 1517000121		(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒		Signature: <i>Chad May</i> Time: 1600		Signature: Time:	
PROJ. NAME: EPRS Gw project		CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER		Printed Name: Date:		Printed Name: Date:	
P.O. NO.:		METHANOL PRESERVATION ☐		<i>Chris A. Marez</i> 3-20-02			
SHIPPED VIA <i>Greyhound</i>		COMMENTS: FIXED FEE ☐		Company: See reverse side (Force Majeure)		Company:	
SAMPLE RECEIPT		HORTON # 1E meter # (93348)		RECEIVED BY:		RECEIVED BY: (LAB) 2	
NO. CONTAINERS: 1				Signature: Time:		Signature: Time: <i>Francine Murre</i> 0945	
CUSTODY SEALS: 1				Printed Name: Date:		Printed Name: Date: <i>Francine Murre</i> 3/22/02	
RECEIVED INTACT: YES				Company:		Pinnacle Laboratories Inc.	
BLUE CELE							

APCL QA/QC Report

Submitted to:

Montgomery Watson Harza

Attention: Brian Buttars

10619 South Jordan Gateway

Salt Lake City, UT 84095

Tel: (801)617-3200 Fax: (801)617-4200

Service ID #: 801-024813

Collected by: Ashley Lowe

Collected on: 09/09/02

Sample description:

Water

Project: San Juan River Basin /4270032-020105

Received: 09/11/02

Tested: 09/13/02

Reported: 09/17/02

Analysis of Water

801-024813QC

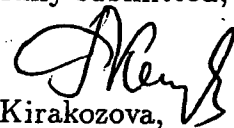
Component Name	Analysis Batch #	CCV (µg/L)	CCV %Rec	M-Blank	Conc. Unit	SP Level	LCS %Rec	MS %Rec	MSD %Rec	MS/MSD %RPD	Control Limit %Rec %Diff	
BTXE												
Benzene	02G3843	100	99	N.D.	µg/L	18.0	85	85*	86*	2	65-129	31
Toluene	02G3843	100	100	N.D.	µg/L	7000	89	90	90	0	66-133	33
Ethylbenzene	02G3843	100	101	N.D.	µg/L	1800	97	96	94	2	65-134	35
m/p-Xylene	02G3843	200	94	N.D.	µg/L	7000	92	88	88	0	65-134	35
o-Xylene	02G3843	100	96	N.D.	µg/L	2500	91	97	94	4	65-134	35

*: LCS/LCSD is used.

Notation: ICV - Initial Calibration Verification
 CCV - Continuation Calibration Verification
 LCS - Lab Control Spike
 MS - Matrix Spike
 MSD - Matrix Spike Duplicate
 ICS - Interference Check Standard
 MD - Matrix Duplicate
 N.D. - Not detected or less than PQL

CCB - Continuation Calibration Blank
 M-blank - Method Blank
 SP Level - Spike Level
 %Rec - Recovery Percent
 %RPD - Relative Percent Differences
 %Diff - Control Limit for %RPD
 ICP-SD - ICP Serial Dilution
 N.A. - Not Applicable

Respectfully submitted,


 Regina Kirakozova,
 Associate QA/QC Director
 Applied P & Ch Laboratory

Applied P & Ch Laboratory

Surrogate Recovery Summary for Method 8021B

Client Name: Montgomery Watson Harza

Contract No:

Lab Code:

APCL

Case No:

SAS No:

SDG Number:

024813

Project ID: San Juan River Basin

Project No: 4270032-020105

Sample Matrix:

Water

Batch No: 02G3843

#	Client Sample No	Lab Sample ID	S1 % #	TOT OUT
1		02G3843-LCS-01	77	0
2		02G3843-LSD-01	84	0
3		02G3843-MB-02	87	0
4	TB02090901	02-4813-3	90	0
5	MW-5 GW STATE GAS	02-4725-5MS	88	0
6	MW-5 GW STATE GAS	02-4725-5MSD	85	0
7	MW-1 GW HORTON 1E	02-4813-1	87	0
8	MW-5 GW OHIO GOV	02-4813-2	92	0
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

S1 = 4-BROMO-FLUOROBENZENE (PID)

QC Control Limit

65-134

Column to be used to flag recovery values:

* - Values outside of contract required QC Limits

D - Surrogate diluted out

I - Matrix Interference

APCL Analytical Report

Submitted to:

Montgomery Watson Harza

Attention: Brian Butters

10619 South Jordan Gateway

Salt Lake City UT 84095

Tel: (801)617-3200 Fax: (801)617-4200

Service ID #: 801-024813

Collected by: Ashley Lowe

Collected on: 09/09/02

Received: 09/11/02

Extracted: N/A

Tested: 09/13/02

Reported: 09/16/02

Sample Description: Water

Project Description: 4270032-020105 San Juan River Basin

Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result		
				MW-1 GW Horton 1E	MW-5 GW Ohio Gov	TB02090901
				02-04813-1	02-04813-2	02-04813-3
BTXE						
Dilution Factor				1	1	1
BENZENE	8021B	µg/L	0.5	167	1.1	<0.5
ETHYLBENZENE	8021B	µg/L	0.5	2.4	2.7	0.9
TOLUENE	8021B	µg/L	0.5	49.9	0.5	0.4J
O-XYLENE	8021B	µg/L	0.5	1.7	4.0	<0.5
M,P-XYLENE	8021B	µg/L	1	11	7.8	0.9J

PQL: Practical Quantitation Limit.

MDL: Method Detection Limit.

CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit.

"-": Analysis is not required.

J: Reported between PQL and MDL.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,

Dominic Lau

Laboratory Director

Applied P & Ch Laboratory

LABORATORY APCL
Contract El Paso Corp., San Jaun River Basin

Chain of Custody ID 020910AL01
Page 1 of 1
Air Bill No. 834715209748

MWH
Phone (801) 617-3200 FAX (801) 617-4200
MWH Contact Brian Butters
Project San Juan River Basin
Project Number 4270032-020105
Date Due 21 Days
Sampler's Name Ashley Lowe
(print clearly)

[illegible]

(a) Matrix: SO – Soil WS – Surface Water WG – Ground Water	AA – Air WQ – Trip Blank/ Equipment Blanks WW – Wastewater	(b) Sampling Technique: Composite=C Grab=G Hand Auger=HA	Submersible Pump=SP Bladder Pump=BP Bailer=B Wellhead Faucet=WF Hydropunch=HP	Location IDs: Groundwater Sites=GW Bisti=BI Jaquez=JA	North Flare Pit=NF South Flare Pit=SF San Juan River Plant=SJ
--	---	--	---	---	---

Relinquished by/Affiliation	Received by/Affiliation	Date	Time
Ashley S Lane / AESE 14:00	[Signature] / APCL	09/10/02	14:00
		9/11/02	0937

LABORATORY USE ONLY

SAMPLES WERE:

- 1 Shipped or hand delivered
Notes: Fed-Ex
- 2 Ambient or Chilled
Notes:
- 3 Temperature 4.4°C
- 4 Received Broken/Leaking
(Improperly Sealed)
Y N
Notes:
- 5 Properly Preserved
Y N
Notes:
- 6 Received Within
Holding Times
Y N
Notes:

COC Tape Was:

- | | | | |
|-----------------------------|---|---|----|
| 1 Present on Outer Package | Y | N | NA |
| 2 Unbroken on Outer Package | Y | N | NA |
| 3 Present on Sample | Y | N | NA |
| 4 Unbroken on Sample | Y | N | NA |
- Notes:

Discrepancies Between Sample Labels and COC Record?

Y
Notes:

ATTACHMENT 2
FIELD DOCUMENTATION

Product Recovery and Well Observation Data

Project Name: San Juan River Basin
 Project Manager: Ashley Lowe
 Client Company: MWH
 Site Name: Horton 1E

Project No: 220013
 Date: 09/10/02

Well	Time	Depth to Water (ft)	Depth to Product (ft)	Total Well Depth (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-2	10:35	46.755	—	62.625	—	0	
MW-3	10:32	50.378	—	57.130	—	0	tan colored silt on probe
MW-1	10:45	49.955	—	65.365	—	0	sampled

COMMENTS: _____

Signature: Ashley L Lowe

Date: 09/10/02

WELL DEVELOPMENT AND SAMPLING LOG

Project No: 220013 Project Name: San Juan River Basin Client: MWH
 Location: Horton 1E Well No: MW-1 Development ☐ Sampling ☒
 Project Manager Ashley Lowe Date 09/10/02 Start Time 10:45 Weather 69°, Drizzling
 Depth to Water 49.955 Depth to Product NA Product Thickness NA Measuring Point TDC
 Water Column Height 15.41 Well Dia. 4" TD 65.365

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐
 Bottom Valve Bailer ☒ Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐
 Criteria: 3 to 5 Casing Volumes of Water Removal ☒ Stabilization of Indicator Parameters ☐ Other or bail dry

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
<u>0.65 x 15.4</u>	<u>10 gal x 3</u>		<u>30 gal</u>

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
<u>10:50</u>	<u>5.12</u>	<u>1840</u>	<u>20.7</u>				<u>0.5</u>	<u>v. clear</u>
	<u>5.15</u>	<u>1750</u>	<u>19.0</u>				<u>3.5</u>	<u>light brown color</u>
	<u>5.19</u>	<u>1660</u>	<u>18.1</u>				<u>5.5</u>	
	<u>5.20</u>	<u>1650</u>	<u>18.2</u>				<u>7.5</u>	<u>slight odor</u>
	<u>5.25</u>	<u>1640</u>	<u>18.2</u>				<u>9.5</u>	
	<u>5.30</u>	<u>1640</u>	<u>18.0</u>				<u>13.5</u>	<u>dark brown, cloudy</u>
	<u>5.30</u>	<u>1590</u>	<u>17.4</u>				<u>15.5</u>	
	<u>5.34</u>	<u>1560</u>	<u>17.1</u>				<u>17.5</u>	
	<u>5.34</u>	<u>1550</u>	<u>17.2</u>				<u>19.5</u>	
	<u>5.35</u>	<u>1580</u>	<u>17.2</u>				<u>21.5</u>	<u>observed sheen on water</u>
	<u>5.34</u>	<u>1590</u>	<u>17.2</u>				<u>23.5</u>	
	<u>5.34</u>	<u>1580</u>	<u>17.1</u>				<u>25.5</u>	
	<u>5.36</u>	<u>1580</u>	<u>17.2</u>				<u>27.5</u>	
	<u>5.35</u>	<u>1570</u>	<u>17.1</u>				<u>28.5</u>	
	<u>5.36</u>	<u>1560</u>	<u>17.1</u>				<u>29.5</u>	
	<u>5.36</u>	<u>1550</u>	<u>17.1</u>				<u>30.5</u>	

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate
<u>12:16</u>	<u>5.36</u>	<u>1550</u>	<u>17.1</u>					<u>30.5 gal</u>	

COMMENTS:

INSTRUMENTATION:

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

Water Disposal

Kutz PlantSample ID Horton 1E MW-1Sample Time 12:16BTEX ☒ VOCs ☐ Alkalinity ☐TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Ammonia ☐ TKN ☐ NM WQCC Metals ☐Total Phosphorus ☐MS/MSD ☐ BD ☐ BD Name/Time ☐ TB TB02090901

fed USA Airbill FedEx Tracking Number 834715209748

1 From Please print and press hard.

Date _____ Sender's FedEx Account Number 220929116

Sender's Name Ashley Lowe Phone (505) 566-9116

Company A.E. Schmidt Environmental

Address 906 San Juan Blvd, Suite, D

City Farmington State NM ZIP 87401

2 Your Internal Billing Reference
First 24 characters will appear on invoice.

3 To Recipient's Name Eric Wendland Phone (909) 590 1828

Company APCL

Address 13760 Magnolia Ave.

To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address _____

City Chino State CA ZIP 91710

Try online shipping at fedex.com

By using this Airbill you agree to the service conditions on the back of this Airbill and in our current Service Guide, including terms that limit our liability.

Questions? Visit our Web site at fedex.com or call 1.800.Go.FedEx® 800.463.3339.

0200 Sender's Copy

4a Express Package Service

☒ FedEx Priority Overnight Next business morning ☐ FedEx Standard Overnight Next business afternoon ☐ FedEx First Overnight Earliest next business morning delivery to select locations

☐ FedEx 2Day Second business day ☐ FedEx Express Saver Third business day

FedEx Envelope rate not available. Minimum charge: One pound rate.

4b Express Freight Service

☐ FedEx 1Day Freight* Next business day ☐ FedEx 2Day Freight Second business day ☐ FedEx 3Day Freight Third business day

* Call for Confirmation.

5 Packaging * Declared value limit \$500

☐ FedEx Envelope* ☐ FedEx Pak* Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak ☐ Other

6 Special Handling

☐ SATURDAY Delivery Available ONLY for FedEx Priority Overnight and FedEx 2Day to select ZIP codes ☐ HOLD Weekday at FedEx Location Available ONLY for FedEx First Overnight ☐ HOLD Saturday at FedEx Location Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations

For hold FedEx address in Section 3

Does this shipment contain dangerous goods?
Our box must be checked.

☒ No ☐ Yes As per attached Shipper's Declaration ☐ Yes Shipper's Declaration not required ☐ Dry Ice Dry Ice, 9 UN 1845 x _____ kg

Dangerous Goods (including Dry Ice) cannot be shipped in FedEx packaging. ☐ Cargo Aircraft Only

7 Payment Bill to:

☐ Sender Acct. No. in Section 1 will be billed. ☒ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

Enter FedEx Acct. No. or Credit Card No. below

FedEx Acct. No. Credit Card No. 1421-27-695 Exp. Date _____

Total Packages 1 Total Weight 10 lbs Total Declared Value \$.00

* Our liability is limited to \$100 unless you declare a higher value. See back for details. FedEx Use Only

8 Release Signature Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

446

Print Date 10/01 • Part #157612 • ©1994-2001 FedEx • PRINTED IN U.S.A. WCSL 02

RETAIN THIS COPY FOR YOUR RECORDS.

LABORATORY APCL
Contract El Paso Corp., San Jaun River Basin

Chain of Custody ID 020910 AL 61
Page 1 of 1
Air Bill No. 834715209748

Sampler's Name Ashley Lowe
(print clearly)

Y Notes: 

☒ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 1

Page 1 of 1

Project Name EPFS G.W. PROJECT

Project Manager Lisa Winn

Project No. 1517000121

Client Company El Paso Field Services

Site Name Horton #1E (93394)

Site Address Rural San Juan CO.

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 65.46
Initial Depth to Water (feet) 49.07
Height of Water Column in Well (feet) 16.39
Diameter (inches): Well 4" Gravel Pack

Instruments

Serial No. (If applicable)

- ☐ pH Meter YSI 63
☒ DO Monitor YSI 95
☒ Conductivity Meter YSI 63
☒ Temperature Meter YSI 63
☐ Other _____

Methods of Development

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

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	16.39	0.69 x 3	32.07
Gravel Pack			
Drilling Fluids			
Total			32.07

Water Disposal

KUTZ Separator Bloomfield N.M.

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Boiler				Increment	Cumulative	Increment	Cumulative					
3-20-02	0957		X				6.5	6.5			13.9	6.38	1533		Cloudy, mild Septic Odor
	1006		X				6.5	13			14.4	6.80	1711		Cloudy, Light Gray mild Septic Odor
	1017		X				6.5	19.5			14.4	6.84	1722		" "
	1027		X			64.03	6.5	26			14.4	7.02	1671	6.31	NO Change

Comments AFTER Bailing approximately 26 gal. Bailed well Dry LET Recover sampled for BTEX 1045

Developer's Signature(s) Chris X [Signature]

3-20-02

Reviewed [Signature] Date 3/28/02

☐ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 2

Page 1 of 1

Project Name EPFS GW project

Project Manager Lisa Winn

Project No. 512000121

Client Company El Paso Field Services

Site Name Horton #1E (93388)

Site Address Rural San Juan Co.

Development Criteria

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

Methods of Development

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

Water Volume Calculation

Initial Depth of Well (feet) 62.73
Initial Depth to Water (feet) 46.75
Height of Water Column in Well (feet) 15.98
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	15.98	260X3	7.8
Gravel Pack			
Drilling Fluids			
Total			7.8

Instruments

- ☒ pH Meter YSI 63
☒ DO Monitor YSI 95
☒ Conductivity Meter YSI 63
☒ Temperature Meter YSI 63
☐ Other _____

Serial No. (if applicable)

Water Disposal

KWT2 Separator Bloomfield N.M.

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
3-20-02	1211		X				1.75	1.75			13.7	6.88	1650		cloudy no odor
	1216		X				1.75	3.5			13.4	6.96	1655		cloudy light brown no odor
	1233		X				1.75	5.25			13.5	6.96	1666		" "
	1238		X				1.75	7			13.3	7.03	1656		" "
	1243		X			49.0	1.75	8.75			13.2	6.97	1649	2.83	No Change

Comments Sampled for Brex 1250

Developer's

Signature(s)

Christina M

3-20-02

Review

Lisa Winn

Date

3/28/02

☒ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 3

Page 1 of 1

Project Name EPFS GW. project

Project Manager LISA Winn

Project No. 1517000121

Client Company _____

Site Name HORTON # 1E (93388)

Site Address Rural San Juan CO.

Development Criteria

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

Methods of Development

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

Water Volume Calculation

Initial Depth of Well (feet) 52.52
Initial Depth to Water (feet) 50.40
Height of Water Column in Well (feet) 2.12
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	<u>2.12</u>	<u>1.16 x 3</u>	<u>3.48</u>
Gravel Pack			
Drilling Fluids			
Total			<u>3.48</u>

Instruments

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

Serial No. (if applicable)

YSI 63
YSI 95
YSI 63
YSI 63

Water Disposal

KUTL Separator Bloomfield N.M.

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Boiler				Increment	Cumulative	Increment	Cumulative					
3-20-02	1118		X				.75	.75			13.2	6.67	1660		Cloudy, mild septic odor
	1121		X				.75	1.5			13.4	6.77	1717		Cloudy Bottom mild septic odor
	1124		X				.75	2.25			13.6	6.79	1720		" "
	1127		X				.75	3			13.6	6.75	1721		" "
	1130		X			50.74	.75	3.75			13.6	6.75	1715	2.87	no change

Comments SAMPLED FOR BTEX 1143

Developer's

Signature(s)

Chris & Mary

Date

3-20-02

Reviewer

Lisa Winn

Date

3/28/02



Certified Mail: #7001 1940 0003 1553 8513

February 28, 2002

RECEIVED

MAR 04 2002

**ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION**

Mr. William C. Olson
New Mexico Oil Conservation Division
1220 St. Francis Dr.
Santa Fe, NM 87504

RE: 2001 Pit Project Annual Groundwater Report

Dear Mr. Olson:

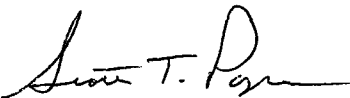
In accordance with reporting requirements, El Paso Field Services (EPFS) has enclosed annual reports for the 30 remaining groundwater impacted sites that were identified during our pit closure project of 1994 / 1995.

EPFS has organized the 30 reports (Volumes IA, IB, II and III), reports by land type. Volume IA and IB contain annual reports for sites found on Federal land. Volume II contains Non Federal sites and Volume III contains sites on Navajo land. Of the 30 reports submitted EPFS is requesting closure of three sites located on Navajo lands. Of the three Navajo sites submitted for closure OCD has closed the Charley Pah #4 and the John Charles #8. The Rementa et al #1 has not been closed by either agency. EPFS understands closure of groundwater sites on Navajo land falls under jurisdiction of the Navajo Environmental Protection Agency and original documents have been submitted to them for review. Other Navajo sites are included in the report for your information.

The Jaquez Com. C #1 and Jaquez Com. E #1 site is not included in with this report and will be submitted by the required deadline of April 1, 2002.

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

Sincerely,



Scott T. Pope P.G.
Senior Environmental Scientist

xc: Mr. Denny Foust, NMOCD, Aztec - w / enclosures; **Certified Mail # 7001 1940 0003 1553 8506**
Mr. Bill Liesse, BLM - w / enclosures (federal sites only), **Certified Mail # 7001 1940 0003 1553 8520**

SAN JUAN BASIN PIT CLOSURES

San Juan Basin, New Mexico

**El Paso Field Services
Pit Project Groundwater Sites
Annual Report
Volume II-Non-Federal Sites**

March 2002

Prepared for

**El Paso Field Services
Farmington, New Mexico**



MWH

MONTGOMERY WATSON HARZA

EL PASO FIELD SERVICES ANNUAL GROUNDWATER REPORT

NON-FEDERAL SITES VOLUME II

TABLE OF CONTENTS

Site Map

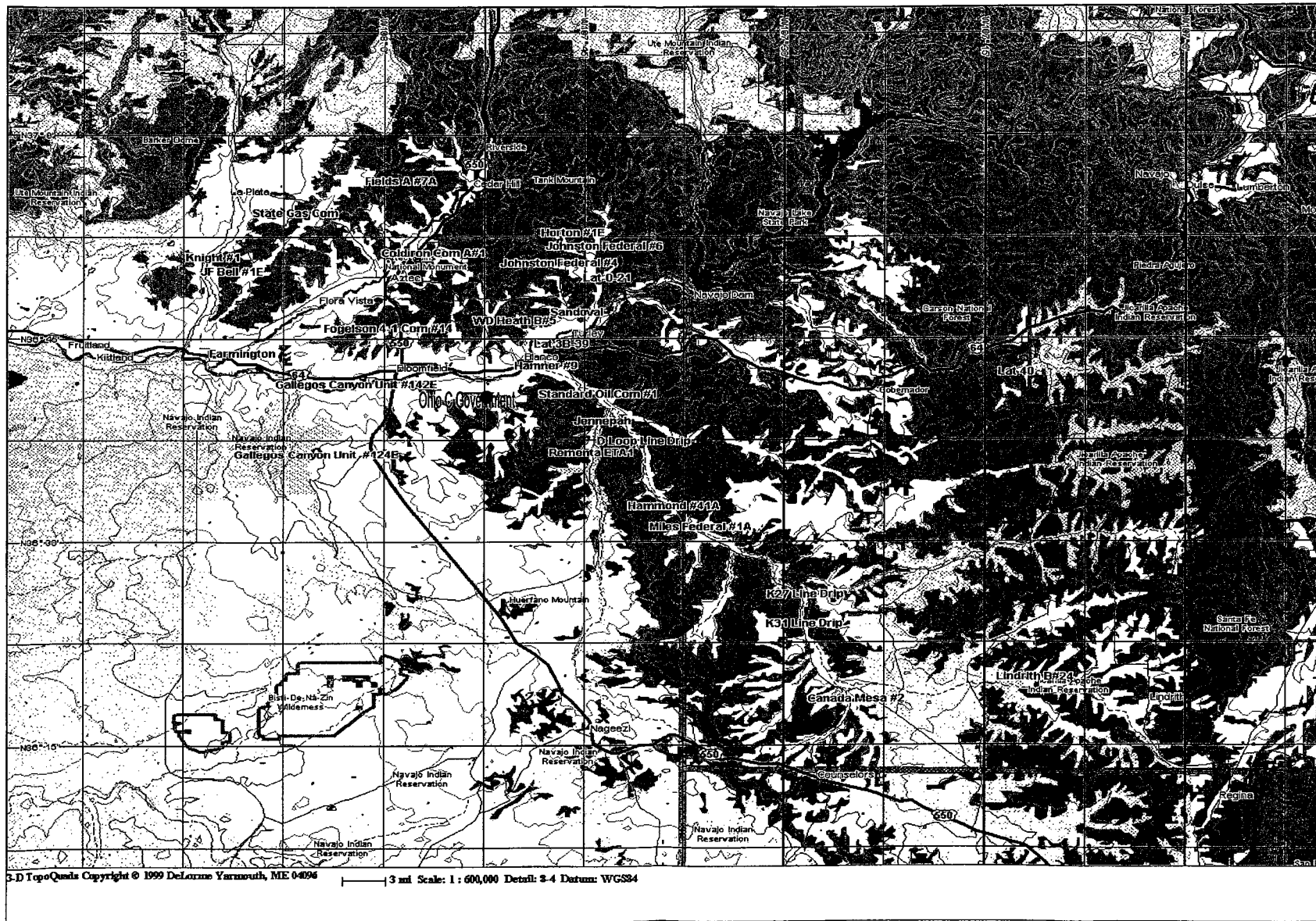
METER or LINE ID	SITE NAME	TOWNSHIP	RANGE	SECTION	UNIT
71669	State Gas Com N #1	31N	12W	16	H
70194	Johnston Fed #4	31N	09W	33	H
93388	Horton #1E	31N	09W	28	H
72556	Knight #1	30N	13W	5	A
73551	Coldiron A #1	30N	11W	2	K
03906	GCU Com A #142E	29N	12W	25	G
70445	Standard Oil Com #1	29N	09W	36	N
LD146	Lat 3B-39 Line Drip	29N	09W	10	M
LD087	K-31 Line Drip	25N	06W	16	N
94967	Lindrith B #24	24N	03W	9	N



MWH

MONTGOMERY WATSON HARZA

Groundwater Site Map



EPFS GROUNDWATER PITS 2001 ANNUAL GROUNDWATER REPORT

Horton #1E

Meter Code 93388

SITE DETAILS

Legals Twn: 31N Rng: 09W Sec: 28 UNIT: H
NMOCD Haz Ranking 40 Land Type: Fee Operator: Amoco Production Company

PREVIOUS ACTIVITIES

Site Assessment: Aug-94 Excavation Sep-94 (50cy) Soil Boring: Aug-95 Monitor Well: Aug-95
Geoprobe: NA Additional MWs: Oct-99 Downgradient MW's: Oct-99 Replace MW: NA
PSH Removal Initiated: NA ORC Nutrient Injection NA Re-Excavation: NA
Quarterly Initiated Dec-96 Annual Initiated Oct-99 Quarterly Resumed: NA

2001 ACTIVITY

Groundwater Monitoring - Semi annual monitoring of MW-1 and annual groundwater monitoring of MW-2 and MW-3 has continued through 2001.

SUMMARY TABLES AND GRAPHS

Groundwater analytical data is presented in Table 1 BTEX. Copies of the laboratory data sheets and associated quality assurance/quality control data are presented in Attachment 1. Included are BTEX Data graphs for MW-1 through MW-3.

SITE MAP

Site Maps with BTEX concentrations and groundwater elevations are attached.

GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS

There were no drilling activities at this site in 2001.

DISPOSITION OF GENERATED WASTES

There were no wastes generated at this site.

EPFS GROUNDWATER PITS 2001 ANNUAL GROUNDWATER REPORT

Horton #1E

Meter Code: 93388

ISOCONCENTRATION MAPS

There are no isoconcentration maps presented for this site.

CONCLUSIONS

Hydrocarbon concentrations in MW-1 continue to hover around 100 ppb benzene.

Downgradient monitoring wells MW-2 and MW-3 have not detected any hydrocarbons during any of the three sampling events between 1999 and 2001.

Groundwater flow is towards the southwest.

RECOMMENDATIONS

- > EPFS recommends adding oxygenation to source well MW-1.
- > Conduct semi-annual sampling at MW-1 until analytical results are near the New Mexico groundwater standards, then sample quarterly for closure.
- > Based on non-detectable hydrocarbon concentrations in MW-2 and -3 since 1999, we recommend sampling at closure.

ROAD

FORMER PIT

TOC=100.00
SITE GWEL=51.19

METER
HOUSE

MW-1

	MW-1	MW-2	MW-3
B	130	<0.5	<0.5
T	3.8	<0.5	<0.5
E	0.7	<0.5	<0.5
X	6.6	<0.5	<0.5

50

49

48

47

MW-3
TOC=95.9
SITE GWEL=45.72

SHEET #2
LOCATION

MW-2
TOC=95.76
SITE GWEL=49.29

WELLHEAD

SEPARATOR

UNLINED EARTHEN
SEPARATOR PIT

UNLINED
EARTHEN PIT

LEGEND

- ⊕ MW-1 Approximate Monitoring Well Location and Number
- B Benzene ($\mu\text{g/L}$)
- T Toluene ($\mu\text{g/L}$)
- E Ethylbenzene ($\mu\text{g/L}$)
- X Total Xylenes ($\mu\text{g/L}$)
- NS Not Sampled
- GWEL Groundwater Elevation (FT Above Mean Sea Level Unless Noted Otherwise)
- TOC Top of Casing
- 49 Potentiometric Surface (Approximate & Assumed Where Dashed)
- Direction of Groundwater Flow (Estimated)

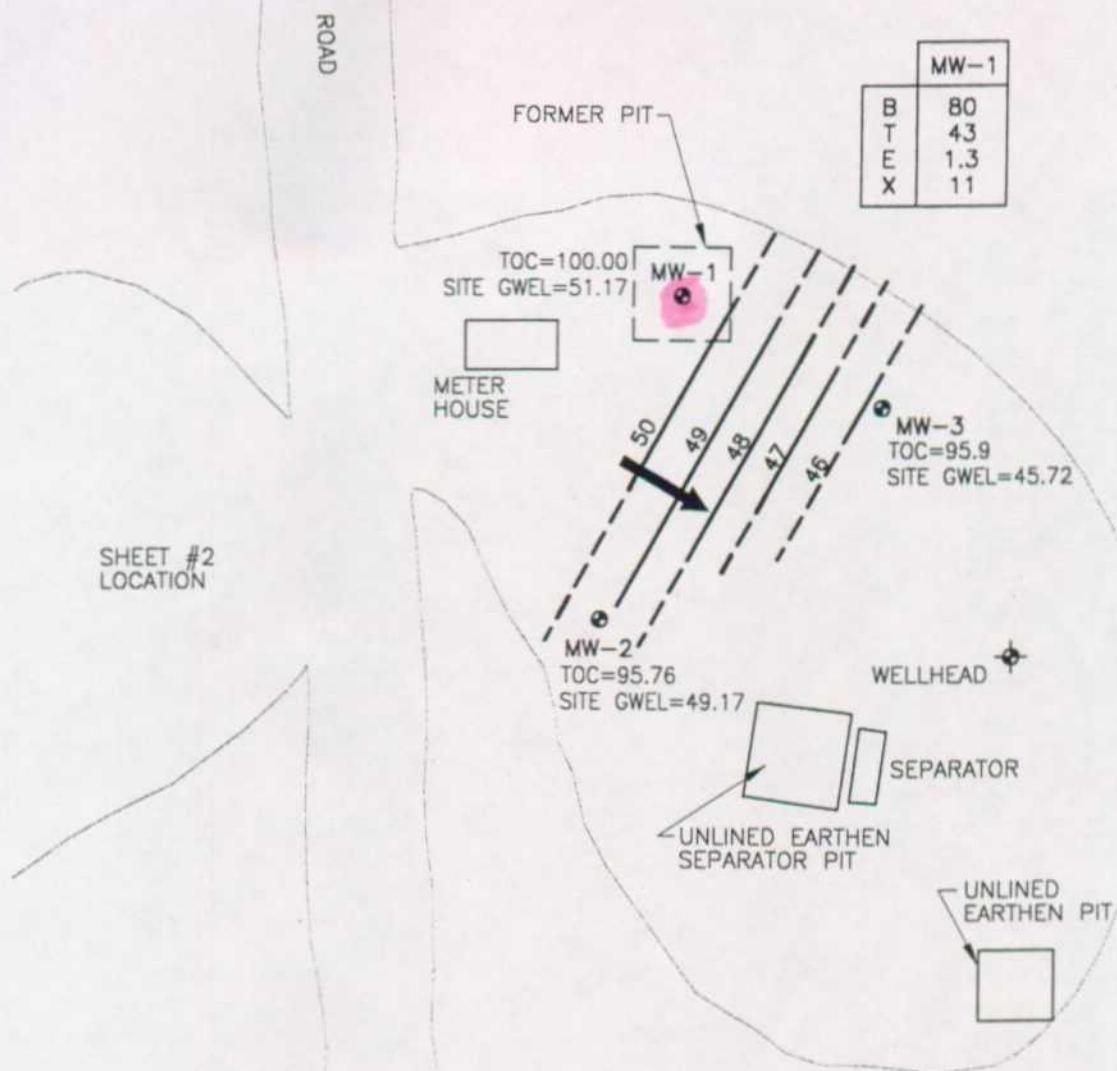


0 60
SCALE: 1"=60'

HORTON #1E, METER 93388
MARCH, 2001

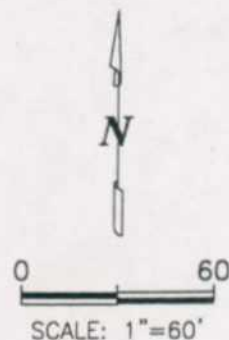
GROUNDWATER SITES
EL PASO CORPORATION

FIGURE 1



LEGEND

- MW-1 Approximate Monitoring Well Location and Number
- B Benzene ($\mu\text{g/L}$)
- T Toluene ($\mu\text{g/L}$)
- E Ethylbenzene ($\mu\text{g/L}$)
- X Total Xylenes ($\mu\text{g/L}$)
- NS Not Sampled
- GWEL Groundwater Elevation (FT Above Mean Sea Level Unless Noted Otherwise)
- TOC Top of Casing



HORTON #1E, METER 93388
SEPTEMBER, 2001

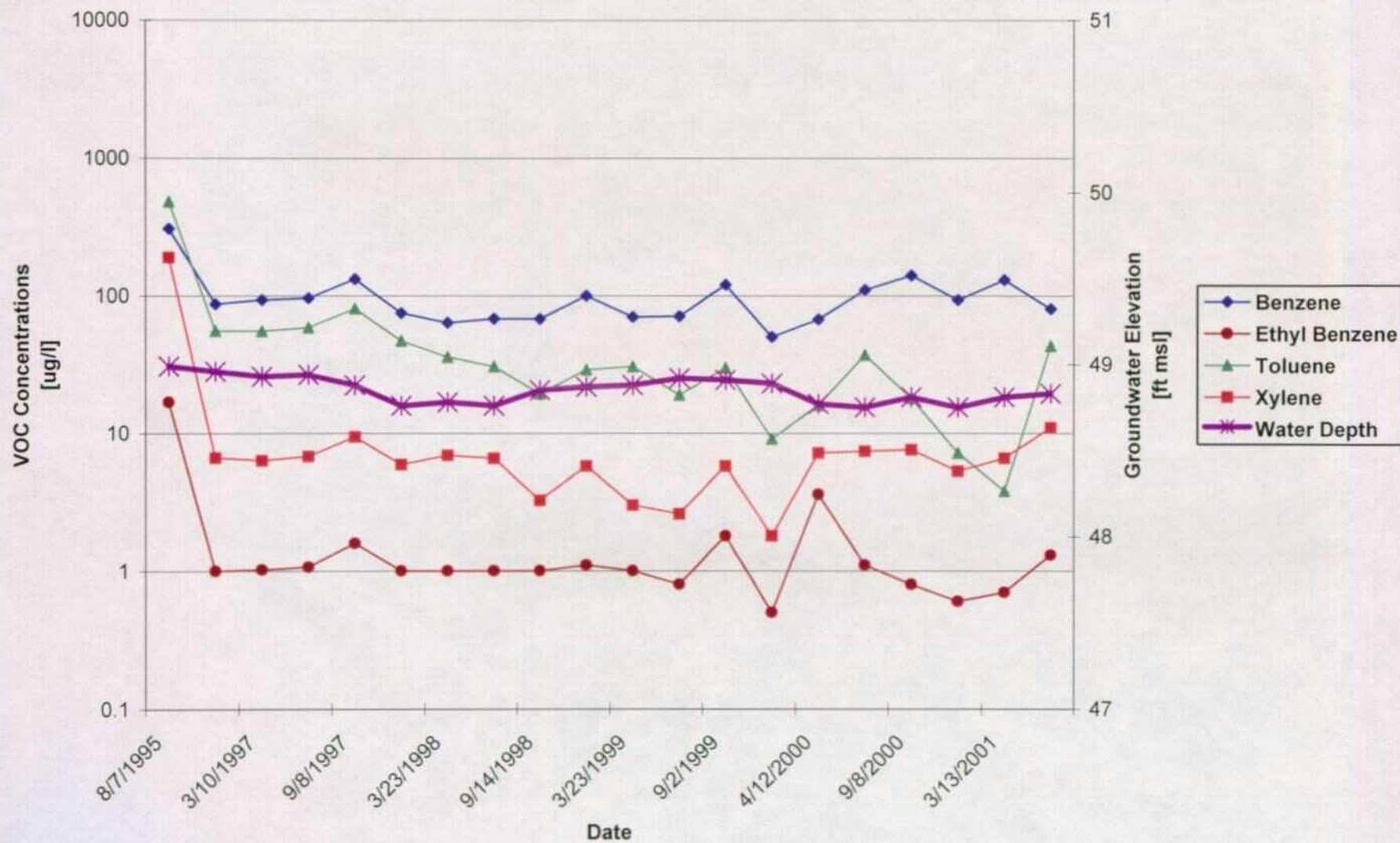
GROUNDWATER SITES
EL PASO CORPORATION

FIGURE 2

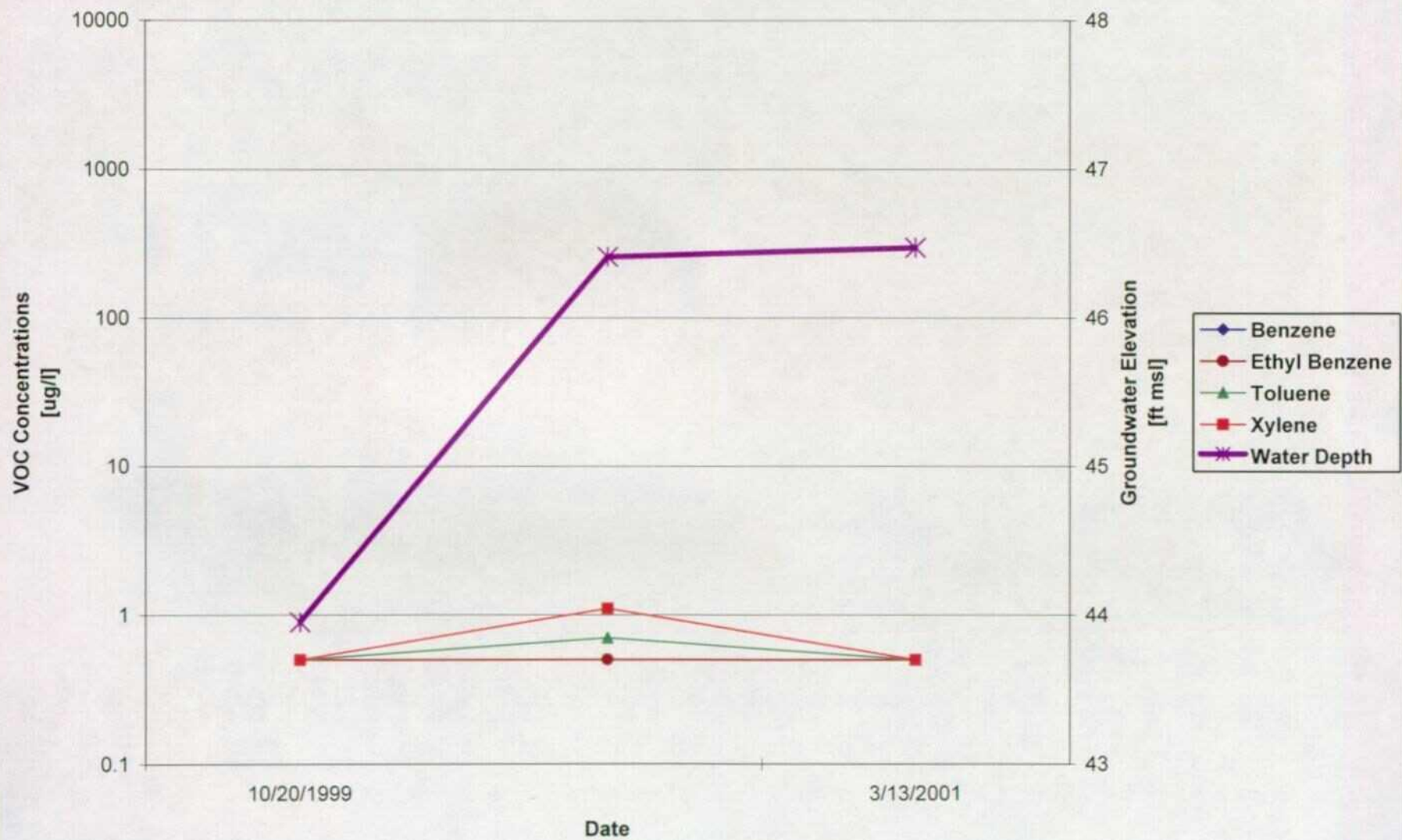
Table 1 BTEX
Horton #1E

Sample #	Meter Line #	Site Name	Sample Date	MW#	Benzene (µg/l)	Ethyl Benzene (µg/l)	Toluene (µg/l)	Total Xylenes (µg/l)	Depth to Water (Feet)	Groundwater Elevation (feet)
HOR0301	93388	Horton #1E	3/13/2001	1	130	0.7	3.8	6.6	48.81	51.19
HOR0109	93388	Horton #1E	9/7/2001	1	80	1.3	43	11	48.83	51.17
HOR0301	93388	Horton #1E	3/13/2001	2	< 0.5	< 0.5	< 0.5	< 0.5	46.47	49.29
HOR0301	93388	Horton #1E	3/13/2001	3	< 0.5	< 0.5	< 0.5	< 0.5	50.18	45.72

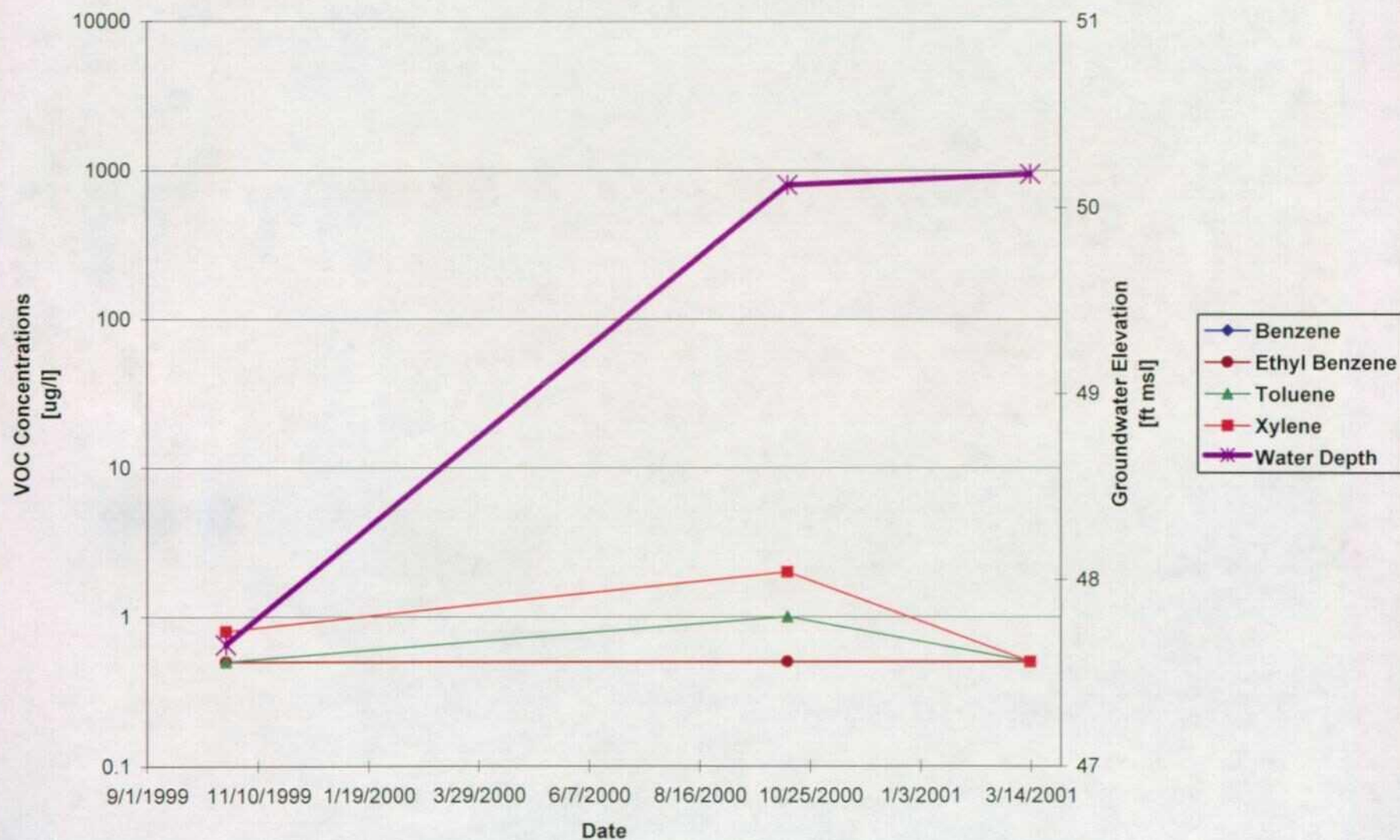
Horton #1E MW-1



Horton #1E MW-2



Horton #1E MW-3



ATTACHMENT 1

2001 GROUNDWATER ANALYTICAL

PINNACLE
LABORATORIES

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

Pinnacle Lab ID number **109046**
September 19, 2001

GOLDEN ENVIRONMENTAL MNGT.
906 SAN JUAN BLVD.
FARMINGTON, NM 87401

EL PASO FIELD SERVICES
614 RIELLY STREET
FARMINGTON, NM 87401

Project Name EPFS REMEDIATION PROJECT
Project Number 6169

Attention: LISA WINN/SCOTT POPE

On 09/13/01 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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



H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE
LABORATORIES

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

CLIENT	: GOLDEN ENVIRONMENTAL MNGT.	PINNACLE ID	: 109046
PROJECT #	: 6169	DATE RECEIVED	: 09/13/01
PROJECT NAME	: EPFS REMEDIATION PROJECT	REPORT DATE	: 09/19/01
PINNACLE			DATE
ID #	CLIENT DESCRIPTION	MATRIX	COLLECTED
109046 - 01	HOR-0109-MW1	AQUEOUS	09/07/01
109046 - 02	TRIP BLANK	AQUEOUS	09/10/01

PINNACLE
LABORATORIES

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

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : GOLDEN ENVIRONMENTAL MNGT.
PROJECT # : 6169
PROJECT NAME : EPFS REMEDIATION PROJECT

PINNACLE I.D.: 109046

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	HOR-0109-MW1	AQUEOUS	09/07/01	NA	09/13/01	1
02	TRIP BLANK	AQUEOUS	09/10/01	NA	09/13/01	1

PARAMETER	DET. LIMIT	UNITS	HOR-0109-MW1	TRIP BLANK
BENZENE	0.5	UG/L	80	< 0.5
TOLUENE	0.5	UG/L	43	< 0.5
ETHYLBENZENE	0.5	UG/L	1.3	< 0.5
TOTAL XYLENES	0.5	UG/L	11	< 0.5

SURROGATE:

BROMOFLUOROBENZENE (%)

94

90

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

N/A

PINNACLE
LABORATORIES

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

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

EST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 109046
LAB I. D.	: 091301	DATE EXTRACTED	: NA
CLIENT	: GOLDEN ENVIRONMENTAL MNGT.	DATE ANALYZED	: 09/13/01
PROJECT #	: 6169	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS REMEDIATION PROJECT		

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

UNROGATE:
ROMOFLUOROBENZENE (%) 94
UNROGATE LIMITS: (80 - 120)
HEAT NOTES:
/A

PINNACLE
LABORATORIES

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

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 091301
CLIENT : GOLDEN ENVIRONMENTAL MNGT.
PROJECT # : 6169
PROJECT NAME : EPFS REMEDIATION PROJECT

PINNACLE I.D. : 109046
DATE EXTRACTED : NA
DATE ANALYZED : 09/01/01
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	17.7	89	16.9	85	5	(80 - 120)	20
OLUENE	<0.5	20.0	20.3	102	19.6	98	4	(80 - 120)	20
THYLBENZENE	<0.5	20.0	20.6	103	19.7	99	4	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	62.2	104	59.5	99	4	(80 - 120)	20

HEMIST NOTES:
/A

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

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

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

[illegible]

PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS		RELINQUISHED BY:		RELINQUISHED BY:	
PROJ. NO.: <u>169</u>		(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒		Signature: <u>[Signature]</u> Time: <u>1500</u>		Signature: _____ Time: _____	
PROJ. NAME: <u>GPOFS Remediation Project</u>		CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER		Printed Name: _____ Date: _____		Printed Name: _____ Date: _____	
P.O. NO.:		METHANOL PRESERVATION ☐		<u>Chris L. Muel</u> <u>9-12-01</u>			
SHIPPED VIA:		COMMENTS: FIXED FEE ☐		Company: _____		Company: _____	
SAMPLE RECEIPT				See reverse side (Force Majeure)			
NO. CONTAINERS <u>3</u>		<u>Horton # 1E</u>		RECEIVED BY:		RECEIVED BY: (LAB)	
CUSTODY SEALS <u>Y/N (NA)</u>		<u>meter # 93388</u>		Signature: _____ Time: _____		Signature: <u>Francine Tuvio</u> Time: <u>0955</u>	
RECEIVED INTACT <u>YES</u>				Printed Name: _____ Date: _____		Printed Name: <u>Francine Tuvio</u> Date: <u>9/13/01</u>	
BLUE ICE <u>3.3°C</u>				Company: _____		Pinnacle Laboratories Inc.	

PINNACLE
LABORATORIES

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

Pinnacle Lab ID number **103045**
March 22, 2001

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

EL PASO FIELDS SERVICES
614 RIELLY STREET
FARMINGTON, NM 87401

Project Name EPFS QUARTERLY SAMPLING
Project Number 62800107

Attention: ROBERT THOMPSON/SCOTT POPE

On 03/16/01 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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



H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE
LABORATORIES

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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 103045
PROJECT #	: 62800107	DATE RECEIVED	: 03/16/01
PROJECT NAME	: EPFS QUARTERLY SAMPLING	REPORT DATE	: 03/22/01

PINNACLE ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
103045 - 01	HOR-0301-MW1	AQUEOUS	03/13/01
103045 - 02	HOR-0301-MW2	AQUEOUS	03/13/01
103045 - 03	HOR-0301-MW3	AQUEOUS	03/13/01
103045 - 04	HOR-0301-MWS3	AQUEOUS	03/13/01



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

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D.: 103045

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	HOR-0301-MW1	AQUEOUS	03/13/01	NA	03/19/01	1
02	HOR-0301-MW2	AQUEOUS	03/13/01	NA	03/19/01	1
03	HOR-0301-MW3	AQUEOUS	03/13/01	NA	03/19/01	1

PARAMETER	DET. LIMIT	UNITS	HOR-0301-MW1	HOR-0301-MW2	HOR-0301-MW3
BENZENE	0.5	UG/L	130	< 0.5	< 0.5
TOLUENE	0.5	UG/L	3.8	< 0.5	< 0.5
ETHYLBENZENE	0.5	UG/L	0.7	< 0.5	< 0.5
TOTAL XYLENES	0.5	UG/L	6.6	< 0.5	< 0.5

SURROGATE:
BROMOFLUOROBENZENE (%) 96 96 95
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A



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

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D.: 103045

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	HOR-0301-MWS3	AQUEOUS	03/13/01	NA	03/19/01	1

PARAMETER	DET. LIMIT	UNITS	HOR-0301-MWS3
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 (%) 96
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A



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

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 103045
BLANK I. D.	: 031901	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 03/19/01
PROJECT #	: 62800107	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS QUARTERLY SAMPLING		

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

SURROGATE:
BROMOFLUOROBENZENE (%) 105
SURROGATE LIMITS: (80 - 120)
CHEMIST NOTES:
N/A



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GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 031901
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D. : 103045
DATE EXTRACTED : NA
DATE ANALYZED : 03/19/01
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	18.9	95	19.1	96	1	(80 - 120)	20
TOLUENE	<0.5	20.0	20.2	101	20.2	101	0	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.7	104	20.9	105	1	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	56.7	95	56.6	94	0	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

Well Development and Purging Data

CHAIN OF CUSTODY

DATE: 9-7-01 PAGE: 1 OF 1

PLI Accession #:

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: Lisa Winn

COMPANY: G.E.M.

ADDRESS: 906 SAN JUAN BLVD.

Suite D. Farmington N.M. 87401

PHONE: (505) 566-9116

FAX: (505) 566-9120

BILL TO: Scott Pope

COMPANY: El Paso Field Services

ADDRESS: 6041 Reilly Ave.
Farmington NM 87401

ANALYSIS REQUEST

SAMPLE ID DATE TIME MATRIX LAB I.D.

HOR-0101-MW1 9-7-01 1510 H₂OTrip Blank 9-10-01 1335 H₂O

Petroleum Hydrocarbons (418.1) TRPH

(MOD.8015) Diesel/Direct Inject

(M8015) Gas/Purge & Trap

8021 (BTEX)/8015 (Gasoline) MTBE

8021 (BTEX) ☐ MTBE ☐ TMB ☐ PCE

8021 (TCL)

8021 (EDX)

8021 (HALO)

8021 (CUST)

504.1 EDB ☐ / DBCP ☐

8260 (TCL) Volatile Organics

8260 (Full) Volatile Organics

8260 (CUST) Volatile Organics

8260 (Landfill) Volatile Organics

Pesticides / PCB (608/8081/8082)

Herbicides (615/8151)

Base/Neutral/Acid Compounds GC/MS (625/8270)

Polynuclear Aromatics (610/8310/8270-SIMS)

General Chemistry:

Priority Pollutant Metals (13)

Target Analyte List Metals (23)

RCRA Metals (8)

RCRA Metals by TCLP (Method 1311)

Metals:

NUMBER OF CONTAINERS

PROJECT INFORMATION

PROJ. NO.: C169

PROJ. NAME: EPCS Remediation Project

P.O. NO.:

SHIPPED VIA:

SAMPLE RECEIPT

NO. CONTAINERS:

CUSTODY SEALS:

YIN/NA

RECEIVED INTACT

BLUE ICE

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK(NORMAL) ☒CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHERMETHANOL PRESERVATION ☐COMMENTS: FIXED FEE ☐Horton # 1E
meter # 93388

RELINQUISHED BY:

1.

Signature:

Time:

Printed Name:

Date:

Company:

See reverse side (Force Majeure)

RECEIVED BY:

1.

Signature:

Time:

Printed Name:

Date:

Company:

RELINQUISHED BY:

2.

Signature:

Time:

Printed Name:

Date:

Company:

RECEIVED BY: (LAB)

2.

Signature:

Time:

Printed Name:

Date:

Pinnacle Laboratories Inc.

Date 9-7-01

Well Number Mw 03

Development
Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-

Page 1 of 1

Project Name EPFS quarterly Sampling

Project Manager R Thompson

Project No. 62800107

Client Company El Paso Field Services

Phase/Task No. 0301

Site Name Horton #1E (93388)

Site Address Rural San Juan CO.

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 57.52
Initial Depth to Water (feet) 50.18
Height of Water Column in Well (feet) 7.34
Diameter of the Well 2" 1" of Pack

Instruments

Serial No. (if applicable)

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

Methods of Development

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

Item	Water Volume in Well (Gallons)	Volume to be Removed (Gallons)
Well Casing	2.34	7.19
Gravel Pack		3.57
Unfilled Casing		
Total		3.57

Water Disposal
K-12 Separator Bloomfield N.M.

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Temperature (°F)	pH	Conductivity (microhm/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Bailer				Initial	Final					
3-13-01	12:05		X				.75	.75	12.1	6.02	1760		Cloudy, Brown No odor
	12:09		X				.75	1.50	14.3	5.83	1790		" "
	12:11		X				.75	2.25	15.5	5.93	1800		" "
	12:15		X				.75	3	15	5.84	1790		" "
	12:19		X				.75	3.75	14.5	6.03	1790		No Change

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

Comments SAMPLED for BTEX 1348 Duplicate Sample Taken 1338

Developer's Signature(s) Chris A May

Date 3-13-01

Reviewer RT

Date 3/13/01

3R - 192

REPORTS

DATE:

3/2001

10

SAN JUAN BASIN PIT CLOSURES
San Juan Basin, New Mexico

El Paso Field Services
Pit Project Groundwater Report
Annual Report
Volume I

March 2001

Prepared For

El Paso Field Services
Farmington, New Mexico

Project 62800398



192

EPFS GROUNDWATER PITS

2000 ANNUAL GROUNDWATER REPORT

HORTON #1E
Meter/Line ID - 93388

SITE DETAILS

Legals - Twn: 31N Rng: 9W Sec: 28 Unit: H
NMOCD Hazard Ranking: 40 Land Type: FEE
Operator: AMOCO PRODUCTION COMPANY

PREVIOUS ACTIVITIES

Site Assessment: Aug-94 Excavation: Sep-94 (50 cy) Soil Boring: Aug-95
Monitor Well: Aug-95 Quarterly Sampling Initiated: Dec-96
Additional Monitor Wells: Oct-99

2000 ACTIVITIES

Quarterly Groundwater Monitoring - Quarterly groundwater monitoring of MW-1 and annual groundwater monitoring of MW-2 and MW-3 has continued through 2000.

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 in Attachment 1.

SITE MAP

A site map showing the groundwater elevation and gradient for the last two quarters of 2000 is presented as Figure 1 and 2, respectively.

GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS

There were no drilling activities at this site in 2000.

DISPOSITION OF GENERATED WASTES

There were no wastes generated at this site in 2000.

ISOCONCENTRATION MAPS

An isoconcentration map was generated for benzene and is included as Figure 3.

CONCLUSIONS

Benzene has exceeded the NMWQCC groundwater standards since quarterly sampling was initiated in MW-1. With the groundwater gradient to the southeast, downgradient monitor wells MW-2 and MW3 show no evidence of hydrocarbon migration. This site, remotely located in rural San Juan County, exhibits moderately elevated levels of benzene and only traces of toluene, ethyl benzene, and total xylenes. Based upon sample results it appears that natural attenuation of the residual hydrocarbons remaining within the pit is occurring.

EPFS GROUNDWATER PITS

2000 ANNUAL GROUNDWATER REPORT

RECOMMENDATIONS

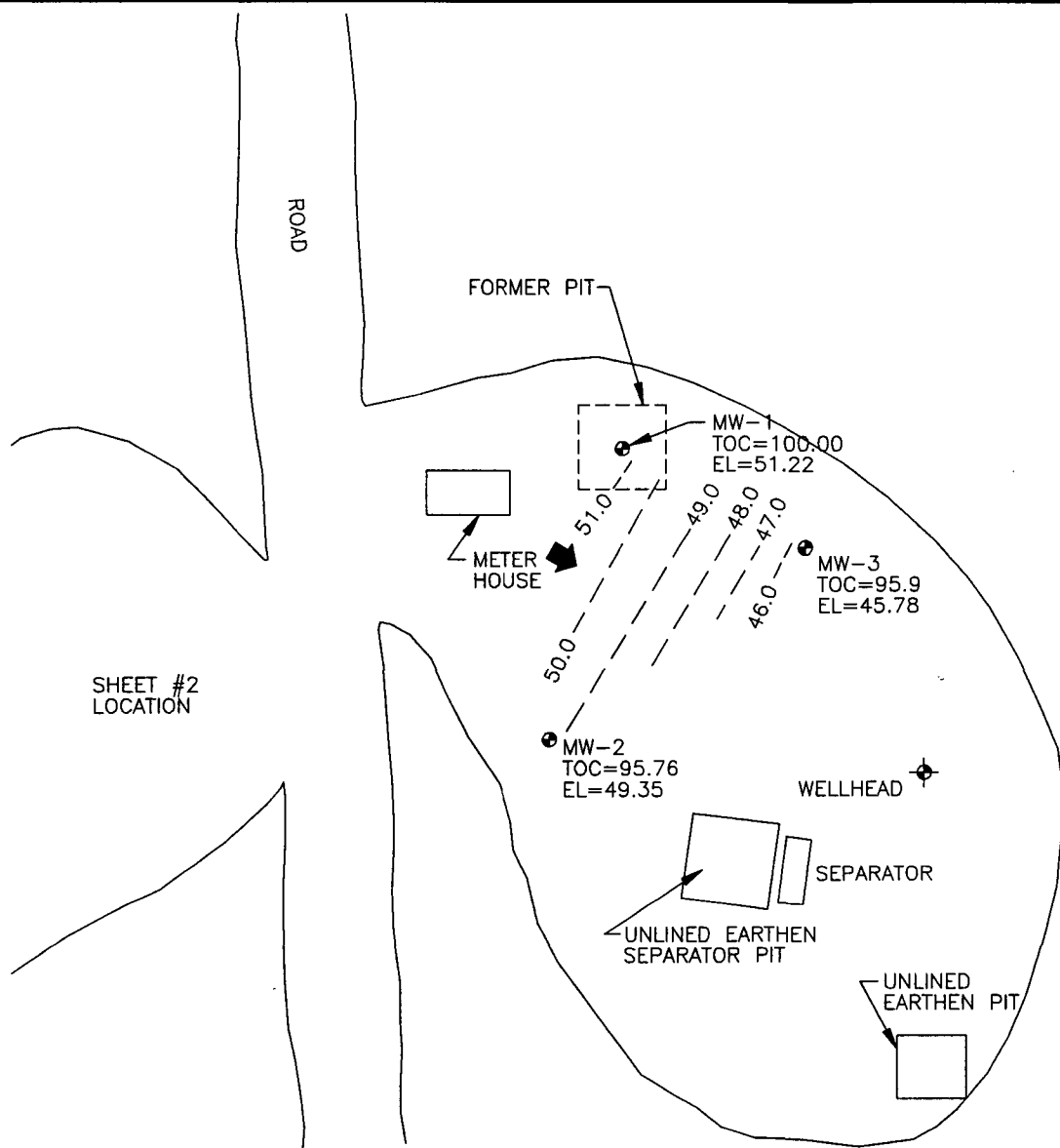
- Complete temporary monitor wells MW-2 and MW-3.
- Conduct semi-annual sampling at MW-1 until analytical results for the hydrocarbon constituents are near New Mexico groundwater standards, then sample quarterly for closure.
- Sample monitor wells MW-2 and MW-3 annually.
- Following OCD approval for closure, all associated monitor wells will be abandoned using OCD approved abandonment procedures.

Table 1

March 2001

Sample #	Meter / Line #	Site Name	Sample Date	MW #	Project	Benzene (PPB)	Toluene (PPB)	Ethyl Benzene (PPB)	Total Xylenes (PPB)	Total BTEX (PPB)
HOR-0004-MW01	93388	Horton 1E	04/12/2000	1	Sample 4 - 14th Quarter	= 67	= 16	= 3.6	= 7.2	93.8
HOR-0006-MW01	93388	Horton 1E	06/09/2000	1	Sample 4 - 15th Quarter	= 110	= 37	= 1.1	= 7.4	155.5
HOR-0009-MW01	93388	Horton 1E	09/08/2000	1	Sample 4 - 16th Quarter	= 140	= 18	= 0.8	= 7.6	166.4
HOR-0012-MW01	93388	Horton 1E	12/11/2000	1	Sample 4 - 17th Quarter	= 93	= 7.2	= 0.6	= 5.3	106.1
HOR-0010-MW02	93388	Horton 1E	10/09/2000	2	Sample 1 - 2nd Annual	< 0.5	= 0.7	< 0.5	= 1.1	1.8
HOR-0010-MW03	93388	Horton 1E	10/10/2000	3	Sample 1 - 2nd Annual	< 0.5	= 1.0	< 0.5	= 2.0	3.0

Sample 1 - Annual Sampling
Sample 4 - Quarterly Sampling



LEGEND

- MW-1 APPROXIMATE MONITORING WELL LOCATION AND NUMBER
- TOC TOP OF CASING ELEVATION
- EL GROUNDWATER ELEVATION
- 58 — GROUNDWATER POTENTIOMETRIC SURFACE
- ➔ GROUNDWATER GRADIENT

NOTE: Well locations are to scale, relative to each other. The surface features are not to scale.

0 60
FEET



COL 62800219C-002

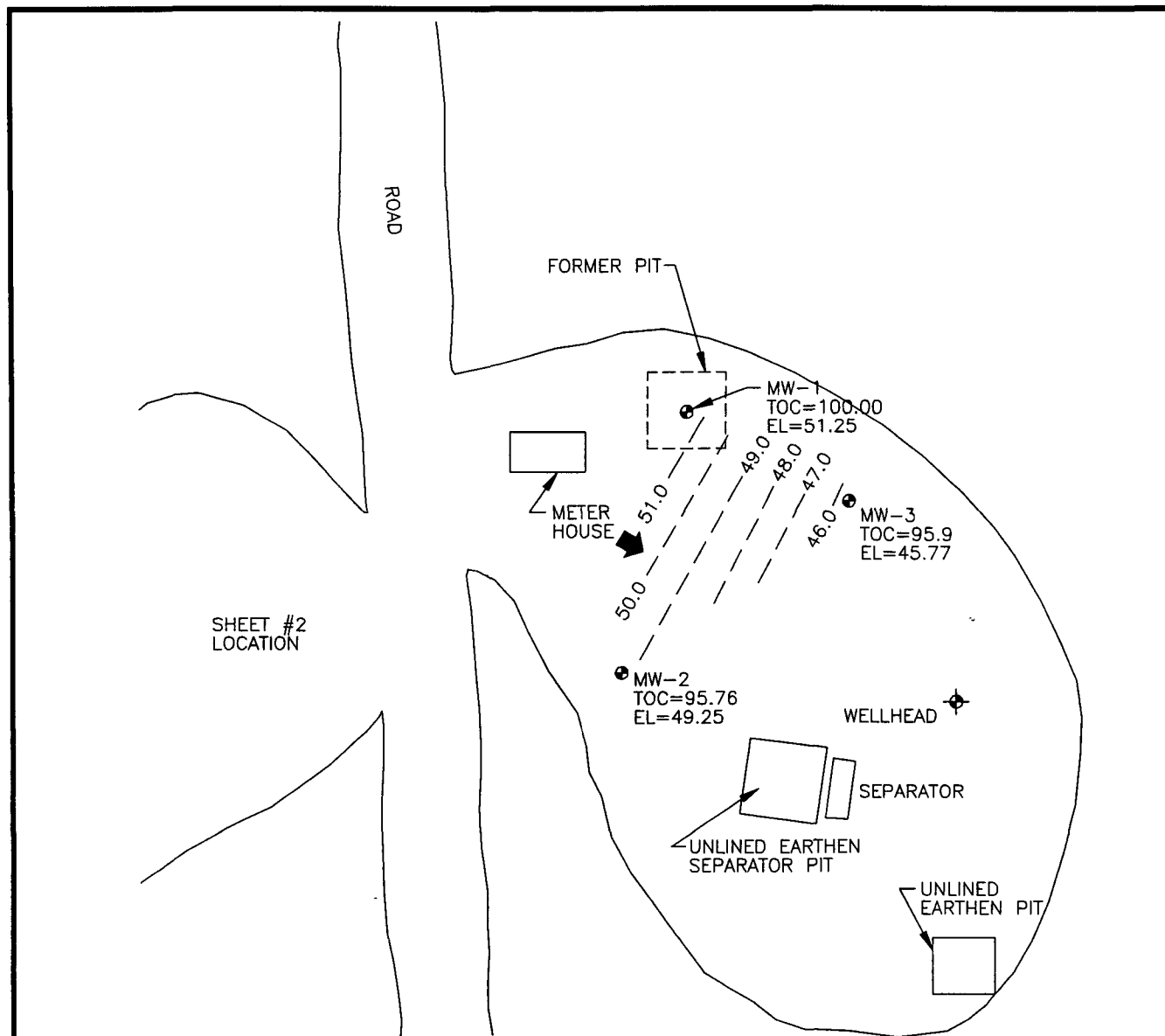


TITLE:
HORTON #1E
METER 93388
OCTOBER 9, 2000

DWN: TMM	DES.: LW
CHKD: LW	APPD: MN
DATE: 2/19/01	REV.: 0

PROJECT NO.: 62800219
EPFS GW PITS

FIGURE 1



LEGEND

- MW-1 APPROXIMATE MONITORING WELL LOCATION AND NUMBER
- TOC TOP OF CASING ELEVATION
- EL GROUNDWATER ELEVATION
- 58 GROUNDWATER POTENTIOMETRIC SURFACE
- ➔ GROUNDWATER GRADIENT

NOTE: Well locations are to scale, relative to each other. The surface features are not to scale.

0 60
FEET



COL. 628\00219C-003

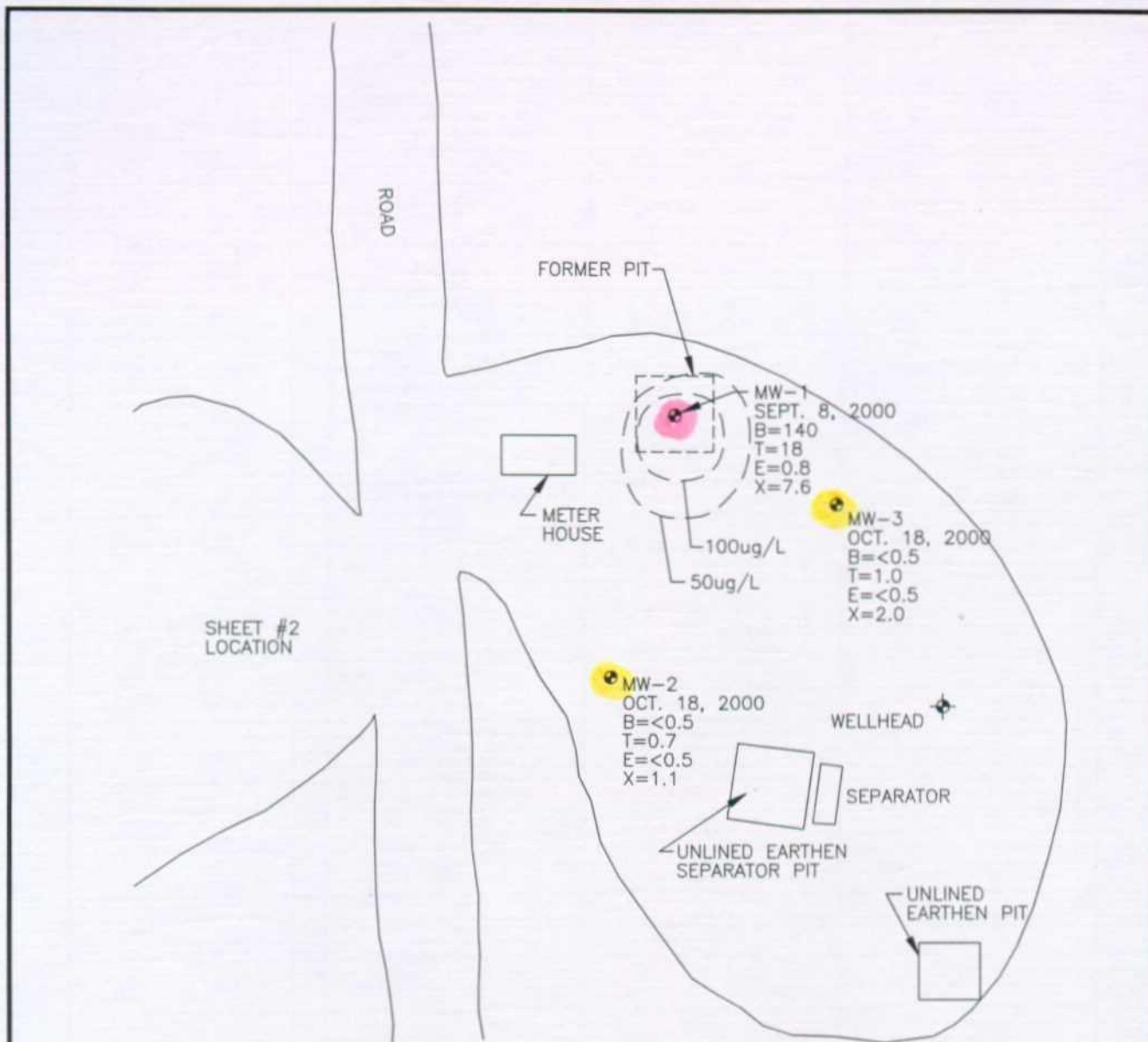


TITLE:
HORTON #1E
METER 93388
DECEMBER 11, 2000

DWN: TMM	DES.: LW
CHKD: LW	APPD: MN
DATE: 2/19/01	REV.: 0

PROJECT NO.: 62800018
EPFS GW PITS

FIGURE 2



LEGEND

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

0 60
FEET



COL 628\00219C-004



TITLE:
HORTON #1E - METER 93388
OCT. 9, 2000 ISOCONCENTRATION
MAP - BENZENE

DWN: TMM
CHKD: LW
DATE: 2/20/01

DES: LW
APPD: MN
REV: 0

PROJECT NO.: 62800018
EPFS GW PITS
FIGURE 3

ATTACHMENT 1

2000 GROUNDWATER ANALYTICAL

Well Number MW-01☐ Develop.
☒ Purging

WELL DEVELOPMENT AND PURGING ATA

Serial No. WDPD- _____

Page 1 of 1Project Name EPFS QUARTERLY SAMPLINGProject Manager ROBERT THOMPSONProject No. 62800107Client Company EL PASO FIELD SERVICESPhase/Task No. 0301Site Name HORTON #1E (93388)Site Address RURAL SAN JUAN COUNTY

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 65.48' TOR
Initial Depth to Water (feet) 48.77' TOR
Height of Water Column in Well (feet) 16.71'
Diameter (inches): Well 4" Gravel Pack

Instruments

Serial No. (if applicable)

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

Methods of Development

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

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	<u>16.71</u>	<u>10.91 x 3</u>	
Gravel Pack			
Drilling Fluids			
Total			<u>32.73</u>

Water Disposal

KUTZ SEPERATOR

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Baller				Increment	Cumulative	Increment	Cumulative					
4/12/00	1240		X				5	5			18.5	7.21	2180		CLOUDY
4/12/00	1253		X				5	10			18.2	6.97	2240		LIGHT BROWN
4/12/00	1303		X				5	15			18.0	7.09	2100		LIGHT BROWN
4/12/00	1312		X				5	20			16.6	7.12	2120		CLOUDY
4/12/00	1326		X				5	25			17.5	7.18	2370		CLOUDY
4/12/00	1333		X				5	30			18.2	7.13	2410		CLOUDY
4/12/00	1343		X				5	35			17.7	7.25	2160		CLOUDY

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

Comments SAMPLED AT 1355. COC# C2516

Developer's Signature(s)

Robert Thompson

Date

4/12/00

Reviewer

Date

[illegible]

4000 Monroe Road
Farmington, NM 87401

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

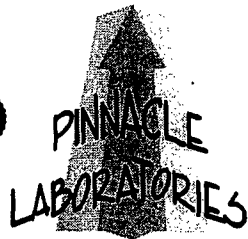
COC Serial No. C 2516

[illegible]

Received By:

Signature	Date	Time	Signature	Date	Time
Robert Thompson	11/13/12	11:00			

Samples Iced: ☒ Yes ☐ No		Carrier: <i>APR 11, 1993</i>	Airbill No. <i>ALI/606650793</i>
Preservatives (ONLY for Water Samples) ☐ Cyanide Sodium hydroxide (NaOH) ☒ Volatile Organic Analysis Hydrochloric acid (HCl) ☐ Metals Nitric acid (HNO ₃) ☐ TPH (418.1) Sulfuric acid (H ₂ SO ₄) ☐ Other (Specify) _____ ☐ Other (Specify) _____		Shipping and Lab Notes:	



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

Pinnacle Lab ID number **004054**
April 24, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name EPFS QUARTERLY SAMPLING
Project Number 62800107

Attention: Robert Thompson/LeAudra Stanley

On 04/14/00 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

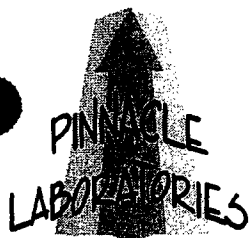
If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

Kimberly D. McNeill
Project Manager

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure



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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 004054
PROJECT #	: 62800107	DATE RECEIVED	: 04/14/00
PROJECT NAME	: EPFS QUARTERLY SAMPLING	REPORT DATE	: 04/24/00
PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	HOR-0004-MW01	AQUEOUS	04/12/00
02	TRIP BLANK	AQUEOUS	04/12/00



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

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D.: 004054

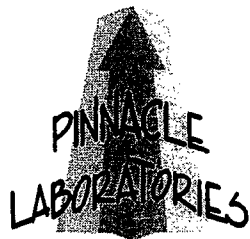
SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	HOR-0004-MW01	AQUEOUS	04/12/00	NA	04/15/00	1
02	TRIP BLANK	AQUEOUS	04/12/00	NA	04/15/00	1

PARAMETER	DET. LIMIT	UNITS	HOR-0004-MW01	TRIP BLANK
BENZENE	0.5	UG/L	67	< 0.5
TOLUENE	0.5	UG/L	16	< 0.5
BENZENE	0.5	UG/L	3.6	< 0.5
XYLENES	0.5	UG/L	7.2	< 0.5

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

87 104

CHEMIST NOTES:
N/A



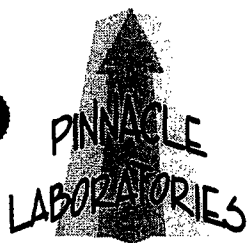
2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 004054
BLANK I. D.	: 041500	DATE EXTRACTED	: N/A
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 04/15/00
PROJECT #	: 62800107	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS QUARTERLY SAMPLING		

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

PROGATE:
OFLUOROBENZENE (%) 92
SURROGATE LIMITS: (80 - 120)
CHEMIST NOTES:
N/A



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Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 041500
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D. : 004054
DATE EXTRACTED : N/A
DATE ANALYZED : 04/15/00
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	21.0	105	20.7	104	1	(80 - 120)	20
TOLUENE	<0.5	20.0	23.6	118	22.6	113	4	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	22.9	115	22.2	111	3	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	69.2	115	66.4	111	4	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

Well Number MLW01☐ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD- _____

Page 1 of 1Project Name EPES QUARTERLY SAMPLINGProject Manager ROBERT THOMPSONProject No. 62800107Client Company EL PASO FIELD SERVICESPhase/Task No. 0301Site Name HORTON #1E #93388Site Address RURAL SAN JUAN CO.

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 65.53 TORInitial Depth to Water (feet) 48.75 TORHeight of Water Column in Well (feet) 16.78Diameter (inches): Well 4 Gravel Pack _____

Instruments

Serial No. (if applicable)

☒ pH MeterHYDAC☐ DO Monitor☒ Conductivity MeterHYDAC☒ Temperature MeterHYDAC☐ Other _____

Methods of Development

Pump

Bailer

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

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	16.78	1095.13	32.9
Gravel Pack			
Drilling Fluids			
Total			32.9

Water Disposal

KITZ SEPARATOR, BOOMFIELD, NM

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
6/9/00	1343		X				6	6			21.7	6.83	2500		BROWN, CLOUDY
"	1357		X				6	12			20.5	6.81	2380		"
"	1409		X				6	18			20.9	6.67	2260		"
"	1423		X				6	24			19.9	6.99	2230		"
"	1436		X				6	30			20.2	6.99	2310		"
"	1446		X				3	33			20.2	6.86	2240		"

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

Comments Sampled for BTEX at 1452

Developer's Signature(s) _____

Date 6/9/00Reviewer RTDate 6/19/00

27 JAN 1968

4000 Monroe Road
Farmington, NM 87401

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

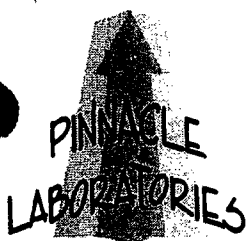
COC Serial No. C 2569

[illegible]

Received By:

Signature	Date	Time	Signature	Date	Time
Jessie Wagner	6/15/00	1:15			

Samples Iced: ☒ Yes ☐ No		Carrier: <u>GREENLAND LINES</u>	Airbill No. <u>GLI 160691 851</u>
Preservatives (ONLY for Water Samples) ☐ Cyanide Sodium hydroxide (NaOH) ☒ Volatile Organic Analysis Hydrochloric acid (HCl) ☐ Metals Nitric acid (HNO ₃) ☐ TPH (418.1) Sulfuric acid (H ₂ SO ₄) ☐ Other (Specify) _____ ☐ Other (Specify) _____		Shipping and Lab Notes:	



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

Pinnacle Lab ID number **006059**
June 19, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

EL PASO FIELD SERVICES
614 RIELY STREET
FARMINGTON, NM 87401

Project Name EPFS QUARTERLY SAMPLING
Project Number 62800107

Attention: ROBERT THOMPSON/LEAUDRA STANLEY

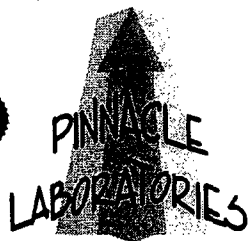
On 06/15/00 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure



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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 006059
PROJECT #	: 62800107	DATE RECEIVED	: 06/15/00
PROJECT NAME	: EPFS QUARTERLY SAMPLING	REPORT DATE	: 06/19/00
PIN			
ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	HOR-0006-MW01	AQUEOUS	06/09/00
02	TRIP BLANK	AQUEOUS	06/09/00



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

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D.: 006059

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	HOR-0006-MW01	AQUEOUS	06/09/00	NA	06/15/00	1
02	TRIP BLANK	AQUEOUS	06/09/00	NA	06/16/00	1

PARAMETER	DET. LIMIT	UNITS	HOR-0006-MW01	TRIP BLANK
BENZENE	0.5	UG/L	110	< 0.5
TOLUENE	0.5	UG/L	37	< 0.5
ETHYLBENZENE	0.5	UG/L	1.1	< 0.5
M-XYLENES	0.5	UG/L	7.4	< 0.5

SURROGATE:
BROMOFLUOROBENZENE (%) 112 95
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.	: 006059
BLANK I. D.	: 061500	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 06/15/00
PROJECT #	: 62800107	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS QUARTERLY SAMPLING		

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

SURROGATE:

10-FLUOROBENZENE (%)

107

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.	: 006059
BLANK I. D.	: 061600	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 06/16/00
PROJECT #	: 62800107	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS QUARTERLY SAMPLING		

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

SURROGATE:

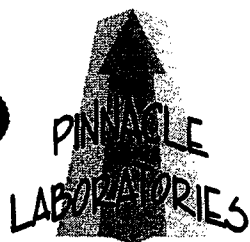
MOFLUOROBENZENE (%)

113

ROGATE LIMITS: (80 - 120)

CHEMIST NOTES:

N/A



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

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 006058-05
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D. : 006059
DATE EXTRACTED : NA
DATE ANALYZED : 06/15/00
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	18.2	91	17.9	90	2	(80 - 120)	20
TOLUENE	<0.5	20.0	19.9	100	20.0	100	1	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.2	101	20.3	102	0	(80 - 120)	20
TOTAL XYLENES	0.9	60.0	61.6	101	61.7	101	0	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

[illegible]

4000 Monroe Road
Farmington, NM 87401

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

COC Serial No. C 2658

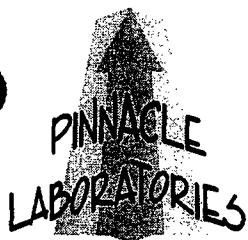
[illegible]

Relinquished by:

Received By:

Received By:			Received By:		
Signature	Date	Time	Signature	Date	Time
Chris A. Mung	09-11-06	1:00			

Samples Iced: ☒ Yes ☐ No		Carrier: <u>Gre. H. 1 BLS 111</u>	Airbill No. <u>GLI 140 691 8209</u>
Preservatives (ONLY for Water Samples) ☐ Cyanide Sodium hydroxide (NaOH) ☐ Volatile Organic Analysis Hydrochloric acid (HCl) ☐ Metals Nitric acid (HNO ₃) ☐ TPH (418.1) Sulfuric acid (H ₂ SO ₄) ☒ Other (Specify) <u>H₂SO₄</u> ☐ Other (Specify) _____		Shipping and Lab Notes:	



SEP 15 2000

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

Pinnacle Lab ID number 009065
September 13, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

EL PASO FIELD SERVICES
614 RIELY STREET
FARMINGTON, NM 87401

Project Name EPFS QTRLY SAMP.
Project Number 62800107

Attention: ROBERT THOMPSON/LEAUDRA STANLEY

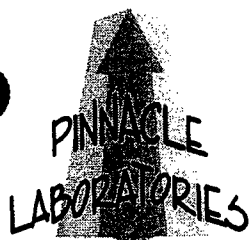
On 09/12/00 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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

H. Mitchell Rubenstein, Ph. D.
General Manager

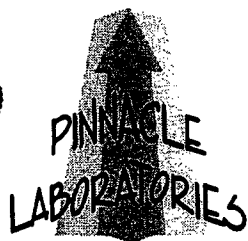
MR: jt

Enclosure



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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 009065
PROJECT #	: 62800107	DATE RECEIVED	: 09/12/00
PROJECT NAME	: EPFS QTRLY SAMP.	REPORT DATE	: 09/13/00
PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	HOR-0009-MW-01	AQUEOUS	09/08/00



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

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QTRLY SAMP.

PINNACLE I.D.: 009065

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	HOR-0009-MW-01	AQUEOUS	09/08/00	NA	09/12/00	1
PARAMETER		DET. LIMIT	UNITS	HOR-0009-MW-01		
BENZENE		0.5	UG/L	140		
TOLUENE		0.5	UG/L	18		
ETHYLBENZENE		0.5	UG/L	0.8		
TOLUENE, XYLENES		0.5	UG/L	7.6		

SURROGATE:

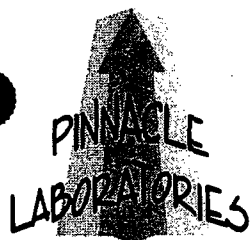
BROMOFLUOROBENZENE (%)

108

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

N/A



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

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 009065
BLANK I. D.	: 091200	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 09/12/00
PROJECT #	: 62800107	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS QTRLY SAMP.		

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

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



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

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 009065-01
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QTRLY SAMP.

PINNACLE I.D. : 009065
DATE EXTRACTED : NA
DATE ANALYZED : 09/12/00
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	140	20.0	159	95	156	80	2	(80 - 120)	20
TOLUENE	18	20.0	40.5	113	39.6	108	2	(80 - 120)	20
ETHYLBENZENE	0.8	20.0	23.3	113	23.2	112	0	(80 - 120)	20
TOTAL XYLENES	7.6	60.0	74.8	112	75.0	112	0	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

Well Number MW 03☐ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1Project Name EpFS quarterly Sampling Project Manager R ThompsonProject No. 62800107Client Company EpFSPhase/Task No. 0301Site Name Horton #1E (93388)Site Address Rural Sun Janm CO.

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 58.76
Initial Depth to Water (feet) 50.12
Height of Water Column in Well (feet) 8.64
Diameter (inches): Well 2" Gravel Pack _____

Instruments

Serial No. (if applicable)

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

Methods of Development

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

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	8.64	1.41 X 3	4.23
Gravel Pack			
Drilling Fluids			
Total			4.23

Water Disposal

Lutz separator Bonfield N.M.

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Baller				Increment	Cumulative	Increment	Cumulative					
10-10-00	1237		X				1	1			14.7	6.50	2930		Brown muddy
	1241		X				1	2			14.5	6.17	2440		" "
	1245		X				1	3			14.4	5.91	2350		" "
	1249		X				1	4			14.4	5.84	2400		" "
	1253		X				1	5			14.4	5.79	2440		no change

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

Comments Sampled for BTEX ~~Sample~~ 1257Developer's Signature(s) Chris A MayDate 10-10-00Reviewer RTDate 10/17/00

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 219. PRINT CITY _____
 220. PRINT STATE _____

4000 Monroe Road
Farmington, NM 87401

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

COC Serial No. C 2675

Relinquished by:			Received By:		
Signature	Date	Time	Signature	Date	Time
<i>[Signature]</i>	10/10/2011	11:00 AM			

Samples Iced: ☒ Yes ☐ No		Carrier: <i>Boysen</i>	Airbill No. <i>GLE/1606918764</i>
Preservatives (ONLY for Water Samples) ☐ Cyanide Sodium hydroxide (NaOH) ☐ Volatile Organic Analysis Hydrochloric acid (HCl) ☐ Metals Nitric acid (HNO ₃) ☐ TPH (418.1) Sulfuric acid (H ₂ SO ₄) ☒ Other (Specify) <i>H₂Cl₂</i> ☐ Other (Specify) _____		Shipping and Lab Notes:	



OCT 20 2000

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

Pinnacle Lab ID number 010033
October 18, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

EL PASO FIELD SERVICES
614 RIELY STREET
FARMINGTON, NM 87401

Project Name EPFS QUARTERLY SAMPLING
Project Number 62800107

Attention: ROBERT THOMPSON/LEAUDRA STANLEY

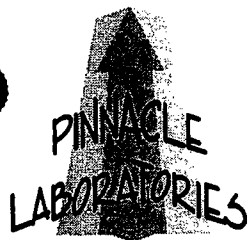
On 10/11/00 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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

H. Mitchell Rubenstein, Ph. D.
General Manager

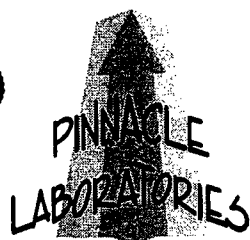
MR: jt

Enclosure



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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 010033
PROJECT #	: 62800107	DATE RECEIVED	: 10/11/00
PROJECT NAME	: EPFS QUARTERLY SAMPLING	REPORT DATE	: 10/18/00
PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	HOR-0010-MW 02	AQUEOUS	10/09/00
02	HOR-0010-MW 03	AQUEOUS	10/10/00



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

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D.: 010033

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	HOR-0010-MW 02	AQUEOUS	10/09/00	NA	10/12/00	1
02	HOR-0010-MW 03	AQUEOUS	10/10/00	NA	10/12/00	1

PARAMETER	DET. LIMIT	UNITS	HOR-0010-MW 02	HOR-0010-MW 03
BENZENE	0.5	UG/L	< 0.5	< 0.5
TOLUENE	0.5	UG/L	0.7	1.0
BENZENE	0.5	UG/L	< 0.5	< 0.5
TOTAL XYLENES	0.5	UG/L	1.1	2.0

SURROGATE:

BROMOFLUOROBENZENE (%)

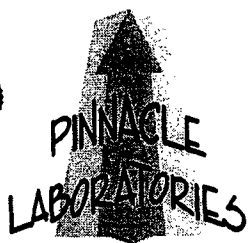
105

111

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

N/A



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

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 010033
BLANK I. D.	: 101200	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 10/12/00
PROJECT #	: 62800107	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS QUARTERLY SAMPLING		

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

SURROGATE:
BROMOFLUOROBENZENE (%)

105

SURROGATE LIMITS: (80 - 120)

CHEMIST NOTES:

N/A



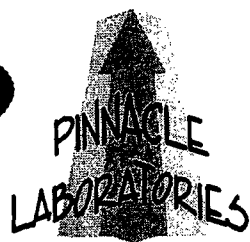
2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 010033
BLANK I. D.	: 101300	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 10/13/00
PROJECT #	: 62800107	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS QUARTERLY SAMPLING		

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

SURROGATE:
BROMOFLUOROBENZENE (%) 107
SURROGATE LIMITS: (80 - 120)
CHEMIST NOTES:
N/A



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

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 010035-01
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D. : 010033
DATE EXTRACTED : NA
DATE ANALYZED : 10/13/00
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	17.4	87	18.6	93	7	(80 - 120)	20
TOLUENE	<0.5	20.0	20.4	102	21.3	107	4	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	21.6	108	22.7	114	5	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	65.1	109	68.3	114	5	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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



Samples Iced: ☒ Yes ☐ No		Carrier: <i>Greyhound</i>	Airbill No. <i>GLI/606918764</i>
Preservatives (ONLY for Water Samples)		Shipping and Lab Notes:	
☐ Cyanide Sodium hydroxide (NaOH)		Rec'd @ 4.8°C	
☐ Volatile Organic Analysis Hydrochloric acid (HCl)			
☐ Metals Nitric acid (HNO ₃)			
☐ TPH (418.1) Sulfuric acid (H ₂ SO ₄)			
☒ Other (Specify) <i>H₂Cl₂</i>			
☐ Other (Specify) _____			

10-10-1964

4000 Monroe Road
Farmington, NM 87401

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

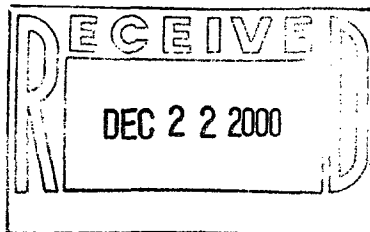
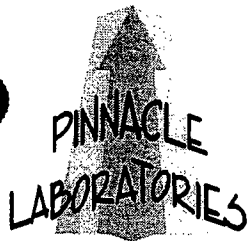
COC Serial No. C 2814

[illegible]

Received By:

Signature	Date	Time	Signature	Date	Time
Chris A. Mazy	12-13-00	11:30			

Samples Iced: ☒ Yes ☐ No		Carrier: Greyhound	Airbill No. GLI/6069/9974
Preservatives (ONLY for Water Samples) ☐ Cyanide Sodium hydroxide (NaOH) ☐ Volatile Organic Analysis Hydrochloric acid (HCl) ☐ Metals Nitric acid (HNO ₃) ☐ TPH (#18.1) Sulfuric acid (H ₂ SO ₄) ☒ Other (Specify) <u>HgCl₂</u> ☐ Other (Specify) _____		Shipping and Lab Notes:	



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

Pinnacle Lab ID number **012058**
December 19, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

EL PASO FIELD SERVICES
614 RIELLY STREET
FARMINGTON, NM 87401

Project Name EPFS QUARTERLY SAMPLING
Project Number 62800107

Attention: ROBERT THOMPSON/SCOTT POPE

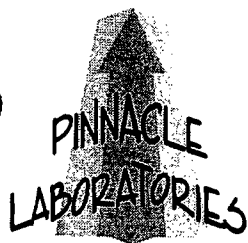
On 12/14/00 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure



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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 012058
PROJECT #	: 62800107	DATE RECEIVED	: 12/14/00
PROJECT NAME	: EPFS QUARTERLY SAMPLING	REPORT DATE	: 12/19/00
PINNACLE		DATE	
ID #	CLIENT DESCRIPTION	MATRIX	COLLECTED
012058 - 01	HOR-0012-MW 01	AQUEOUS	12/11/00



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

GAS CHROMATOGRAPHY RESULTS

EST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

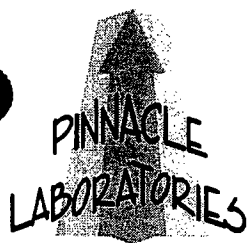
PINNACLE I.D.: 012058

AMPLE			DATE	DATE	DATE	DIL.
S. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
1	HOR-0012-MW 01	AQUEOUS	12/11/00	NA	12/15/00	1

PARAMETER	DET. LIMIT	UNITS	HOR-0012-MW 01
BENZENE	0.5	UG/L	93
OLUENE	0.5	UG/L	7.2
ETHYLBENZENE	0.5	UG/L	0.6
XYLENES	0.5	UG/L	5.3

SURROGATE:
BROMOFLUOROBENZENE (%) 101
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A



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

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 012058
BLANK I. D.	: 121500	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 12/15/00
PROJECT #	: 62800107	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS QUARTERLY SAMPLING		

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

DATE:
BROMOFLUOROBENZENE (%) 107
SURROGATE LIMITS: (80 - 120)
CHEMIST NOTES:
N/A



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

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 012057-01
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

PINNACLE I.D. : 012058
DATE EXTRACTED : NA
DATE ANALYZED : 12/15/00
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	20.8	104	21.1	106	1	(80 - 120)	20
TOLUENE	<0.5	20.0	19.6	98	19.5	98	1	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.8	104	20.9	105	0	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	60.6	101	61.1	102	1	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

3R - 192

REPORTS

DATE:

3/2000

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

HORTON #1E
Meter/Line ID - 93388

SITE DETAILS

Legals - Twn: 31N Rng: 9W Sec: 28 Unit: H
NMOCD Hazard Ranking: 40 Land Type: FEE
Operator: AMOCO PRODUCTION COMPANY

PREVIOUS ACTIVITIES

Site Assessment: Aug-94 Excavation: Sep-94 (50 cy) Soil Boring: Aug-95
Monitor Well: Aug-95 Quarterly Sampling Initiated: Dec-96
Additional Monitor Wells: Oct-99

1999 ACTIVITIES

Quarterly Groundwater Monitoring - Quarterly groundwater monitoring of MW-1 and annual groundwater monitoring of MW-2 and MW-3 has continued through 1999.

Monitor Well Installation - The groundwater gradient was estimated based on topography and additional wells were drilled as requested in OCD correspondence dated July 28, 1999. Groundwater samples collected from the additional wells were below NMWQCC Standards.

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

Two additional monitor wells were installed on October 8, 1999. The associated geologic logs and well installation diagrams are included as Attachment 2.

DISPOSITION OF GENERATED WASTES

There were no wastes generated at this site in 1999.

ISOCONCENTRATION MAPS

None generated for this site.

CONCLUSIONS

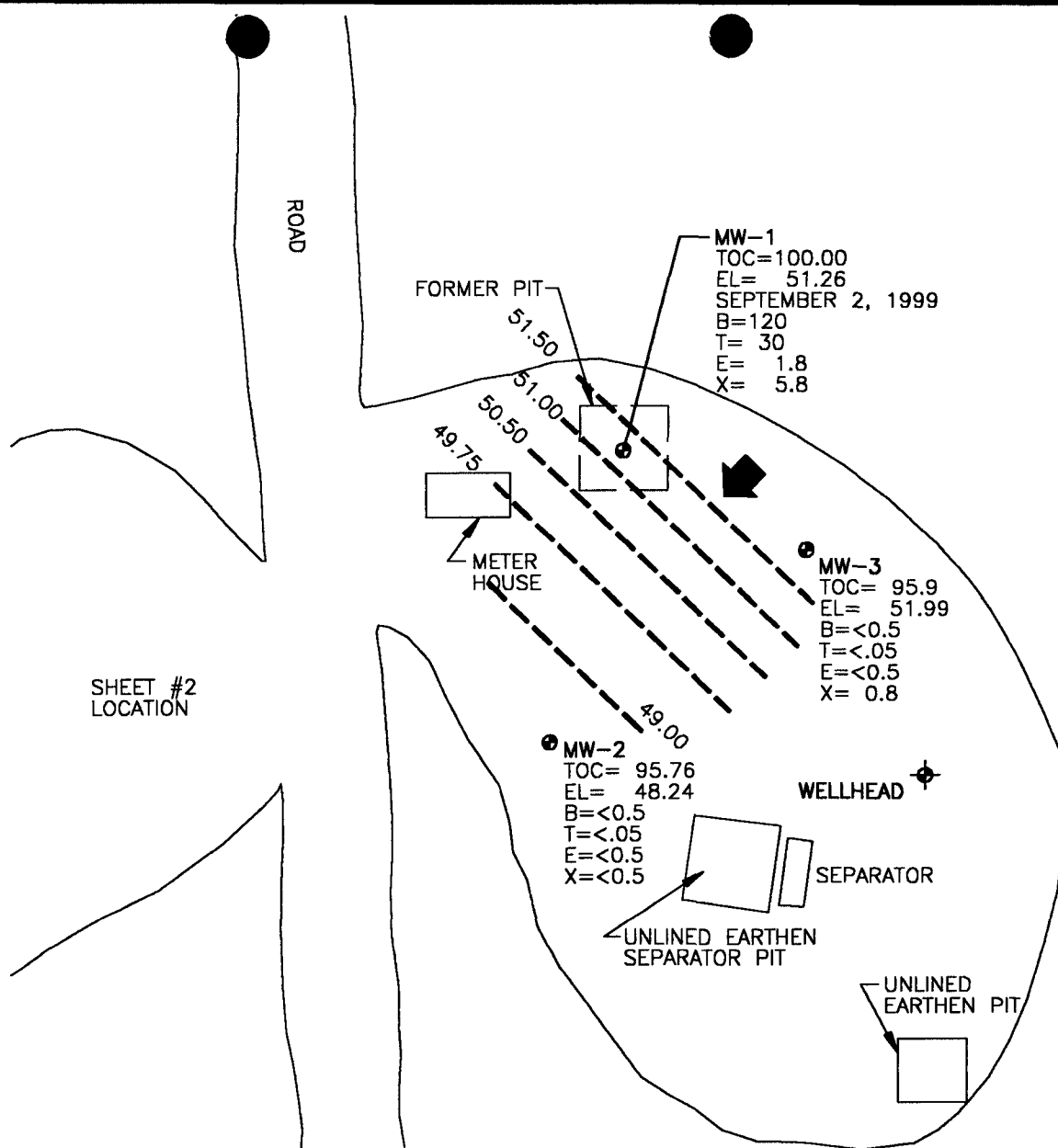
Benzene has been in excess of standards since quarterly sampling was initiated in MW-1. Downgradient monitor well MW-2 shows no evidence of hydrocarbon migration. The groundwater gradient is to the southwest.

EPFS GROUNDWATER PITS

1999 ANNUAL GROUNDWATER REPORT

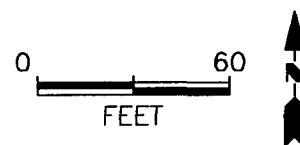
RECOMMENDATIONS

- Quarterly sampling will continue at MW-1 until analytical results show hydrocarbon constituents are below New Mexico Groundwater Standards for four consecutive quarters.
- Sample monitor wells MW-2 and MW-3 annually.
- Following OCD approval for closure, all associated monitor wells 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
- B BENZENE (ug\L)
- T TOLUENE (ug\L)
- E ETHYL BENZENE (ug\L)
- X XYLENE (ug\L)
- ug\L MICROGRAMS PER LITER
- ➔ GROUNDWATER GRADIENT
- 25.0 GROUNDWATER POTENTIOMETRIC SURFACE



COL 628\00018C-002



TITLE:

HORTON #1E
93388
OCTOBER 20, 1999

DWN:

CJG

DES.:

CI

PROJECT NO.:

62800018

CHKD:

CI

APPD:

DATE:

03/14/00

REV.:

0

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
990027	93388	Horton 1E	03/22/99	1	Sample 4 - 10th Quarter	= 48.70	= 23.10	< 62.40	= 668.00	= 802
990278	93388	Horton 1E	06/11/99	1	Sample 4 - 11th Quarter	= 71.00	= 19.00	= 0.80	= 2.60	= 93
990382	93388	Horton 1E	09/02/99	1	Sample 4 - 12th Quarter	= 120.00	= 30.00	= 1.80	= 5.80	= 158
990471	93388	Horton 1E	12/09/99	1	Sample 4 - 13th Quarter	= 50.00	= 9.10	< 0.50	= 1.80	= 61
990427	93388	Horton 1E	10/20/99	2	Sample 4 - 1st Quarter	< 0.50	< 0.50	< 0.50	< 0.50	< 2
990425	93388	Horton 1E	10/20/99	3	Sample 4 - 1st Quarter	< 0.50	< 0.50	< 0.50	= 0.80	< 2

ATTACHMENT 1
1999 GROUNDWATER ANALYTICAL



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990106
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	3/22/99	1113
PROJECT:	Sample 4 10th Quarter	
DATE OF BTEX EXT. ANAL.:	NA	3/23/99
TYPE DESCRIPTION:	MW-1	Water

Field Remarks: _____

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	70.1	PPB				
TOLUENE	30.6	PPB				
ETHYL BENZENE	<1	PPB				
TOTAL XYLENES	3	PPB				
TOTAL BTEX	104	PPB				

—BTEX is by EPA Method 8020 —

The Surrogate Recovery was at 112.6 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative: _____

Approved By: _____

Date: 5/7/99



Well Development and Purging Data

Site Name HORTON 1E

☐ Development
☒ Purging

Well Number MW-1

Meter Code 93388

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) 64.50
Initial Depth to Water (feet) 48.88
Height of Water Column in Well (feet) 15.62
Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>10.3</u>	<u>31.0</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Water Disposal

KOTZ SEPARATOR

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)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
3-22-99	0953										16.0	5.83	2200		
3-22-99	1001						5.0	5.0			15.5	6.30	2150		
3-22-99	1010						5.0	10.0			15.0	6.42	2280		
3-22-99	1025						5.0	15.0			14.6	6.52	2320		
3-22-99	1029						5.0	20.0			14.6	6.57	2350		
3-22-99	1040						5.0	25.0			14.8	6.59	2370		
3-22-99	1049						5.0	30.0			14.9	6.60	2330		
3-22-99	1102						5.0	35.0			15.0	6.76	2070	3.5	

Comments _____

Developer's Signature

Dennis Bird

Date

3-22-99

Reviewer

John Fisher

Date

4/7/99



EL PASO FIELD SERVICES

QUALITY CONTROL REPORT
EPA METHOD 8020 - BTEX
Samples: 990106 to 990107

QA/QC for 03/22/99 Sample Set #3

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	51.2	102.4	75 - 125 %	X
Toluene	Standard	50.0	51.1	102.3	75 - 125 %	X
Ethylbenzene	Standard	50.0	52.1	104.3	75 - 125 %	X
m & p - Xylene	Standard	100	104.5	104.5	75 - 125 %	X
o - Xylene	Standard	50.0	51.8	103.6	75 - 125 %	X
LCS LA-45476 25 PPB					RANGE	
Benzene	Standard	25.0	24.5	98	39 - 150	X
Toluene	Standard	25.0	24.5	98	46 - 148	X
Ethylbenzene	Standard	25.0	24.8	99	32 - 160	X
m & p - Xylene	Standard	50.0	49.7	99	Not Given	X
o - Xylene	Standard	25.0	24.9	100	Not Given	X

Narrative: Acceptable.

LABORATORY DUPLICATES:

SAMPLE ID	TYPE	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	ACCEPTABLE	
					YES	NO
990106					RANGE	
Benzene	Matrix Duplicate	70.7	72.1	1.96	+/- 20 %	X
Toluene	Matrix Duplicate	30.6	31.3	2.26	+/- 20 %	X
Ethylbenzene	Matrix Duplicate	0.7	0.7	0.28	+/- 20 %	X
m & p - Xylene	Matrix Duplicate	2.6	2.7	2.73	+/- 20 %	X
o - Xylene	Matrix Duplicate	0.4	0.4	10.00	+/- 20 %	X

Narrative: Acceptable.

LABORATORY SPIKES:

SAMPLE ID	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACCEPTABLE	
					YES	NO
990106					RANGE	
Benzene	25	70.7	91.0	81	75 - 125 %	X
Toluene	25	30.6	51.2	82	75 - 125 %	X
Ethylbenzene	25	1	20.9	81	75 - 125 %	X
m & p - Xylene	50	3	43.7	82	75 - 125 %	X
o - Xylene	25	0.4	20.7	81	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 (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

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 031799	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.P.

Approved By: John Larch

Date: 3/25/99



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	NA	990278
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	6/11/99	1148
PROJECT:	Sample 4 - 11th 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	71	PPB	1			
TOLUENE	19	PPB	1			
ETHYL BENZENE	0.8	PPB	1			
TOTAL XYLENES	2.6	PPB	1			
TOTAL BTEX	93.4	PPB				

—BTEX is by EPA Method 8021 Modified —

The Surrogate Recovery was at 87 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

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

Approved By:

John Paulsen

Date:

6/24/99



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	NA	990279
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	6/11/99	1148
PROJECT:	Sample 4 - 11th Quarter	
DATE OF BTEX EXT. ANAL.:	NA	6/21/99
TYPE DESCRIPTION:	MW-1	Water

Field Remarks: Field Duplicate

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	71	PPB	1			
TOLUENE	19	PPB	1			
ETHYL BENZENE	0.8	PPB	1			
TOTAL XYLENES	2.7	PPB	1			
TOTAL BTEX	93.5	PPB				

—BTEX is by EPA Method 8021 Modified —

The Surrogate Recovery was at 87 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

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

Approved By: John S. Landon Date: 6/24/99



Well Development and Purging Data

Site Name HORTON #7E

☐ Development
☒ Purging

Well Number MW-1

Meter Code 93388

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) 64.50

Initial Depth to Water (feet) 48.93

Height of Water Column in Well (feet) 15.58

Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>10.3</u>	<u>30.9</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Water Disposal

KOTZ SEPARATOR

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)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
6-11-99	1021										18.0	6.21	1914		
6-11-99	1031						5.0	5.0			16.9	6.44	1935		
6-11-99	1040						5.0	10.0			16.9	6.52	1933		
6-11-99	1050						5.0	15.0			16.9	6.61	1931		
6-11-99	1100						5.0	20.0			16.9	6.69	1934		
6-11-99	1110						5.0	25.0			16.9	6.71	1935		
6-11-99	1121						5.0	30.0			16.9	6.78	1937		
6-11-99	1137						5.0	35.0			17.5	7.03	1916	3.5	

Comments _____

Developer's Signature

Dennis Birch

Date

6-11-99

Reviewer

John Landrin

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 906066
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
PROJECT # : (none)
PROJECT NAME : PIT MONITOR WELLS

PINNACLE ID : 906066
DATE RECEIVED : 6/18/99
REPORT DATE : 6/22/99

PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	990278 Horton #1E mw#1, mc# 93388	AQUEOUS	6/11/99
02	990279 Horton #1E - Field Duplicate	AQUEOUS	6/11/99
03	990280 Hammond #41A mw#1, mc# 89894	AQUEOUS	6/11/99
04	990281 (TRIP BLANK)	AQUEOUS	6/11/99



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.: 906066

SAMPLE		MATRIX	DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.		SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	990278	AQUEOUS	6/11/99	NA	6/21/99	1
02	990279	AQUEOUS	6/11/99	NA	6/21/99	1
03	990280	AQUEOUS	6/11/99	NA	6/21/99	1
PARAMETER		DET. LIMIT	UNITS	990278	990279	990280
BENZENE		0.5	UG/L	71	71	260 (D20)
TOLUENE		0.5	UG/L	19	19	3.3
ETHYLBENZENE		0.5	UG/L	0.8	0.8	42
METHYL XYLENES		0.5	UG/L	2.6	2.7	270

SURROGATE:

BROMOFLUOROBENZENE (%)

87

87

105

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

(D20)= 20X DILUTION, ANALYZED ON 6/21/99



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.: 906066

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
04	990281 (TRIP BLANK)	AQUEOUS	6/11/99	NA	6/21/99	1
PARAMETER		DET. LIMIT	UNITS	990281 (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 (%) 95
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.	: 906066
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	PINNACLE I.D.	: 906066
MSMSD #	: 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	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

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

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

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS		RELINQUISHED BY: 1		RELINQUISHED BY: 2	
PROJ. NO.:		(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒		Signature: Time: 1036		Signature: Time:	
PROJ. NAME: PIT/NO. 1036		CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER		Printed Name: Date: 6-16-99		Printed Name: Date:	
P.O. NO.:		METHANOL PRESERVATION ☐		Company: DENNIS BIRD		Company:	
SHIPPED VIA: FEU-X		COMMENTS: FIXED FEE ☐		RECEIVED BY: 1		RECEIVED BY: (LAB) 2	
SAMPLE RECEIPT				Signature: Time:		Signature: Time: 1036	
NO. CONTAINERS	7			Printed Name: Date:		Printed Name: Date: 6/18/99	
CUSTODY SEALS	☒ N / NA			Company:		American Environmental Network (NM), Inc.	
RECEIVED INTACT	Yes						
BLUE ICE	Yes						



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990382
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	09/02/1999	1250
PROJECT:	Sample 4 12th Quarter	
DATE OF BTEX EXT. ANAL:	NA	09/10/1999
TYPE DESCRIPTION:	MW-1	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	120	PPB				
TOLUENE	30	PPB				
ETHYL BENZENE	1.8	PPB				
TOTAL XYLENES	5.8	PPB				
TOTAL BTEX	158	PPB				

—BTEX is by EPA Method 8020 —

The Surrogate Recovery was at 88.0 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Sample analyzed by Pinnacle Laboratories, Albuquerque NM.

Approved By:

John Sanchez

Date:

9-16-99



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990383
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	09/02/1999	1250
PROJECT:	Sample 4 12th Quarter	
DATE OF BTEX EXT. ANAL:	NA	09/10/1999
TYPE DESCRIPTION:	MW-1 Field Duplicate	Water

Field Remarks: Field Duplicate

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	120	PPB				
TOLUENE	31	PPB				
ETHYL BENZENE	1.8	PPB				
TOTAL XYLENES	5.3	PPB				
TOTAL BTEX	158	PPB				

--BTEX is by EPA Method 8020 --

The Surrogate Recovery was at 89.0 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Sample analyzed by Pinnacle Laboratories, Albuquerque NM.

Approved By:

John L. Ladd

Date:

9-16-99

SAMPLE 4 12TH QTR

CHAIN OF CUSTODY RECORD

Page _____ of _____

Project Number		Project Name				Total No. of Containers	Composite or Grab	Requested Analysis						Contract Laboratory P.O. Number																	
Samplers: (Signature)		Date:																													
<i>Dennis Bird</i>		<i>9-2-99</i>																													
Lab ID	Date	Time	Matrix	Sample Number										Remarks																	
	<i>9-2-99</i>	<i>1250</i>	<i>WATER</i>	<i>990382</i>	<i>2</i>	<i>G</i>	<i>X</i>							<i>HORTON 1 E MW-1</i>																	
	<i>9-2-99</i>	<i>1250</i>	<i>WATER</i>	<i>990383</i>	<i>2</i>	<i>G</i>	<i>X</i>							<i>HORTON 1 E MW-1 FIELD COPY</i>																	
	<i>9-2-99</i>	<i>---</i>	<i>WATER</i>	<i>---</i>	<i>1</i>	<i>G</i>	<i>X</i>							<i>TRIP BLANK</i>																	
																Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)					
<i>Dennis Bird</i>		<i>9-2-99 1525</i>																													
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received for Laboratory by: (Signature)																					
								<i>9-3-99 0800</i>		<i>Don Zeller</i>																					
Requested Turnaround Time:				Sample Receipt Remarks				Results & Invoices to:																							
☐ Routine ☐ Rush				<i>Cool & INACT 40°F</i>				North Region Laboratory																							
Carrier Co.								El Paso Natural Gas Company																							
Bill No.:				Charge Code				P. O. Box 4990																							
								Farmington, New Mexico 87499																							
								505-599-2144																							
								FAX: 505-599-2261																							

Well Development and Purging Data

Site Name HORTON 1E

☐ Development
☐ Purging

Well Number MW-1

Meter Code 93388

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) 64.50
Initial Depth to Water (feet) 48.91
Height of Water Column in Well (feet) 15.59

Diameter (inches): Well _____ Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>10.3</u>	<u>30.9</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Water Disposal

KUTZ SEPARATOR

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)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
9-2-99	1113										18.4	6.76	2120		
9-2-99	1124						5.0	5.0			17.2	6.72	2130		
9-2-99	1134						5.0	10.0			17.0	6.73	2120		
9-2-99	1144						5.0	15.0			17.2	6.72	2120		
9-2-99	1154						5.0	20.0			16.9	6.82	2110		
9-2-99	1205						5.0	25.0			16.7	6.80	2110		
9-2-99	1215						5.0	30.0			17.0	6.84	2120		
9-2-99	1225						5.0	35.0			17.6	6.78	2140	3.5	

Comments _____

Developer's Signature Dennis Bird Date 9-2-99 Reviewer John Fuda Date 9-16-99

PINNACLE
LABORATORIES



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

Pinnacle Lab ID number 909032
September 14, 1999

EL PASO FIELD SERVICES
770 WEST NAVAJO
FARMINGTON, NM 87401

990380 - MC LD 146 3B-39 Line Drip
990382 - MC 93388 Horton #1 E
990383 - MC 93388 Horton #1 E FD

Project Name PIT MONITOR WELLS
Project Number (none)

Attention: JOHN LAMBDIN

On 9/9/99 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: mt

Enclosure

Reviewed & Approved
J. Sauter 9-16-99



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	: 909032
PROJECT #	: (none)	DATE RECEIVED	: 9/9/99
PROJECT NAME	: PIT MONITOR WELLS	REPORT DATE	: 9/14/99
PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	990380	AQUEOUS	8/30/99
02	990382	AQUEOUS	9/2/99
03	990383	AQUEOUS	9/2/99
04	TRIP BLANK	AQUEOUS	8/30/99
05	TRIP BLANK	AQUEOUS	9/2/99



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

GAS CHROMATOGRAPHY RESULTS

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

PINNACLE I.D.: 909032

SAMPLE		MATRIX	DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.		SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	990380	AQUEOUS	8/30/99	NA	9/10/99	20
02	990382	AQUEOUS	9/2/99	NA	9/10/99	1
03	990383	AQUEOUS	9/2/99	NA	9/10/99	1
PARAMETER		DET. LIMIT	UNITS	990380	990382	990383
BENZENE		0.5	UG/L	< 10	120	120
TOLUENE		0.5	UG/L	54	30	31
ETHYLBENZENE		0.5	UG/L	290	1.8	1.8
TOTAL XYLENES		0.5	UG/L	6500	5.8	5.3

SURROGATE:
BROMOFLUOROBENZENE (%) 102 88 89
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.: 909032

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	TRIP BLANK	AQUEOUS	8/30/99	NA	9/10/99	1
05	TRIP BLANK	AQUEOUS	9/2/99	NA	9/10/99	1
PARAMETER	DET. LIMIT		UNITS	TRIP BLANK	TRIP BLANK	
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	
METHYL-t-BUTYL ETHER	2.5		UG/L	< 2.5	< 2.5	
SURROGATE:						
BROMOFLUOROBENZENE (%)				103	88	
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.	: 909032
BLANK I. D.	: 091099	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 9/10/99
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



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.	: 909032
MSMSD #	: 091099	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 9/10/99
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	18.3	92	19.3	97	5	(80 - 120)	20
TOLUENE	<0.5	20.0	19.1	96	19.9	100	4	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	19.0	95	19.7	99	4	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	58.0	97	60.2	100	4	(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.

PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS		RELINQUISHED BY: 1		RELINQUISHED BY: 2	
PROJ. NO.:		(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒		Signature: Time: 1416		Signature: Time:	
PROJ. NAME: PIT MANTON WELLS		CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER		Printed Name: Date: 9-8-99		Printed Name: Date:	
P.O. NO.:		METHANOL PRESERVATION ☐		Company: DENNIS BIRD		Company:	
SHIPPED VIA: FED-X		COMMENTS: FIXED FEE ☐		EL PASO FIELD SERVICES			
SAMPLE RECEIPT				RECEIVED BY: 1		RECEIVED BY: (LAB) 2	
NO. CONTAINERS	8			Signature: Time:		Signature: Time: 1450	
CUSTODY SEALS	YES (NO)			Printed Name: Date:		Printed Name: Date: 9/9/99	
RECEIVED INTACT	YES			Company:		American Environmental Network (NM), Inc.	
BLUE CRACE	YES						

Well Number MW-2

- ☐ Development
☐ Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-_____

Page 1 of _____Project Name EPFS - GWProject Manager C. I. RBYProject No. 62800018Client Company EPFS

Phase/Task No. _____

Site Name Horton IE MW#2Site Address Pump Canyon Meter # 93388

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 60.25
Initial Depth to Water (feet) 43.95
Height of Water Column in Well (feet) 16.30
Diameter (inches): Well _____ Gravel Pack _____

Instruments

Serial No. (if applicable)

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

Water Disposal

Ground

Methods of Development

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

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing			<u>7.94</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 (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
10-20	1506										63.5	7.3	3050		
10-20	1514										61.0	7.4	3030		
10-20	1534										63.4	8.2	3170		
10-20	1544										62.9	8.3	3196		

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

Comments Sample ID MH-2Developer's Signature(s) Mike HARRDate 10-20-99

Reviewer _____ Date _____



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990427
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	10/20/1999	1605
PROJECT:	Sample 4 - 1st Quarter	
DATE OF BTEX EXT. ANAL.:	N/A	10/28/1999
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 91 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Sample Analyzed by Pinnacle Laboratories, Albuquerque, NM.

Approved By:

John Santolucito

Date:

11/5/99



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990428
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	10/20/1999	1615
PROJECT:	Sample 4 - 1st Quarter	
DATE OF BTEX EXT. ANAL:	N/A	10/28/1999
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	0.8	PPB				
TOTAL BTEX	<2.0	PPB				

—BTEX is by EPA Method 8021 —

The Surrogate Recovery was at 100 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Sample Analyzed by Pinnacle Laboratories, Albuquerque, NM.

Approved By:

John L. Linder

Date:

11/5/99



Well Number *MW-3*

Serial No. WDPD-

Project Name EPFS - Gw

Client Company **ELPES**

Site Name Horton 1 E MW #3

☐ Development
☐ Purging

WELL DEVELOPMENT AND PURGING DATA

Page _____ of _____

Project Manager: C. TERBY

Project No. 62800018

Phase, Task No.

Development Criteria

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

Methods of Development

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

Water Volume Calculation

Initial Depth of Well (feet) 54.80
Initial Depth to Water (feet) 47.65
Height of Water Column in Well (feet) 7.15
Diameter (inches): Well Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing			3.48
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Serial No. (If applicable)

Water Disposal

Group of

Water Removal Data

[illegible]

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

Comments Sample ID MH-13

Developer's Signature(s) Mike Hare

Date 10-20-75

Reviewer

Date _____



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

COC Serial No. C 2400

790427
790428

Received By:

Signature	Date	Time	Signature	Date	Time
Mike Hare	10-20-99	17:00	Rx Frigerator	10-20-99	17:00
Rx Frigerator	10-22-99	0930	Stennis Bros	10-22-99	0932

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

PINNACLE
LABORATORIES



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

Pinnacle Lab ID number
November 02, 1999

910090

EL PASO FIELD SERVICES
770 WEST NAVAJO
FARMINGTON, NM 87401

Project Name PIT MONITOR WELLS
Project Number (none)

Attention: JOHN LAMBDIN

On 10/27/99 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. Hall 11/5/99*



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	: 910090
PROJECT #	: (none)	DATE RECEIVED	: 10/27/99
PROJECT NAME	: PIT MONITOR WELLS	REPORT DATE	: 11/2/99

PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	990426	AQUEOUS	10/20/99
02	990427	AQUEOUS	10/20/99
03	990428	AQUEOUS	10/20/99



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.: 910090

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	990426	AQUEOUS	10/20/99	NA	10/28/99	1
02	990427	AQUEOUS	10/20/99	NA	10/28/99	1
03	990428	AQUEOUS	10/20/99	NA	10/28/99	1
PARAMETER		DET. LIMIT	UNITS	990426	990427	990428
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	0.8

SURROGATE:

BROMOFLUOROBENZENE (%)	89	91	100
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.	: 910090
BLANK I. D.	: 102899	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 10/28/99
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 (%) 101
SURROGATE LIMITS: (80 - 120)
CHEMIST NOTES:
N/A



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

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 910090
MSMSD #	: 102899	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 10/28/99
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	17.1	86	18.3	92	7	(80 - 120)	20
TOLUENE	<0.5	20.0	17.8	89	18.9	95	6	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	17.9	90	19.1	96	6	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	55.0	92	58.7	98	7	(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.

[illegible]

PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS		RELINQUISHED BY: 1		RELINQUISHED BY: 2	
PROJ. NO.:		(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒		Signature: Time: 1440		Signature: Time:	
PROJ. NAME: PIT MOUNTAIN WELLS		CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER		Printed Name: Date: 10-28-99		Printed Name: Date:	
P.O. NO.:		METHANOL PRESERVATION ☐		DENNIS BIRD			
SHIPPED VIA: FED-X		COMMENTS: FIXED FEE ☐		Company: EL PASO FIELD SERVICE		Company:	
SAMPLE RECEIPT				See reverse side (Force Majeure)			
NO. CONTAINERS				RECEIVED BY: 1		RECEIVED BY: (LAB) 2	
6				Signature: Time:		Signature: Time: 1420	
CUSTODY SEALS				Printed Name: Date:		Printed Name: Date: 10/27/99	
YIN (NA)				Company:		Pinnacle Laboratories Inc.	
RECEIVED INTACT							
Yes							
BLUE TAPE							
9°C							

**MC# 93388, HORTON 1E,
MW-1 : Sample 4 - 13th Quarter**

Well Development and Purging Data

Site Name HORTON 1E
☐ Development
☒ Purging

Well Number MW-1

Meter Code 93388
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) 64.50

Initial Depth to Water (feet) 48.89

Height of Water Column in Well (feet) 15.61

Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>10.3</u>	<u>31.0</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Water Disposal
KUTZ SEPARATOR
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)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
12-9-99	0943										<u>10.4</u>	<u>6.53</u>	<u>2440</u>		
12-9-99	0953						<u>5.0</u>	<u>5.0</u>			<u>11.4</u>	<u>6.76</u>	<u>2330</u>		
12-9-99	1003						<u>5.0</u>	<u>10.0</u>			<u>11.8</u>	<u>6.85</u>	<u>2370</u>		
12-9-99	1017						<u>5.0</u>	<u>15.0</u>			<u>12.4</u>	<u>6.88</u>	<u>2360</u>		
12-9-99	1027						<u>5.0</u>	<u>20.0</u>			<u>12.4</u>	<u>6.90</u>	<u>2370</u>		
12-9-99	1038						<u>5.0</u>	<u>25.0</u>			<u>12.7</u>	<u>6.94</u>	<u>2390</u>		
12-9-99	1050						<u>5.0</u>	<u>30.0</u>			<u>13.3</u>	<u>6.96</u>	<u>2430</u>		
12-9-99	1101						<u>5.0</u>	<u>35.0</u>			<u>12.7</u>	<u>6.97</u>	<u>2390</u>	<u>2.5</u>	

Comments _____

Developer's Signature

Dennis Bied

Date 12-9-99

Reviewer

John Linder

Date

12/29/99

PINNACLE
LABORATORIES

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

Pinnacle Lab ID number 912041
December 21, 1999



EL PASO FIELD SERVICES
770 WEST NAVAJO
FARMINGTON, NM 87401

mc# 93388 - Horton IE, MWI
mc# 89894 - Hammond #41A, MWI

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

Reviewed & Approved
J. Sandoz 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	: 912041
PROJECT #	: (none)	DATE RECEIVED	: 12/14/99
PROJECT NAME	: PIT MONITOR WELLS	REPORT DATE	: 12/21/99
PIN			
ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	990471 - MC# 93388 - Horton 1E, MW-1	AQUEOUS	12/9/99
02	990472 - MC# 93388 - Horton 1E, MW-1 Field	AQUEOUS	12/9/99
03	990473 - MC# 89594 - Hammond #4/A, MW-1 ^{DUP}	AQUEOUS	12/9/99
04	TRIP BLANK	AQUEOUS	12/9/99

PINNACLE
LABORATORIES

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

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

PINNACLE I.D.: 912041

SAMPLE		MATRIX	DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.		SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	990471	AQUEOUS	12/9/99	NA	12/17/99	1
02	990472	AQUEOUS	12/9/99	NA	12/17/99	1
03	990473	AQUEOUS	12/9/99	NA	12/17/99	1

PARAMETER	DET. LIMIT	UNITS	990471	990472	990473
BENZENE	0.5	UG/L	50	50	110
TOLUENE	0.5	UG/L	9.1	9.1	3.9
ETHYLBENZENE	0.5	UG/L	< 0.5	< 0.5	13
AL XYLENES	0.5	UG/L	1.8	2.0	53

SURROGATE:

BROMOFLUOROBENZENE (%)

SURROGATE LIMITS (80 - 120)

93

93

106

Mc#93388

Mc#93388

Mc#89894
Hammond #41A
MW-1

Horton #1 E

Horton #1 E

MW-1

MW-1

Field
Duplicate

CHEMIST NOTES:

N/A

Good Duplicate!

PINNACLE
LABORATORIES

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

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

PINNACLE I.D.: 912041

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
04	TRIP BLANK	AQUEOUS	12/9/99	NA	12/17/99	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		

PROGATE:
BROMOFLUOROBENZENE (%) 99
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 912041
MSMSD #	: 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	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.
JG.
12/29/99



DATE: 12-4-99 PAGE: 1 OF 1

912041

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS		RELINQUISHED BY: 1.		RELINQUISHED BY: 2.	
PROJ. NO.:		(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒		Signature: Time: 1/6/37		Signature: Time:	
PROJ. NAME: PIT MONITOR WELLS		CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER		Printed Name: Date: 12-9-99		Printed Name: Date:	
P.O. NO.:		METHANOL PRESERVATION ☐		Company: EL PASO FIELD SERVICE		Company:	
SHIPPED VIA: FED-X		COMMENTS: FIXED FEE ☐		See reverse side (Force Majeure)			
SAMPLE RECEIPT				RECEIVED BY: 1.		RECEIVED BY: (LAB) 2.	
NO. CONTAINERS	7			Signature: Time:		Signature: Time: 1/4/05	
CUSTODY SEALS	Y/N (NA)			Printed Name: Date:		Printed Name: Date: 12/14/99	
RECEIVED INTACT	YES			Company:		Pinnacle Laboratories Inc.	
BLUE	106						

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 #

Well #

Page

1

MW 2

1 of 3

Project Name

Project Number

Project Location

EPFS GROUNDWATER

62800018 Phase 35

HORTON #12

Well Logged By

Personnel On-Site

Contractors On-Site

Client Personnel On-Site

C. CULLICOTT

K. PADILLA, D. PADILLA

0

0

ALUSEL

Drilling Method

Air Monitoring Method

PID

Elevation

Borehole Location

GWL Depth

Logged By

Drilled By

Date/Time Started

Date/Time Completed

T3IN R9WS28H

47.35'

C. CULLICOTT

D. PADILLA & A. WRIGHT

10/8/99 8:00am

10/8/99 8:25am 12:30pm

meter 93388

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			① 3" RECOVERY STIFF BROWN SILT, CLEAN, NO STAIN OR ODOR.						① 16 BLOWS
5	① 5-6 1/2		② 8" RECOVERY DARK TAN POORLY SORTED SAND, LOOSE & CLEAN						② 11 BLOWS
10	② 10-11 1/2		③ 6" RECOVERY BROWN FINE TO MEDIUM SILTY SAND CLEAN, DRY						③ 10 BLOWS
15	③ 15-16 1/2		④ 4" RECOVERY BROWN FINE TO MEDIUM SILTY SAND, SLIGHTLY STIFF, CLEAN, DRY						④ 13 BLOWS
20	④ 20-21 1/2		⑤ 1" RECOVERY BROWN CLAYEY SILT DAMP, SLIGHTLY PLASTIC SCATTERED ROOT TRACES						⑤ 16 BLOWS
25	⑤ 25-26 1/2		⑥ 14" RECOVERY BROWN SILTY CLAY, DAMP, PLASTIC, CLEAN, W/POCKETS OF GYPSUM CRYSTALS & PIECES OF charcoal?						⑥ 15 BLOWS
30	⑥ 30-35 1/2		⑦ FULL RECOVERY STIFF TO PLASTIC BROWN SILTY CLAY w/ GYPSUM CRYSTALS, GRAY MOTTLED CLEAN W/SCATTERED BLACK PIECES OF charcoal?						⑦ 18 BLOWS
35	⑦ 35-36 1/2								
40									

Comments:

SUNNY, COOL

DTW MW147'

NO PID

Geologist Signature

Cathy Cullerott

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

100 Monroe Road

Albuquerque, New Mexico 87401

(505) 822-8222 FAX (505) 326-2388

Borehole #

1

Well #

MU-2

Page

2

of

3

Project Name

EPAS GROUNDWATER

Project Number

02800018

Phase

35

Project Location

HOLTON #1E

Well Logged By

C. CULLICOTT

Personnel On-Site

K. PAQUILLA, D. PAQUILLA, A. WERTHO

Contractors On-Site

8

Client Personnel On-Site

8

Drilling Method

AUGER

Air Monitoring Method

Elevation

Borehole Location

T31N R9W S28H

SWL Depth

47.35'

Logged By

C. CULLICOTT

Drilled By

D. PAQUILLA, A. WERTHO

Date/Time Started

10/8/99 9:00am

Date/Time Completed

10/8/99 12:30pm

MEJL 93388

Depth (Feet)	Sample Interval	Sample Type & Recovery (Inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Change (feet)	Lithology	Air Monitoring Units: NDU BZ BH S	Drilling Conditions & Blow Counts
40	(8) 40-41 1/2	(8) 14" RECOVERY	TAN SILTY SAND, LOOSE COARSE @ TOP OF SPLIT SPOON, FINER TOWARD BOTTOM. STRONG ORANGE STAIN FOR 1" NEAR TOP. OCCASIONAL BLACK STAIN IN FINER SAND TOWARD BOTTOM NO ODOOR. LIKELY NATURAL ORGANICS.					(8) 18 BLOWS
45	(9) 45-46 1/2	(9) FULL RECOVERY	DAMP GRAY TO BROWN SANDY SILTY CLAY, PLASTIC, W/ SCATTERED ORANGE STAIN. CLEAN					(9) 5 BLOWS
50	(10) 50-51 1/2	(10) SPLIT SPOON REFUSAL	AT 30 BLOW B, BUT NOTHING HARD APPARENT IN SPLIT SPOON. 8" RECOVERY, SATURATED ORANGE SAND, LOOSE. WTN 48' CLEAN					(10) 50+ BLOWS
55	(11) 55-56 1/2	(11) SPLIT SPOON REFUSAL	NO BLOWS. SEEMS TO STILL BE IN WATER TABLE BUT VERY HARD DRILLING. SETTING WELL AT 55'. SATURATED ORANGE SAND IN SPLIT SPOON.					

Comments:

Geologist Signature

Cathy Cullcott

MONITORING WELL INSTALLATION RECORD

Environmental Services Corp.
 326-2252 FAX (505) 326-2388

Borehole # 1
 Well # MCW 2
 Page 3 of 3

Project Name EPFS GROUNDWATER

Project Number 62800012 Phase 35
 Project Location HOLTON #1E

On-Site Geologist C. CULLICOTT
 Personnel On-Site K. PADILLA, D. PADILLA
 Contractors On-Site A. WERITO
 Client Personnel On-Site

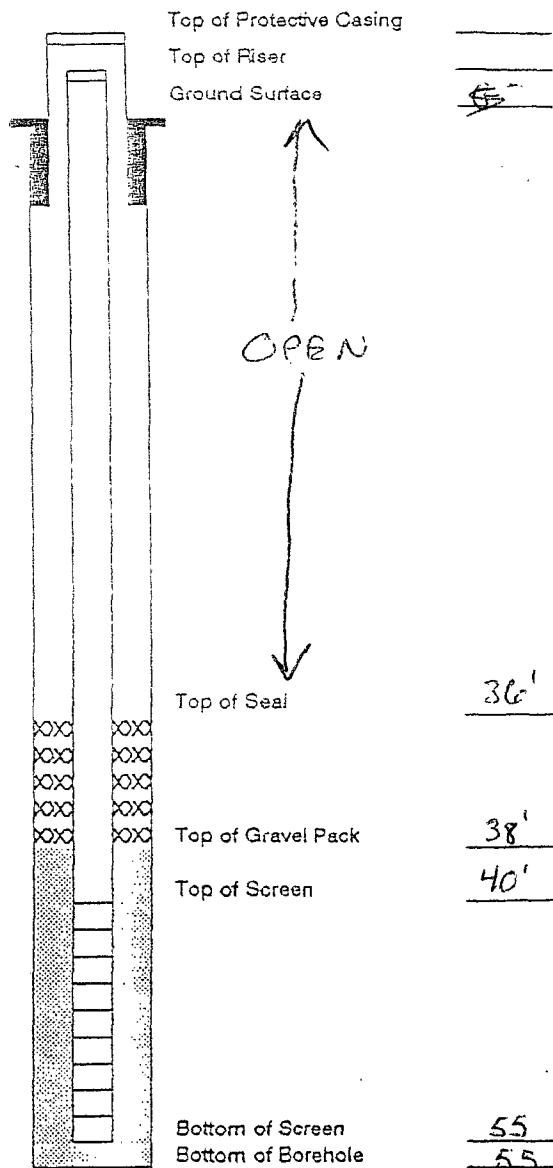
Location T31N R9W S28H
 Well Depth 47.35'
 Bored By D. PADILLA & A. WERITO

Start Time 10/8/99 9:00am
 End Time 10/8/99 12:30pm

meter 93388

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"	65
Bottom of Well Riser	2"	40
Top of Well Screen	2"	40
Bottom of Well Screen	2"	55
Top of Peltonite Seal	BENT.	36
Bottom of Peltonite Seal	CHIPS	38
Top of Gravel Pack	CO.	38
Bottom of Gravel Pack	SAND	55
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		47.35'
Total Depth of Borehole		55



Comments: SOME BACKFILL OF SAND INTO AUGERS, BUT DRILLERS WERE ABLE TO CLEAR IT OUT TO TOP.

WELL DEVELOPED WITH
 5 gallons bailed 11:50-12:20pm
 DTW 48.15' AFTER BAILING
 WATER VERY TURBID - ORANGE BROWN, NO ODOOR

Geologist Signature

Cathy Cullicott

RECORD OF SUBSURFACE EXPLORATION

Emp Environmental Services Corp.

30 Monroe Road

Albuquerque, New Mexico 87401

(505) 325-3232 FAX (505) 325-2388

Rehole #

2

Well #

MW3

Page

1 of 3

Project Name

EPAS GROUNDWATER

Project Number

62800018 Phase 35

Project Location

HORTON II E

Well Logged By

C. CULLICOTT

Personnel On-Site

K. PADILLA, D. PADILLA,

Contractors On-Site

0

A. WERITO

Client Personnel On-Site

0

Drilling Method

AUGER

Air Monitoring Method

Elevation

Corehole Location

T31N R9W S28N

WL Depth

47.94'

Logged By

C. CULLICOTT

Drilled By

K. PADILLA, D. PADILLA

Date/Time Started

10/8/99 12:30 PM

Date/Time Completed

10/8/99 2:30 PM

meter 93386

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									
10	① 10-11 1/2		① 4" RECOVERY FINE BROWN SILTY SAND. LOOSE, DRY. CLEAN						① 10 BLOWS
15									
20	② 20-21 1/2		② FULL RECOVERY LOOSE, DRY, POORLY SORTED SAND → 60% COARSE, W/SMALL GRAVEL. CLEAN CUTTINGS @ 25' SAME						② 21 BLOWS
25									
30	③ 30-31 1/2		③ 6" RECOVERY STIFF BROWN SILT, W/SOME LIGHTER MOTTLING. CLEAN. SLIGHTLY DAMP.						③ 19 BLOWS
35									
40									

Comments:

SUNNY, WARM

NO PLO

Geologist Signature

Cathy Cullcott

RECORD OF SUBSURFACE EXPLORATION

Oilip Environmental Services Corp.

30 Monroe Road

Birmingham New Mexico 87401

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

Well #

2

Well #

mw3

Page

2 of 3

Project Name

EPFS GROUNDWATER

Project Number

02800018

Phase

35

Project Location

HUTTON #16

Well Logged By

C. CULLICOTT

Personnel On-Site

E. PADILLA, D. PADILLA,

Contractors On-Site

A. WERTZ

Client Personnel On-Site

Drilling Method

AUGER

Air Monitoring Method

Elevation

Corehole Location

T31 N 29 W S28 E

EWL Depth

47.44'

Logged By

C. CULLICOTT

Drilled By

E. PADILLA & D. PADILLA

Date/Time Started

10/8/99 12:30pm

Date/Time Completed

10/8/99 2:30pm

meter 93388

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	
40	④ 40- 41 1/2		④ FULL RECOVERY BROWN CLAYEY SILT, SLIGHTLY DAMP, CLEAN PLASTIC, w/SCATTERED ROOT TRACES & CHARCOAL? mottled Gray.						④ 12 BLOWS
50	⑤ 50- 51 1/2		⑤ FULL RECOVERY GRAYS AND, SATURATED, NO OOR, w/SOME GRAVEL, WT~48%						⑤ 4 BLOWS
55									
60									
25									
30									
35									
40									

Comments:

Geologist Signature

Cathy Cullcott

MONITORING WELL INSTALLATION RECORD

Environmental Services Corp.
 1326-2262 FAX (506) 326-2388

Borehole # 2
 Well # MW3
 Page 3 of 3

Project Name EPFS GROUNDWATER

Project Number 02800018 Phase 3S
 Project Location HOLTON #1E

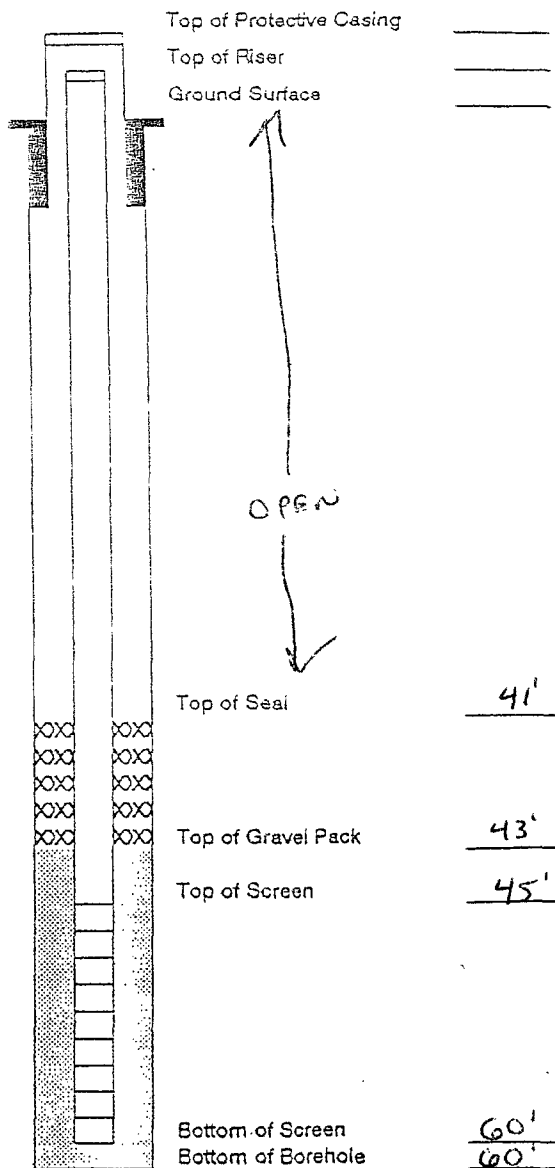
On-Site Geologist C. CULLICOTT
 Personnel On-Site K. PADILLA, O. PADILLA,
 Contractors On-Site A. WERKUS
 Client Personnel On-Site

Location T31N R9W S28H
 Depth 47.94'
 Called By K. PADILLA
D. PADILLA
 Date/Time Started 10/8/99 12:30pm
 Date/Time Completed 10/8/99 2:30pm

meter 93388

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"	65
Bottom of Well Riser	2"	45'
Top of Well Screen	2"	45'
Bottom of Well Screen	2"	60'
Top of Peltonite Seal	BENT	41'
Bottom of Peltonite Seal	CHIPS	43'
Top of Gravel Pack	CO	43'
Bottom of Gravel Pack	SAND	60'
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		47.94'
Total Depth of Borehole		60'



Comments: WELL DEVELOPED w/ 6 gallons removed 2:45-3:10
DTW AFTER BALANCE 48". Water was clear at first,
then slightly turbid the
rest of the time. Might have
a slight odor. 48"

Geologist Signature

Cathy Cullcott

3R - 192

REPORTS

DATE:

1998



Certified Mail: #Z 211 324 121

March 31, 1999

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

RECEIVED

APR 05 1999

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

RE: 1998 Pit Project Annual Groundwater Report

Dear Mr. Olson:

In accordance with reporting requirements, El Paso Field Services (EPFS) has enclosed annual updates for the 49 remaining groundwater impacted locations that were identified during our pit closure project of 1994 / 1995.

Of the 49 reports, EPFS hereby requests closure of 18 of these locations. The 18 sites EPFS is requesting closure on are presented in 4 separate binders entitled "Final Closure Report for Groundwater Sites with Four Consecutive Quarters Below Standards".

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".

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

Sincerely,

A handwritten signature in cursive script, appearing to read 'Scott T. Pope'.

Scott T. Pope P.G.
Senior Environmental Scientist

xc: Mr. Denny Foust, NMOCD, Aztec - w / enclosures; **Certified Mail # Z 211 324 122**
Mr. Bill Liesse, BLM - w / enclosures; **Certified Mail # Z 211 324 123**
Ms. Charmaine Tso, Navajo EPA - w / enclosures; **Certified Mail # Z 211 324 120**

EPFS GROUNDWATER PITS

1998 ANNUAL GROUNDWATER REPORT

HORTON #1E
Meter/Line ID - 93388

RECEIVED

APR 05 1999

SITE DETAILS

Legals - Twn: 31N Rng: 9W

Sec: 28

Unit: H

NMOCD Hazard Ranking: 40

Land Type: FEE

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

Operator: AMOCO PRODUCTION COMPANY

PREVIOUS ACTIVITIES

Site Assessment: Aug-94

Excavation: Sep-94 (50 cy)

Soil Boring: Aug-95

Monitor Well: Aug-95

Quarterly Sampling Initiated: Dec-96

1998 ACTIVITIES

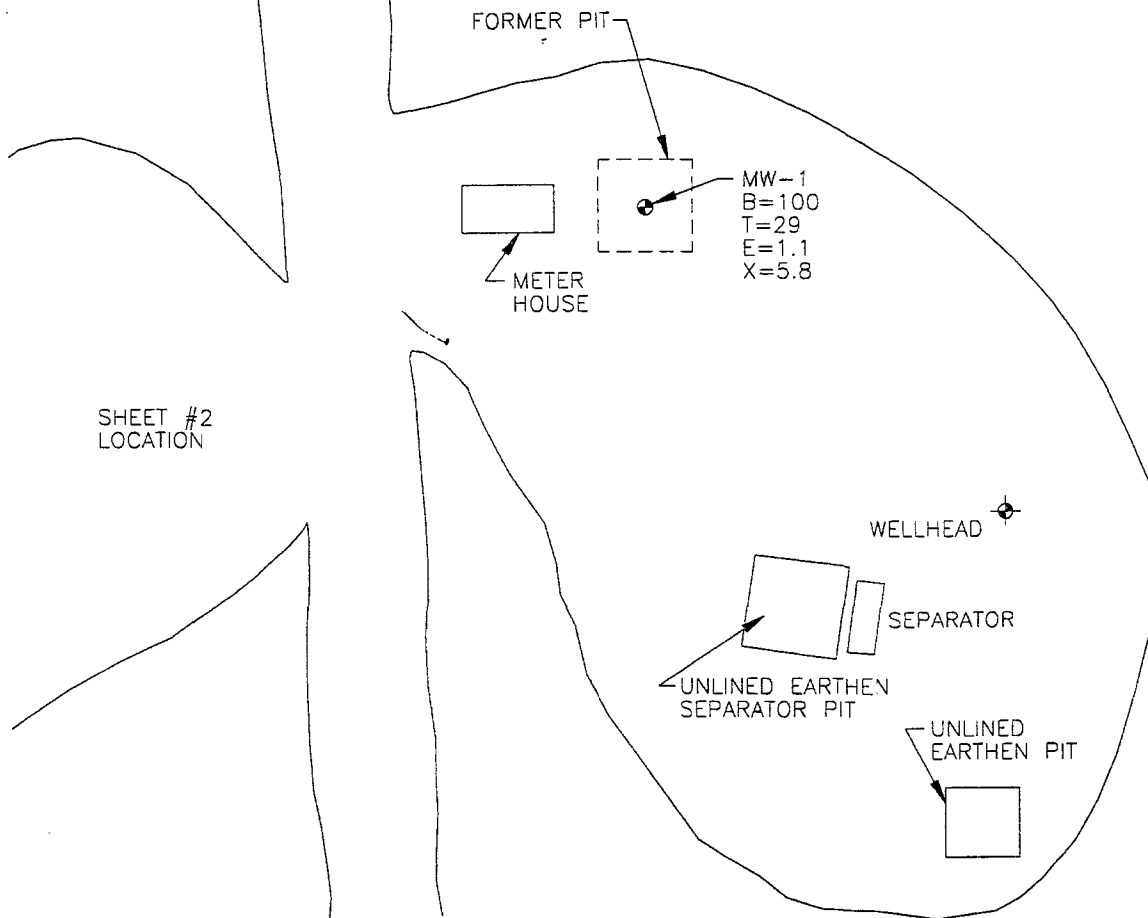
Quarterly Groundwater Monitoring - Quarterly groundwater monitoring has continued through 1998. Groundwater analytical data are presented in Table 1. A site map is presented as Figure 1.

CONCLUSIONS

Benzene has been in excess of standards since quarterly sampling was initiated. Groundwater gradient has not been determined at this site. Benzene levels have stayed approximately the same throughout the life of this project indicating that one or more of the operators unlined earthen pits may be a continuing source of hydrocarbon constituents in the groundwater at this site.

RECOMMENDATIONS

- The OCD requests that EPFS install temporary monitoring wells, determine groundwater gradient, and determine contaminant migration potential.
- Quarterly sampling will continue at MW-1 until analytical results show hydrocarbon constituents are below New Mexico Groundwater Standards for four consecutive quarters.
- Following OCD approval for closure, MW-1 will be abandoned using OCD approved abandonment procedures.



LEGEND

● MW-1 APPROXIMATE MONITORING WELL
LOCATION AND NUMBER

B BENZENE (ug\L)
T TOLUENE (ug\L)
E ETHYL BENZENE (ug\L)
X XYLENE (ug\L)

ug\L MICROGRAMS PER LITER

0 50
FEET



TITLE:

HORTON #1E
METER 93388
DECEMBER 17, 1998

DWN:

TMM

DES.:

CI

PROJECT NO.:

17520

CHKD:

CI

APPD:

DATE:

2/26/99

REV.:

0

EPFS GW PITS

FIGURE 1

EPFS Groundwater Pits
1998 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
980248	93388	Horton 1E	03/23/98	1	Sample 4 - 6th Quarter	= 63.6	= 35.9	< 1.0	= 6.93	= 106
980453	93388	Horton 1E	06/04/98	1	Sample 4 - 7th Quarter	= 68.1	= 30.6	< 1.0	= 6.60	= 105
980641	93388	Horton 1E	09/14/98	1	Sample 4 - 8th Quarter	= 67.7	= 19.4	< 1.0	= 3.26	= 90
980872	93388	Horton 1E	12/17/98	1	Sample 4 - 9th Quarter	= 100.0	= 29.0	= 1.1	= 5.80	= 136

**1998 GROUNDWATER
ANALYTICAL**

Well Development and Purging Data

☐ Development
☒ Purging

Well Number MW-1

Meter Code 93388

Site Name HORTON #1E

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) 64.50
Initial Depth to Water (feet) 48.78
Height of Water Column in Well (feet) 15.72
Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>10.4</u>	<u>31.2</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Water Disposal

KUTZ SEPARATOR

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)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
3-23-98	1124										18.0	6.54	2150		
3-23-98	1133						5.0	5.0			16.7	6.76	2160		
3-23-98	1145						5.0	10.0			16.6	6.84	2190		
3-23-98	1155						5.0	15.0			16.4	6.87	2260		
3-23-98	1204						5.0	20.0			16.4	6.86	2280		
3-23-98	1213						5.0	25.0			16.1	6.89	2330		
3-23-98	1223						5.0	30.0			16.1	6.92	2260		
3-23-98	1235						5.0	35.0			16.4	6.97	2300	2.5	

Comments _____

Developer's Signature

Dennis Bird

Date

3-23-98

Reviewer

Jon Ford

Date

4/2/98



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	980248
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	3/23/98	1249
PROJECT:	Sample 4 6th Quarter	
DATE OF BTEX EXT. ANAL.:	3/27/98	3/27/98
TYPE DESCRIPTION:	MW-1	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	63.6	PPB				
TOLUENE	35.9	PPB				
ETHYL BENZENE	< 1	PPB				
TOTAL XYLENES	6.93	PPB				
TOTAL BTEX	106	PPB				

--BTEX is by EPA Method 8020 --

The Surrogate Recovery was at 98.3 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By:

Jon Larch

Date:

4/3/98

980248BTEXMW,3/31/98



FIELD SERVICES LABORATORY

ANALYTICAL REPORT PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	980249
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	3/23/98	1249
PROJECT:	Sample 4 6th Quarter	
DATE OF BTEX EXT. ANAL.:	3/27/98	3/27/98
TYPE DESCRIPTION:	MW-1 Field Dup	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	62.8	PPB				
TOLUENE	35.2	PPB				
ETHYL BENZENE	< 1	PPB				
TOTAL XYLENES	6.40	PPB				
TOTAL BTEX	104	PPB				

--BTEX is by EPA Method 8020 --

The Surrogate Recovery was at 97.6 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By:

980249BTEXMW,3/31/98

Date:

4/3/98

SAMPLE 4 6TH QTR



A 2628

CHAIN OF CUSTODY RECORD

Project No.		Project Name MC# 93388				Type and No. of Sample Containers	Preservation Technique BTEX	Requested Analysis				Remarks
Samplers: (Signature) Dennis Bird		Date: 3-23-98										
INITIALS	Date	Time	Comp.	GRAB	Sample Number							
WATER	3-23-98	1249	X		980248 ✓	5-1	4°C	X				HORTON 1E MW-1
WATER	3-23-98	1249	X		980249 ✓	5-1	4°C	X				HORTON 1E MW-1 FIELD ODP
Relinquished by: (Signature) Dennis Bird			Date/Time 3-23-98 1615		Received by: (Signature)			Relinquished by: (Signature)			Date/Time	Received by: (Signature)
Relinquished by: (Signature)			Date/Time		Received by: (Signature)			Relinquished by: (Signature)			Date/Time	Received by: (Signature)
Relinquished by: (Signature)			Date/Time		Received for Laboratory by: (Signature) Mason Hopper			Date/Time 3/24/98 1110		Remarks:		
Carrier Co:			Carrier Phone No.			Date Results Reported / by: (Signature)						

Well Development and Purging Data

Site Name HORTON #1E

☐ Development
☒ Purging

Well Number MW-1

Meter Code 93388

Development Criteria

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

Methods of Development

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

Water Volume Calculation

Initial Depth of Well (feet) 64.50
Initial Depth to Water (feet) 48.76
Height of Water Column in Well (feet) 15.74
Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>10.4</u>	<u>31.2</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Water Disposal

KDT2 SEPARATOR

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)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
6-4-98	0946										15.8	6.09	2160		
6-4-98	0954						5.0	5.0			16.3	6.50	2140		
6-4-98	1003						5.0	10.0			17.3	6.61	2140		
6-4-98	1013						5.0	15.0			18.6	6.70	2170		
6-4-98	1022						5.0	20.0			18.8	6.75	2150		
6-4-98	1031						5.0	25.0			18.7	6.78	2160		
6-4-98	1040						5.0	30.0			19.0	6.86	2170		
6-4-98	1054						5.0	35.0			17.6	6.91	2170	3.5	

Comments _____

Developer's Signature Lennie Bird

Date 6-4-98

Reviewer John Letcher

Date 6/10/98



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	980454
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	6/4/98	1106
PROJECT:	Sample 4 7th Quarter	
DATE OF BTEX EXT. ANAL:	6/5/98	6/5/98
TYPE DESCRIPTION:	MW-1 Field Dup	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	69.8	PPB				
TOLUENE	31.3	PPB				
ETHYL BENZENE	< 1	PPB				
TOTAL XYLENES	6.52	PPB				
TOTAL BTEX	108	PPB				

--BTEX is by EPA Method 8020 --

The Surrogate Recovery was at 91.7 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By:

Date:

6/10/98

980454BTEXMW,6/10/98



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	980453
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	6/4/98	1106
PROJECT:	Sample 4 7th Quarter	
DATE OF BTEX EXT. ANAL.:	6/5/98	6/5/98
TYPE DESCRIPTION:	MW-1	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	68.1	PPB				
TOLUENE	30.6	PPB				
ETHYL BENZENE	< 1	PPB				
TOTAL XYLENES	6.60	PPB				
TOTAL BTEX	105	PPB				

--BTEX is by EPA Method 8020 --

The Surrogate Recovery was at 93.6 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By:

John Fard

Date:

6/10/98

980453BTEXMW, 6/8/98

SAMPLE 4 7TH QTR



A 2364

CHAIN OF CUSTODY RECORD

Project No.		Project Name MC# 93388				Type and No. of Sample Containers	Requested Analysis				Remarks
Samplers: (Signature) Dennis Bird		Date: 6-4-98									
MATRIX	Date	Time	Comp.	GRAB	Sample Number						
WATER	6-4-98	1106		X	980453	5-1	4°C	X			HORTON 1E MW-1
WATER	6-4-98	1106		X	980454	5-1	4°C	X			HORTON 1E MW-1 FIELD OFF
WATER	6-4-98	—		X	—	5-1	4°C	X			TRIP BLANK
Relinquished by: (Signature) Dennis Bird		Date/Time 6-4-98 1719		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received for Laboratory by: (Signature) M. R. Hopper		Date/Time 6/5/98 1430		Remarks:			
Carrier Co:		Carrier Phone No.		Date Results Reported / by: (Signature)							

Well Development and Purging Data

☐ Development
☒ Purging

Well Number MW-1

Meter Code 93388

Site Name HORTON #1E

Development Criteria

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

Water Volume Calculation

Initial Depth of Well (feet) 64.50

Initial Depth to Water (feet) 48.85

Height of Water Column in Well (feet) 15.65

Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>10.3</u>	<u>31.0</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Methods of Development

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

☐ Other _____

Water Disposal

KUTZ SEPARATOR

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)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
9-14-98	0940										16.3	6.05	2220		
9-14-98	0948						5.0	5.0			15.8	6.32	2180		
9-14-98	0955						5.0	10.0			15.7	6.41	2170		
9-14-98	1005						5.0	15.0			15.8	6.47	2170		
9-14-98	1015						5.0	20.0			15.8	6.51	2180		
9-14-98	1025						5.0	25.0			15.8	6.57	2190		
9-14-98	1035						5.0	30.0			15.8	6.62	2200		
9-14-98	1048						5.0	35.0			16.2	6.76	2210	3.5	

Comments _____

Developer's Signature Dennis Bird

Date 9-14-98

Reviewer John Swick

Date 9/24/98



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	980641
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	9/14/98	1100
PROJECT:	Sample 4 8th Quarter	
DATE OF BTEX EXT. ANAL.:	9/18/98	9/18/98
TYPE DESCRIPTION:	MW-1	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	67.7	PPB				
TOLUENE	19.4	PPB				
ETHYL BENZENE	< 1	PPB				
TOTAL XYLENES	3.26	PPB				
TOTAL BTEX	90	PPB				

--BTEX is by EPA Method 8020 --

The Surrogate Recovery was at 85.5 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By:

John Leach

Date:

9/24/98

980641BTEXMW,9/23/98

SAMPLE 4 STHQTR



A 2392

CHAIN OF CUSTODY RECORD

Project No.		Project Name MC # 93388				Type and No. of Sample Containers	Preservation Technique BTX	Requested Analysis			Remarks
Samplers: (Signature) Lennon Bird		Date: 9-14-98									
DATE	Date	Time	Comp.	GRAB	Sample Number						
WATER	9-14-98	1100		X	980641	G-1	4°C	X			HORTON #1E MW-1
WATER	9-14-98			X		G-1	4°C	X			TRIP BLANK
Relinquished by: (Signature) Lennon Bird		Date/Time 9-14-98 1625		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received for Laboratory by: (Signature) Mardon Hopper		Date/Time 9/15/98 0930		Remarks:			
Carrier Co:				Carrier Phone No.				Date Results Reported / by: (Signature)			
Air Bill No.:											

Well Development and Purging Data

Site Name HORTON #1E

☐ Development
☒ Purging

Well Number MW-1

Meter Code 93388

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) 64.50
Initial Depth to Water (feet) 48.87
Height of Water Column in Well (feet) 15.63
Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>10.3</u>	<u>31.0</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Water Disposal

KUTZ SEPARATOR

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)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
12-17-98	0957										12.8	6.36	2440		
12-17-98	1005						5.0	5.0			13.5	6.47	2360		
12-17-98	1014						5.0	10.0			13.8	6.53	2420		
12-17-98	1024						5.0	15.0			13.7	6.60	2410		
12-17-98	1033						5.0	20.0			13.9	6.70	2400		
12-17-98	1043						5.0	25.0			13.8	6.71	2420		
12-17-98	1053						5.0	30.0			13.9	6.81	2420		
12-17-98	1105						5.0	35.0			14.0	7.01	2390	3.5	

Comments _____

Developer's Signature

Lennis Bird

Date

12-17-98

Reviewer

John Lander

Date

1-11-99



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	980872
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	12/17/98	1121
PROJECT:	Sample 4 9th Quarter	
ATE OF BTEX EXT. ANAL.:	NA	12/28/98
TYPE DESCRIPTION:	MW-1	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	100	PPB	1			
TOLUENE	29	PPB	1			
ETHYL BENZENE	1.1	PPB	1			
TOTAL XYLENES	5.8	PPB	1			
TOTAL BTEX	136	PPB				

--BTEX is by EPA Method 8020 --

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

Narrative:

Sample Analyzed by Pinnical Laboratories.

Approved By:

John L. Linder

Date:

1-11-99

980872BTEXMW,1/11/99



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	980873
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	12/17/98	1121
PROJECT:	Sample 4 9th Quarter	
DATE OF BTEX EXT. ANAL.:	NA	12/29/98
TYPE DESCRIPTION:	MW-1 Duplicate	Water

Field Remarks: Field Duplicate

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	89	PPB	1			
TOLUENE	25	PPB	1			
ETHYL BENZENE	0.9	PPB	1			
TOTAL XYLENES	4.9	PPB	1			
TOTAL BTEX	120	PPB				

--BTEX is by EPA Method 8020 --

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

Narrative:

Sample Analyzed by Pinnical Laboratories.

Approved By:

John F. Ladd

Date:

1-11-99

980873BTEXMW,1/11/99

PINNACLE
LABORATORIES



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

Pinnacle Lab ID number 812083
December 30, 1998

EL PASO FIELD SERVICES
770 WEST NAVAJO
FARMINGTON, NM 87401

980867 to 980869
980872 to 980874
+ 2 Trip Blanks

Project Name QTRLY MONITOR WELL
Project Number (none)

Attention: JOHN LAMBDIN

On 12/22/98 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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

Kimberly D. McNeill
Project Manager

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: mt

Enclosure

Reviewed & Approved
J. Sarch
1-6-99



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	: 812083
PROJECT #	: (none)	DATE RECEIVED	: 12/22/98
PROJECT NAME	: QTRLY MONITOR WELL	REPORT DATE	: 12/30/98

AEN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	980867	AQUEOUS	12/15/98
02	980868	AQUEOUS	12/15/98
03	980869	AQUEOUS	12/15/98
04	980872	AQUEOUS	12/15/98
05	980873	AQUEOUS	12/17/98
06	980874	AQUEOUS	12/17/98
07	TRIP BLANK	AQUEOUS	12/15/98
08	TRIP BLANK	AQUEOUS	12/17/98



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 : QTRLY MONITOR WELL

PINNACLE I.D.: 812083

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	980867	AQUEOUS	12/15/98	NA	12/29/98	10
02	980868	AQUEOUS	12/15/98	NA	12/28/98	1
03	980869	AQUEOUS	12/15/98	NA	12/28/98	25

PARAMETER	DET. LIMIT	UNITS	980867	980868	980869
BENZENE	0.5	UG/L	7.3	9.8	710
TOLUENE	0.5	UG/L	15	79	1300
XYLBENZENE	0.5	UG/L	100	61	160
TOTAL XYLENES	0.5	UG/L	820	460	940

SURROGATE:
BROMOFLUOROBENZENE (%) 100 112 117
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 : QTRLY MONITOR WELL

PINNACLE I.D.: 812083

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
04	980872	AQUEOUS	12/15/98	NA	12/28/98	1
05	980873	AQUEOUS	12/17/98	NA	12/29/98	1
06	980874	AQUEOUS	12/17/98	NA	12/29/98	1

PARAMETER	DET. LIMIT	UNITS	980872	980873	980874
BENZENE	0.5	UG/L	100	89	330
TOLUENE	0.5	UG/L	29	25	1.6
ETHYLBENZENE	0.5	UG/L	1.1	0.9	30
TOTAL XYLENES	0.5	UG/L	5.8	4.9	150

SURROGATE:

BROMOFLUOROBENZENE (%)	104	104	114
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 : QTRLY MONITOR WELL

PINNACLE I.D.: 812083

SAMPLE ID.#	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
07	TRIP BLANK	AQUEOUS	12/15/98	NA	12/29/98	1
08	TRIP BLANK	AQUEOUS	12/17/98	NA	12/29/98	1

PARAMETER	DET. LIMIT	UNITS	TRIP BLANK	TRIP BLANK
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
AL XYLENES	0.5	UG/L	< 0.5	< 0.5

SURROGATE:

BROMOFLUOROBENZENE (%)

110

107

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.	: 812083
BLANK I. D.	: 122898	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 12/28/98
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: QTRLY MONITOR WELL		

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 (%) 113
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.	: 812083
BLANK I. D.	: 122998	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 12/29/98
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: QTRLY MONITOR WELL		

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 (%) 111
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 # : 122998
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : QTRLY MONITOR WELL

PINNACLE I.D. : 812083
DATE EXTRACTED : NA
DATE ANALYZED : 12/29/98
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	10.0	9.3	93	9.5	95	2	(80 - 120)	20
TOLUENE	<0.5	10.0	10.4	104	10.5	105	1	(80 - 120)	20
ETHYLBENZENE	<0.5	10.0	10.3	103	10.5	105	2	(80 - 120)	20
TOTAL XYLENES	<0.5	30.0	30.5	102	31.1	104	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 Lambdin

COMPANY: EL PASO FIELD SERVICES

ADDRESS: 770 W. NAVAJO
FARMINGTON, NM 87401

PHONE: (505) 544-2144

FAX: (505) 544-2261

BILL TO: (SAME AS ABOVE)

COMPANY:

ADDRESS:

SAMPLE ID	DATE	TIME	MATRIX	LAB I.D.
980867	12-15-98	1115	Water	01
980868	12-15-98	1252	Water	02
980869	12-15-98	1545	Water	03
980872	12-17-98	1121	Water	04
980873	12-17-98	1121	Water	05
980874	12-17-98	1443	Water	06
TRIP BLANK	12-15-98	NA	Water	07
TRIP BLANK	12-17-98	NA	Water	08

ANALYSIS REQUEST

Petroleum Hydrocarbons (418.1) TRPH	(MOD 8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline)	8021 (BTEX) SEMI-QUANT	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)	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
				X																				2
				X																				2
				X																				2
				X																				2
				X																				2
				X																				2
				X																				1
				X																				1

PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS		RELINQUISHED BY:		RELINQUISHED BY:	
PROJ. NO.: NA		(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒		Signature: John Lambdin Time: 1330		Signature: Time:	
PROJ. NAME: Otterly Monitor Well		CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER		Printed Name: John Lambdin Date: 12/21/98		Printed Name: Date:	
P.O. NO.: NA		METHANOL PRESERVATION ☐		Company: El Paso Field Services		Company:	
SHIPPED VIA: Fed-X		COMMENTS: FIXED FEE ☐		RECEIVED BY:		RECEIVED BY: (LAB) 2.	
SAMPLE RECEIPT				Signature: Time:		Signature: Time: 1025	
NO. CONTAINERS:				Printed Name: Date:		Printed Name: Date: 12/22/98	
CUSTODY SEALS: Y/N/NA				Company:		American Environmental Network (NM), Inc.	
RECEIVED INTACT:							
BLUE ICE/ICE:							

CHAIN OF CUSTODY RECORD

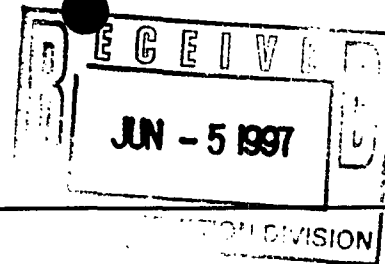
Project No.		Project Name				Type and No. of Sample Containers	Preservation Technique	Requested Analysis				Remarks		
Samplers: (Signature)		Date: 12-17-98												
MATRIX	Date	Time	Comp.	GRAB	Sample Number									
WATER	12-17-98	1121		X	980872	G-1	340F	X				HORTON #1 E MW-1		
WATER	12-17-98	1121		X	980873	G-1	340F	X				HORTON #1 E MW-1 FIELD OVP		
WATER	12-17-98			X		G-1	340F	X				TRIP BLANK		
/														
Relinquished by: (Signature)			Date/Time		Received by: (Signature)			Relinquished by: (Signature)			Date/Time		Received by: (Signature)	
Dennis Bird			12-17-98 1645											
Relinquished by: (Signature)			Date/Time		Received by: (Signature)			Relinquished by: (Signature)			Date/Time		Received by: (Signature)	
Relinquished by: (Signature)			Date/Time		Received for Laboratory by: (Signature)			Date/Time		Remarks:				
					Maida Hopper			12/19/98 0840						
Carrier Co:					Carrier Phone No.					Date Results Reported / by: (Signature)				
Air Bill No.:														

3R - 192

REPORTS

DATE:

6/2/1997



Bill Olson
New Mexico Oil Conservation Commission
2040 South Pacheco Street
Santa Fe, New Mexico 87505

Date: June 2, 1997

Subject: Semi-Annual El Paso Field Services Pit Project Groundwater Report

Mr. Olson,

El Paso Field Services (EPFS) has encountered groundwater at various locations while investigating and or remediating exempt hydrocarbon unlined pits. The enclosed list includes all locations which are in this category. Please find enclosed, the locations and status of each individual pit.

These pits are being remediated according to the "EPFS Remediation Plan for Groundwater Encountered During Pit Closure Activities" dated November 29, 1995.

EPFS requests that future reports for this project be submitted on a yearly basis to begin December 1, 1997 which will include soil boring logs, monitoring well completion diagrams, analytical data, groundwater elevation data, any risk analysis and type of remediation method.

For questions regarding this report please contact Ricky Cosby at (505)599-2158.

A handwritten signature in cursive script that reads 'Ricky D. Cosby'.

Ricky D. Cosby
Compliance Specialist

cc: Denny Foust - Aztec District

El Paso Field Services
Pit Project Ground Water Report

Location/Line Name	LTR	Sec	TN	RG	Marker	Well	Status	Depth to GW	Product Level
					Status				
MCGRATH #1	F	07	30	11	+1		GW encountered during drilling activities, MW results below standards, Develop Closure Plan	17'	No
Mae Gail Com #1	E	24	29	11			PZ1 in center of pit below standards. All other samples below standards. Develop Closure Plan	0.5'-6'	No
NM COM G1	P	36	30	10			MW1 was removed during site re-excavation, PZ1 installed with samples below standards. Develop Closure Plan.	17'-18'	No
MARY ACKROYD #1	J	18	30	11			Geoprobe samples all below standards. Develop Closure Plan.	3'-6'	No
JACQUEZ #3	E	25	30	09	-1		MW1 removed during re-excavation. 3 piezos and 1 probehole around pit all below standards. Operator has placed a production tank over the pit location. Develop Closure Plan.	13'-15'	No
SALAZAR G 34-1	K	34	25	06	+1		MW1 results all below standards. Develop Closure Plan.	35'	No
ANDERSON GAS COM A#1 PC	C	28	29	10			PH4 in center of pit is below standards. All of PH's around pit below standards. Develop Closure Plan.	5'-9'	No
GALLEGOS CANYON UT 145 E	D	26	29	12			PZ1 in center of pit below standards.	6'-9'	No
JOHNSTON FEDERAL #3A	I	12	30	09	+1		Develop Closure Plan. 4 clean quarters.	67.5'	No
FLORANCE #1	J	08	30	11	+1		MW1 installed 05/07/97. Develop and sample MW1.	14'	No
DE-NA-HAZ-ZA #1	D	18	26	08	+1		MW1 installed 05/06/97. Develop and sample MW1.	14'	No
Ramenta Et Al #1	J	13	27	09	+1		MW1 installed 05/08/97. Develop and sample MW1.	5'-9'	No
HAMMOND 41 A	O	25	27	08	+1		MW1 installed 05/05/97. Develop and sample MW1.	15'-24'	No
VALDEZ GAS UNIT A #1E CH	G	24	29	11	-1, +1		MW1 installed 05/07/97. Develop and sample MW1.	11'-12'	No

El Paso Field Services
Pit Project Ground Water Report

Location/Line Name	LTR	Sec	TN	RG	Marker	Well	Status	Depth to GW	Product Level
GALLEGOS CANYON COM A142E	G	25	29	12	+1		MW1 Developed and sampled 03/10/97. Evaluate Data.	13'	No
GALLEGOS CANYON UT D#160	I	27	29	12	+1		MW1 Developed and sampled 03/10/97. Evaluate Data.	19.1'	No
HARRINGTON #1	M	31	27	07	+1		MW1 Developed and sampled 04/02/97. Evaluate Data.	13'	No
Turner A1 "PM" (Pit #2)	G	34	31	11	+1		MW1 Developed and sampled 03/12/97. Evaluate Data.	2.3'--2.5'	No
TURNER #1A (Pit #1)	K	34	31	11	+1		Same as Above	5'	No
SAN JUAN 28-6 UNIT #79 MV	M	11	27	08	+1		MW1 Developed and sampled 04/14/97. Evaluate Data.	30'	No
KNIGHT #1	A	05	30	13	+4		Installed Oxegenate Socks 11/25/96. Geoprobe 02/25/97. Evaluate Data.	22'-25'	No
Ohio C. Govt. #3	P	26	28	11			Install MW1 and sample quarterly.	6'-16'	No
NICKLES #1	K	11	31	13	+1		MW1 Developed and sampled 03/28/97. Evaluate Data.	12'-15'	No
BUD-DOS-PAH #1	M	19	26	08			Soil Boring 02/19/97. Operator has placed a compressor over excavated pit area. Evaluate Data.	13'	No
SANCHEZ GAS COM B#1	G	28	29	10	+1		MW1 Developed and sampled 03/11/97. Evaluate Data.	6'-9'	No
GE-ELE-GU-LITH-E #2	L	07	26	08			Soil Boring 02/20/97. Operator has placed a compressor over excavated pit area. Evaluate Data.	13'	No
JOHN CHARLES #8	B	13	27	09	+1		MW1 Developed and sampled 03/13/97. Evaluate Data.	19'	No
CANDADO 23 MV	B	09	26	07	+1		MW1 Developed and sampled 04/16/97. Evaluate Data.	6'-9'	No

El Paso Field Services
Pit Project Ground Water Report

Location/Line Name	LTR	Sec	TN	RG	Monitor Well Status	Status	Depth to GW	Product Level
GALLEGOS CANYON UNIT 188E	B	30	29	12	+1	MW1 Developed and sampled 04/03/97. Evaluate Data.	3'-5'	No
JOHNSON #1E	P	21	31	13	+1	MW1 Developed and sampled 03/28/97. Evaluate Data.	3'-9'	No
MILES FEDERAL #1E	N	05	26	07	+1	MW1 Developed and sampled 04/02/97. Evaluate Data.	13.5'-30'	No
TRUJILLO GAS COM A#1	C	28	29	10	+1	MW1 Developed and sampled 04/03/97. Evaluate Data.	3'-9'	No
ANDERSON GAS COM A#1 CH	C	28	29	10	+1	MW1 Developed and sampled 03/11/97. Evaluate Data.	5'-9'	No
TRUNK D LINE DRIP (LOOPD8)	F	20	28	08	+1	MW1 Developed and sampled 03/31/97. Evaluate Data.	10.8'-24'	No
K-31 LINE DRIP	N	16	25	06	+1	MW1 Developed and sampled 04/16/97. Evaluate Data.	18'-24'	No
K-17 LINE DRIP	C	26	27	08	+1	MW1 Developed and sampled 03/31/97. Evaluate Data.	17.8'-27'	No
TRUNK 2B DRIP X-1	J	01	27	11	+1	MW1 Developed and sampled 03/11/97. Evaluate Data.	6'-10'	No
Trujillo Gas Com #1 PC	M	21	29	10		Install MW1	4'	No
OHIO C GOVERNMENT #3 TD	P	26	28	11		Install MW1	6'-16'	No
LINDRITH B #24	N	09	24	03		Install MW1	21'-27'	No
K - 51 Line Drip	A	34	26	06		Install MW1	10'	No
Mesa CPD	C	04	29	14	+1	Install well points around pit and sample. MW1 needs 3 more clean quarters.	3'-6.5'	No
STANDARD OIL COM #1	N	36	29	09	+1	Install well points on four sides of pit to establish gradient.	20.89'	No
W.D. HEATH B#5	M	31	30	09	+1	Install well points on four sides of pit to establish gradient.	30'-36'	No
CANYON LARGO UNIT 304	C	11	24	06	+1	Install downgradient well points and sample.	17.5'-18'	No

El Paso Field Services
Pit Project Ground Water Report

Location/Line Name	LTR	Sec	TN	RG	Marker Status	Well Status	Depth to GW	Product Level
K-27 LINE DRIP	E	04	25	08	+ 1	Establish gradient with well points.	40'	No
LAT 0-21 LINE DRIP	O	12	30	09	+ 1	Establish gradient with well points.	33'-36'	No
Trunk D loop Line Drip	I	33	28	08	+ 1	Establish gradient with well points.	33'-36'	No
Bisti Flare Pit	C	21	12	26		Establish GW gradient	15'	No
LAT L-40 LINE DRIP	H	13	28	04	+ 1	Install downgradient well points and sample.	40'	No
HAMNER #9	A	20	29	09	+ 1	Establish gradient with well points.	29'-31'	No
GARTNER LS #7	K	26	30	08		NMOCD Closure Approved	NA	No
HAMMOND FED #1	L	25	27	08	+ 1	NMOCD Closure Approved	NA	No
BURROUGHS COM #1	H	36	27	08		NMOCD Closure Approved	NA	No
CLEVELAND #6	B	21	27	09	+ 1	NMOCD Closure Approved	NA	No
CHARLEY PAH 4	K	12	27	09		NMOCD Closure Approved	NA	No
GRACE PEARCE #1	O	22	29	11		NMOCD Closure Approved	NA	No
HAMMOND #7	G	26	27	08		NMOCD Closure Approved	NA	No
ONA MCGEE #1	P	04	30	11		NMOCD Closure Approved	NA	No
CUTLER #2	A	14	24	06		NMOCD Closure Approved	NA	No
LINDRITH UNIT #23	D	09	24	03		NMOCD Closure Approved	NA	No
GREEN COM #1	E	36	29	09		NMOCD Closure Approved	NA	No
HAMMOND FED #5	D	25	27	08	+ 1	NMOCD Closure Approved	NA	No
FLORA VISTA #1	F	22	30	12		NMOCD Closure Approved	NA	No
MARSHALL B #1J	O	14	27	09		NMOCD Closure Approved	NA	No
HAMMOND #92	O	25	27	08		NMOCD Closure Approved	NA	No
PRICE #3	A	15	28	08		NMOCD Closure Approved	NA	No

El Paso Field Services
Pit Project Ground Water Report

Location/Line Name	LTR	Sec	TN	RG	Monitor Well Status	Depth to GW	Product Level	
KRAUSE WN FEDERAL #1E	C	32	28	11		NMOCD Closure Approved	NA	No
CANYON LARGO UNIT #298	A	03	24	06		NMOCD Closure Approved	NA	No
ARGO #1E	N	18	27	10		NMOCD Closure Approved	NA	No
CANYON LARGO UNIT #302	J	03	24	06		NMOCD Closure Approved	NA	No
FEDERAL 6 #32 CH	G	06	26	07		NMOCD Closure Approved	NA	No
SANCHEZ GAS COM C#1	A	28	29	10		NMOCD Closure Approved	NA	No
VALDEZ #2	G	24	29	11	-1	NMOCD Closure Approved	NA	No
FEDERAL R #2	P	15	27	08	+1	NMOCD Closure Approved	NA	No
CANYON LARGO UNIT #336	C	24	25	06		NMOCD Closure Approved	NA	No
CANDELARIA GAS COM C #1	C	27	29	10		NMOCD Closure Approved	NA	No
HOWELL #3	C	03	27	08		NMOCD Closure Approved	NA	No
LAT 2C-55 LINE DRIP	F	17	25	07	+1	NMOCD Closure Approved	NA	No
HORTON 1-E	H	28	31	09	+1	MW1 above B standards. Inject nutrient slurry in corners of pit.	5.3'	No
LAT 3B-39	M	10	29	09	+1	MW1 above B standards. Inject nutrient slurry in corners of pit.	31'-36'	No
JOHNSTON FEDERAL #4	H	33	31	09	+3	Determine Remedial Design Options.	48.94'--50.38'	Yes
STATE GAS COM N #1	H	16	31	12	+4	Determine Remedial Design Options.	75.66'--76.90'	Yes
COLDIRON COM A#1	K	02	30	11	+1	Determine Remedial Design Options.	35.4'	Yes
JOHNSTON FEDERAL #6A	F	35	31	09	+4	Determine Remedial Design Options.	40'-44.6'	Yes
JAMES F. BELL #1E	P	10	30	13	+4	Determine Remedial Design Options.	23.5'-24.5'	Yes
CANADA MESA #2	I	24	24	06	+1	Determine Remedial Design Options.	30'	Yes

El Paso Field Services
Pit Project Ground Water Report

Location/Line Name	LTR	Sec	TN	RG	Monitor Well Status	Status	Depth to GW	Product Level
FIELDS A #7A	E	34	32	11	+4	Confirm groundwater gradient. Initiate product removal from MW4.	21.8'-28.8'	Yes
FOGELSON 4-1 COM #14	P	04	29	11	+1	Re-excavate site. Evaluate operators open pits as sources of contamination.	31'-36'	No
SANDOVAL GAS COM A 1A	C	35	30	09	+1	Refusal with Geoprobe. Re-excavate pit and re-install MW1.	35'	No
MILES FEDERAL 1A (CH)	F	05	26	07	+1	Evaluate Data. Sandstone refusal at 25'.	29'	Yes
SHEETS #2	H	28	31	09	+4	Sample Quarterly. Steady drop in B analysis through 4 quarters.	48.3'--50.31'	No
JENNAPAH #1	H	36	28	09	+1	Sample Quarterly. Develop and Sample MW1 03/13/97.	20'	No
FLORANCE C LS 7	F	30	28	08	+1	Sample Quarterly. Need 2 more clean quarters.	40'	No
GRAHAM #53	L	10	27	08	+1	Sample Quarterly. Need 3 more clean samples	28.33'	No
MILES FEDERAL 1 A MV	F	05	26	07	+1	Sample Quarterly. Need 2 more clean quarters.	27.8'	No
LAT. H-37 DRIP Y-3	F	01	31	13	+4	Sample Quarterly. Remove socks. 4 clean quarters with ORB socks.	24.5'-25'	No
2C-22 #1 LINE DRIP	N	35	24	06	+1	Develop Closure Plan. 4 clean quarters.	28.8'	No
2C-22 #3 LINE DRIP	G	13	24	06	+1	Sample Quarterly. Need 3 more clean quarters.	14'-24'	No
2C - 45 Line Drip	P	13	25	06	+1	Sample Quarterly. Need 3 more clean quarters.	42.2'	No
USSELMAN GAS COM #1	B	04	31	10	+1	Sample Quarterly. Need 2 more clean quarters	10'	No
Note:								
MW = Monitor Well								
PZ = Piezometer								
BH = Bore Hole								

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REPORTS

DATE:

1997



Certified Mail: #Z 295 387 297; #Z 295 387 296

February 27, 1998

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

RECEIVED

MAR 02 1998

Environmental Bureau
Oil Conservation Division

Re: 1997 Groundwater Annual Report

Dear Mr. Olson:

In accordance with reporting requirements, El Paso Field Services (EPFS) has enclosed annual updates for 57 groundwater impacted locations that were identified during our pit closure project of 1994/1995.

Of the 57 reports, EPFS hereby requests your approval for closure of 11 of these locations. The 11 reports for which EPFS requests closure, are in 2 separate binders entitled "Request for Closure".

After you have had an opportunity to review these updates, EPFS would like to schedule a meeting with you to discuss issues related to closure criteria for some of the more complex locations that are currently being addressed.

If you have any questions regarding this information, please call me at 505/599-2141. I will contact you within the next quarter to schedule a meeting.

Sincerely,

A handwritten signature in cursive script that reads 'Sandra D. Miller'.

Sandra D. Miller
Environmental Manager

xc: Mr. Bill Liesse, BLM w/o enclosures

Mr. Denny Foust, NMOCD - Aztec w/enclosures; **Certified Mail #Z 295 387 298; #Z 295 387 299**

Ms. Charmaine Tso, Navajo EPA w/enclosures; **Certified Mail #Z 295 387 292**

SAN JUAN BASIN PIT CLOSURES
San Juan Basin, New Mexico

El Paso Field Services Pit Project Groundwater Report
Annual Report

March 1998

Prepared For

El Paso Field Services
Farmington, New Mexico

Project 17520

PHILIP
ENVIRONMENTAL
CONSULTANTS

EPFS GROUNDWATER PITS

1997 ANNUAL GROUNDWATER REPORT

HORTON #1E
Meter/Line ID - 93388

SITE DETAILS

Legals - Twn: 31N Rng: 9W Sec: 28 Unit: H
NMOCD Hazard Ranking: 40 Land Type: FEE
Operator: AMOCO PRODUCTION COMPANY

PREVIOUS ACTIVITIES

Site Assessment: Aug-94
Monitor Well: Aug-95

Excavation: Sep-94 (50 cy)

Soil Boring: Aug-95

1997 ACTIVITIES

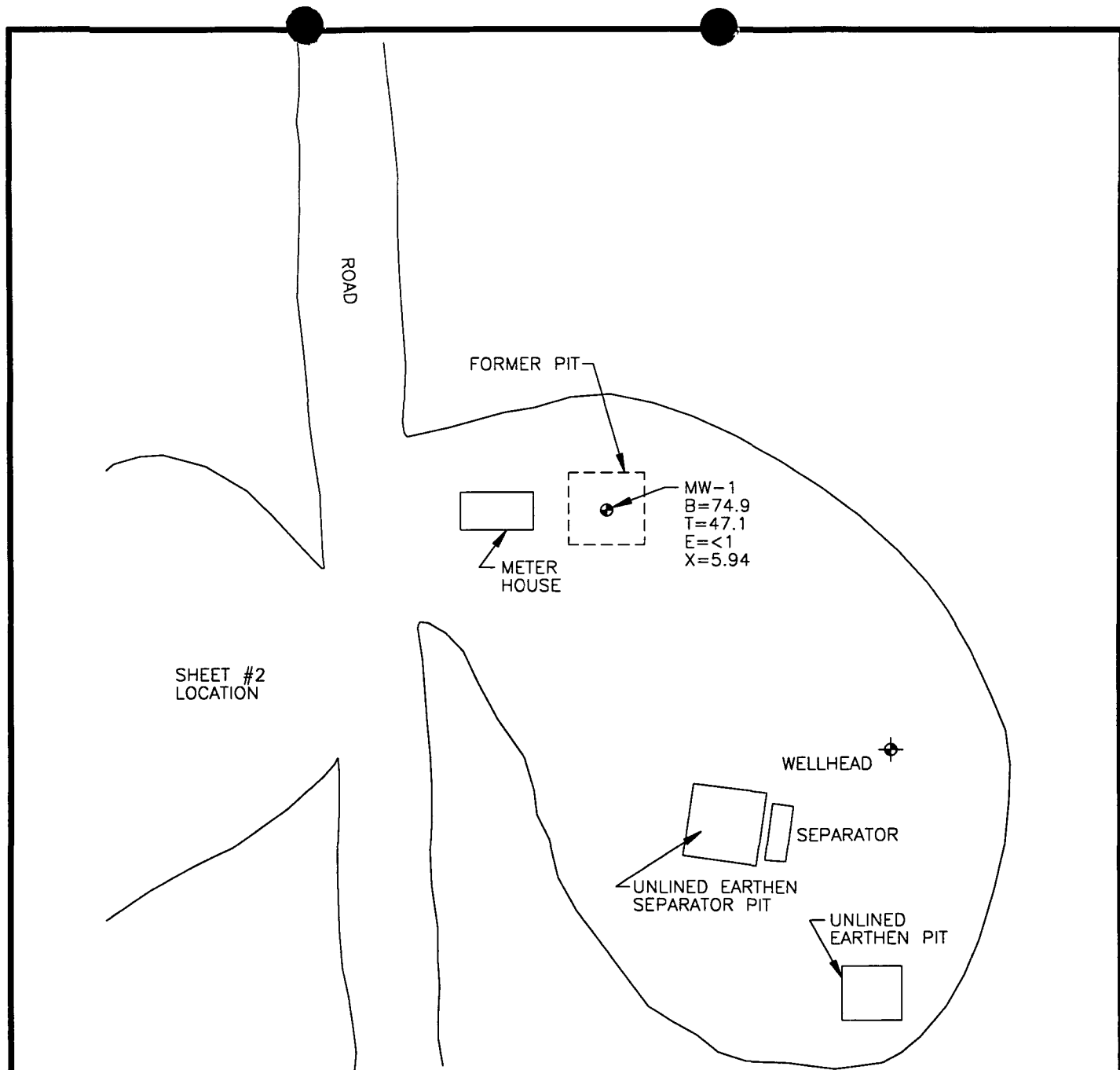
Quarterly Groundwater Monitoring - Quarterly groundwater monitoring was initiated on 12/17/96. Groundwater analytical data are presented in Table 1. A site map is presented in Figure 1.

CONCLUSIONS

Benzene has been in excess of standards since quarterly sampling was initiated. Groundwater gradient has not been determined at this site.

RECOMMENDATIONS

- Install temporary monitoring wells and determine groundwater gradient, and if any contaminant migration has occurred.
- Site may be candidate for nutrient injection on the four corners of the pit.



LEGEND

● MW-1 APPROXIMATE MONITORING WELL LOCATION AND NUMBER

B BENZENE (ug\L)
T TOLUENE (ug\L)
E ETHYL BENZENE (ug\L)
X XYLENE (ug\L)

ug\L MICROGRAMS PER LITER

0 50
FEET



COL. 17520AT-001



TITLE:
HORTON #1E
93388

DWN:
TMM
CHKD:
CC
DATE:
1/14/98

DES.:
CC
APPD:
REV.:
0

PROJECT NO.: 17520
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
961058	93388	Horton 1E	12/17/96	1	Sample 4 - 1st Quarter	= 86.8	= 55.5	< 1	= 6.66	= 150
970183	93388	Horton 1E	3/6/97	1	Sample 4 - 2nd Quarter	= 93.3	= 55.3	= 1.02	= 6.34	= 156
970518	93388	Horton 1E	6/2/97	1	Sample 4 - 3rd Quarter	= 96.1	= 58.8	= 1.07	= 6.82	= 163
970960	93388	Horton 1E	9/8/97	1	Sample 4 - 4th Quarter	= 132	= 80.7	= 1.59	= 9.46	= 224
971294	93388	Horton 1E	12/10/97	1	Sample 4 - 5th Quarter	= 74.9	= 47.1	< 1	= 5.94	= 128

04-41 Aztec

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.

4000 Monroe Road

Farmington, New Mexico 87401

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

 Borehole # BH #1
 Well # _____
 Page 1 of 2

 Project Name EPNG Pits
 Project Number 14509 Phase 001 6000
 Project Location Horton 1-E, 93-388

 Elevation _____
 Borehole Location T31, R9, S28, H
 GWL Depth _____
 Logged By S. Kelly J. Kindley
 Drilled By m. Oona hve
 Date/Time Started 08/03/95 0855
 Date/Time Completed 08/03/95 1245

 Well Logged By S. Kelly J. Kindley
 Personnel On-Site M. Oona hve, J. d. Keffe, J. Long
 Contractors On-Site _____
 Client Personnel On-Site _____

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

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU			Drilling Conditions & Blow Counts
							BZ	BH	S	
0				Backfill material to 12'						
5										
10										
15										
20	1	18'-20'	1.2 2	SAND, brown, medium grain, dry, loose				345/ 1234		09:15
25	2	23'-25'	1.9 1.5	clayey sand (25% clay), dark brown, medium dense, dry				333/ 547		0921
30	3	28'-30'	1.6 2	clayey silt (25% clay), dark brown, fine grained, dry				283/ 658		0927
35	4	33'-35'	1.5 1.5	S.A.A.				204/ 317		0936
40	5	38'-40'	1.6 2	silty clay (10% silt), dark gray, stiff, moist				78/ 654		0953

Comments:

Geologist Signature _____

RECORD OF SUBSURFACE EXPLORATION

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

Borehole # BH #1
Well # _____
Page 2 of 2

Project Name EPNG Pits
Project Number 14509 Phase 604-6000
Project Location Horton 1-E, 93-388

Elevation _____
Borehole Location T31, R9, S28, H
GWL Depth _____
Logged By S. Kelly J. Kindley
Drilled By M. Donahue
Date/Time Started 08/03/95 0855
Date/Time Completed 08/03/95 1245

Well Logged By S. Kelly J. Kindley
Personnel On-Site M. Donahue, J. O'Kiffe, J. Long
Contractors On-Site _____
Client Personnel On-Site _____
Drilling Method 4 1/4" HSA
Air Monitoring Method CGI, PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ BH S			Drilling Conditions & Blow Counts
40										
45	6	43-45		S.A.A					15/210	0958
50	7	48-50		clayey silt + (30% clay), brown, moist					30/322	1005
55	8	53-55		silty clay (20% silt), dark gray, stiff, wet						• 53' water on rods not able to collect sample
60										
65				Boring terminated at 65'						
30										
35										
40										

Comments: _____

Geologist Signature _____

MONITORING WELL INSTALLATION RECORD

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

Borehole # BH #1
Well #
Page 1 of 1

Project Name EPN6 Pits

Project Number 14509 Phase 6000

Project Location Horton 1-E, 93-388

On-Site Geologist J. Kindley
Personnel On-Site M. Donahue, J. O'Kane, J. Wong
Contractors On-Site
Client Personnel On-Site

Elevation
Well Location T31, R9, S28, H
GWL Depth 53'
Installed By M. Donahue

Date/Time Started 08/03/95 0855
Date/Time Completed 08/03/95 1245

Depths in Reference to Ground Surface				
Item	Material	Depth		
Top of Protective Casing			Top of Protective Casing	<u>NA</u>
Bottom of Protective Casing			Top of Riser	<u>+3</u>
Top of Permanent Borehole Casing			Ground Surface	<u>0</u>
Bottom of Permanent Borehole Casing				
Top of Concrete				
Bottom of Concrete				
Top of Grout	Cement Slurry	1		
Bottom of Grout	Cement Slurry	42		
Top of Well Riser	Schedule 40 4" Blank PVC	+3		
Bottom of Well Riser	"	45		
Top of Well Screen	Schedule 40 4" PVC 10" slot	48		
Bottom of Well Screen	"	63	Top of Seal	<u>42 BGL</u>
Top of Bentonite Seal	Enviroplug pellets 50 lb bag	42		
Bottom of Bentonite Seal	"	45	Top of Gravel Pack	<u>45 BGL</u>
Top of Gravel Pack	SCC 50 lb bags of silica sand	45	Top of Screen	<u>48 BGL</u>
Bottom of Gravel Pack	"	65		
Top of Natural Cave-In		63		
Bottom of Natural Cave-In		65		
Top of Groundwater			Bottom of Screen	<u>63 BGL</u>
Total Depth of Borehole			Bottom of Borehole	<u>65 BGL</u>

Comments: BGL - Below Ground Level, 15' of screen

Geologist Signature

Jeffrey Kindley

**1997 GROUNDWATER
ANALYTICAL**

CHAIN OF CUSTODY RECORD

Project No.		Project Name ARTEC PIPELINE				Type and No. of Sample Containers	Requested Analysis ETXE GENERAL CHEMISTRY HEAVY METALS				Remarks
Samplers: (Signature) Dennis Bird		Date: 12-17-76									
MATERIAL	Date	Time	Comp.	GRAB	Sample Number						
WATER	12-17-76	1635		X	961058	122	40C	X	X	X	HORTON 15 MW-1 MC 933PP
WATER	12-17-76	1635		X	961059	122	40C	X	X	X	HORTON 15 MW-1 MC 933PP
Relinquished by: (Signature) Dennis Bird		Date/Time 12-17-76 1228		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received for Laboratory by: (Signature) Mason Roppo		Date/Time 12/18/76 0845		Remarks:			
Carrier Co:				Carrier Phone No.				Date Results Reported / by: (Signature)			
Air Bill No.:											



FIELD SERVICES LABORATORY

ANALYTICAL REPORT

PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

SAMPLE NUMBER:	Field ID N/A	Lab ID 961058
MTR CODE SITE NAME:	93388	Horton 1E MW-1
SAMPLE DATE TIME (Hrs):	12/17/96	1635
PROJECT:	Sample 4 - 1st Quarter	
DATE OF BTEX EXT. ANAL.:	12/18/96	12/18/96
TYPE DESCRIPTION:	Monitor Well	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	86.8	PPB				
TOLUENE	55.5	PPB				
ETHYL BENZENE	<1	PPB				
TOTAL XYLENES	6.66	PPB				
TOTAL BTEX	149	PPB				

—BTEX is by EPA Method 8020—

The Surrogate Recovery was at
DF = Dilution Factor Used

92.3

% for this sample All QA/QC was acceptable.

Narrative:

Approved By:

Date:

1-2-97



Field Services Laboratory
Analytical Report

SAMPLE IDENTIFICATION

EPFS LAB ID:	961058
DATE SAMPLED:	12/17/96
TIME SAMPLED (Hrs):	1635
SAMPLED BY:	D. Bird
MATRIX:	Water
METER CODE:	93388
SAMPLE SITE NAME:	Horton 1E
SAMPLE POINT:	Monitor Well MW-1

FIELD REMARKS:

GENERAL CHEMISTRY WATER ANALYSIS RESULTS

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	6.9	Units	12/18/96
Alkalinity as CO ₃	0	PPM	12/18/96
Alkalinity as HCO ₃	233	PPM	12/18/96
Calcium as Ca	369	PPM	12/19/96
Magnesium as Mg	37.6	PPM	12/19/96
Total Hardness as CaCO ₃	1,076	PPM	12/19/96
Chloride as Cl	13	PPM	12/18/96
Sulfate as SO ₄	1,041	PPM	12/18/96
Fluoride as F	0.9	PPM	12/19/96
Nitrate as NO ₃ -N	<0.2	PPM	12/18/96
Nitrite as NO ₂ -N	<0.2	PPM	12/18/96
Ammonium as NH ₄ ⁺	<0.2	PPM	12/19/96
Phosphate as PO ₄	<0.2	PPM	12/18/96
Potassium as K	2.0	PPM	12/19/96
Sodium as Na	94	PPM	12/19/96
Total Dissolved Solids	1,880	PPM	12/19/96
Conductivity	1,775	umhos/cm	12/19/96
Anion/Cation %	0.5%	%, < 5.0 Accepted	12/23/96

Lab Remarks:

Reported By:

mdr

Approved By:

John L. Lark

Date: 1-2-97



FIELD SERVICES LABORATORY
ANALYTICAL REPORT

SAMPLE IDENTIFICATION

SAMPLE NUMBER:	961058
SAMPLE DATE:	12/17/96
SAMPLE TIME (Hrs):	1635
SAMPLED BY:	D. Bird
MATRIX:	Water
METER CODE:	93388
SAMPLE SITE NAME:	Aztec Pipeline
SAMPLE POINT:	Horton 1E MW-1

REMARKS:

RESULTS

PARAMETER	TOTAL RESULT (mg/L)	N. M. WQCC LIMIT (mg/L)
ARSENIC	<.01	0.100
BARIUM	0.01	1.00
CADMIUM	0.0003	0.010
CHROMIUM	0.002	0.050
LEAD	<.004	0.050
MERCURY	<.00024	0.002
SELENIUM	<.003	0.050
SILVER	<.001	0.050

NOTE: The sample results have been corrected for volume adjustment associated with Method 3015.

References:

- Method 3015, Microwave Assisted Acid Digestion of Aqueous Samples and Extracts, Test Methods for Evaluating Solid Waste, SW-846, Sept., 1994.
- Method 7061A, Arsenic (Atomic Absorption, Gaseous Hydride), Test Methods for Evaluating Solid Waste, SW-846, USEPA, July, 1992.
- Method 7081, Barium (Atomic Absorption, Furnace Technique), Test Methods for Evaluating Solid Waste, SW-846, USEPA, July, 1992.
- Method 7131, Cadmium (Atomic Absorption, Furnace Technique), Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept., 1986.
- Method 7191, Chromium (Atomic Absorption, Furnace Technique), Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept., 1986.
- Method 7421, Lead (Atomic Absorption, Furnace Technique), Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept., 1986.
- Method 245.5, Mercury (Automated Cold Vapor Technique), Methods for the Determination of Metals in Environmental Samples, EPA 600/4-91/010, USEPA, June, 1991.
- Method 7741A, Selenium (Atomic Absorption, Gaseous Hydride), Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept., 1994.
- Method 7761, Silver (Atomic Absorption, Furnace Technique), Test Methods for Evaluating Solid Waste, SW-846, USEPA, July, 1992.

Reported By:

mda

Approved By:

John Larkin

Date: 1-3-97

QUALITY CONTROL REPORT

Sample ID: 961058 and 961059
Date Sampled: 12/17/96

Date Reported: 01/03/97

STANDARD REFERENCE MATERIAL

Analyte	Found Result (µg/L)	Known Value (µg/L)	% Recovery
Arsenic	27.7	32.4	86%
Barium	69.4	64.9	107%
Cadmium	2.74	2.38	115%
Chromium	5.16	4.76	108%
Lead	33.9	29.7	114%
Mercury	4.21	4.59	92%
Selenium	35.5	40.5	88%
Silver	4.35	4.32	101%

DUPLICATE ANALYSIS (mg/L)

Analyte	Original Sample Result	Duplicate Sample Result	% RPD
Arsenic	ND	ND	NA
Barium	0.09	0.09	0.0%
Cadmium	0.003	0.001	NA*
Chromium	ND	ND	NA
Lead	ND	ND	NA
Mercury	ND	ND	NA
Selenium	ND	ND	NA
Silver	ND	ND	NA

* Results are < 5X DL.

SPIKE ANALYSIS (µg/L)

Analyte	Original Sample Result	Spike Sample Result	Spike Added	Recovery Percent
Arsenic	ND	110	100	110%
Barium	87	1060	1000	97%
Cadmium	0.5	12.0	10.0	115%
Chromium	3.1	50.3	50.0	95%
Lead	ND	47.8	50.0	96%
Mercury	ND	1.78	2.00	89%
Selenium	ND	53.7	50.0	107%
Silver	ND	50.1	50.0	99%

METHOD BLANK

Analyte	Found Result (µg/L)	Detection Level (µg/L)
Arsenic	ND	10
Barium	ND	10
Cadmium	ND	0.2
Chromium	ND	2
Lead	ND	4
Mercury	ND	0.24
Selenium	ND	3
Silver	ND	0.5

ND: Not Detected at stated detection level.

NA: Not Applicable.

Reported By: mh

Approved By: John Smith

Date: 1-3-97



EL PASO FIELD SERVICES

Well Development and Purging Data

Site Name HORTON 1 E

- ☐ Development
☒ Purging

Well Number MW-1

Meter Code 93388

Development Criteria

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

Methods of Development

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

☐ Other _____

Water Volume Calculation

Initial Depth of Well (feet) 64.50
Initial Depth to Water (feet) 48.96
Height of Water Column in Well (feet) 15.54

Diameter (Inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		10.3	30.8
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Water Disposal

CHACO NORTH CONTACT POND

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)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Baller				Increment	Cumulative	Increment	Cumulative					
12-17-96	1507										9.1	7.38	2260		
12-17-96	1518						5.0	5.0			11.4	7.12	2370		
12-17-96	1525						5.0	10.0			12.0	7.04	1943		
12-17-96	1536						5.0	15.0			11.6	7.02	1927		
12-17-96	1548						5.0	20.0			11.5	6.96	1959		
12-17-96	1558						5.0	25.0			11.3	6.96	1908		
12-17-96	1608						5.0	30.0			10.7	6.95	2020	2.5	

Comments _____

Developer's Signature

Dennis Bird

Date 12-17-96

Reviewer

Jan Linder

Date 1-2-97

CHAIN OF CUSTODY RECORD

Project No.		Project Name <i>ACTEC PIPELINE</i>				Type and No. of Sample Containers	Preservation Technique <i>BTX/E</i>	Requested Analysis			Remarks
Samplers: (Signature) <i>Bonnie Birch</i>		Date: <i>3-6-97</i>									
	Date	Time	Comp.	GRAB	Sample Number						
<i>3-6-97</i>	<i>1548</i>			<i>X</i>	<i>970183</i>	<i>52</i>	<i>400</i>	<i>X</i>			<i>HORTON 1 E MC# 93388</i>
Relinquished by: (Signature) <i>Bonnie Birch</i>		Date/Time <i>3-6-97 1735</i>		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received for Laboratory by: (Signature) <i>Martin J. Hopper</i>		Date/Time <i>3/10/97 1020</i>		Remarks:			
Carrier Co.		Carrier Phone No.				Date Results Reported / by: (Signature)					
Air Bill No.:											



4-8-97

FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	970183
MTR CODE SITE NAME:	93388	Horton 1E
SAMPLE DATE TIME (Hrs):	3/6/97	1548
PROJECT:	Sample 4 - 2nd Quarter	
DATE OF BTEX EXT. ANAL.:	3/10/97	3/10/97
TYPE DESCRIPTION:	Monitor Well	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	93.3	PPB				
TOLUENE	55.3	PPB				
ETHYL BENZENE	1.02	PPB				
TOTAL XYLENES	6.34	PPB				
TOTAL BTEX	156	PPB				

--BTEX is by EPA Method 8020 --

The Surrogate Recovery was at
DF = Dilution Factor Used

102

for this sample All QA/QC was acceptable.

Narrative:

Approved By:

John Santolucito

Date:

4/5/97

970183,4/3/97



EL PASO FIELD SERVICES

Well Development and Purging Data

Site Name HORTON 1E

- ☐ Development
☒ Purging

Well Number MW-1

Meter Code 93388

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) 84.5
Initial Depth to Water (feet) 48.93
Height of Water Column in Well (feet) 15.57

Diameter (Inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>10.3</u>	<u>30.9</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Water Disposal

KDT2 SEPARATOR

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)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
3-6-97	1436										16.6	6.73	1814		
3-6-97	1444						5.0	5.0			16.5	6.70	1821		
3-6-97	1453						5.0	10.0			16.3	6.69	1760		
3-6-97	1502						5.0	15.0			16.8	6.67	1828		
3-6-97	1511						5.0	20.0			16.5	6.71	1840		
3-6-97	1522						5.0	25.0			17.1	6.71	1875		
3-6-97	1531						5.0	30.0			16.5	6.70	1834	3.5	

Comments _____

Developer's Signature

Dennis Bird

Date

3-6-97

Reviewer

John Fuchs

Date

4/15/97



CHAIN OF CUSTODY RECORD

Project No.		Project Name AZTEC PIPELINE						Type and No. of Sample Containers		Preservation Technique BTEX		Requested Analysis		Remarks			
Samplers: (Signature) Dennis Bird																Date: 6-2-97	
MATRIX	Date	Time	Comp.	GRAB	Sample Number												
WATER	6-2-97	1343	X		970518			G-2	4°C	X				HORTON 1 E MW-1 MC 933PP			
A diagonal line crosses the remaining rows of the sample log.																	
Relinquished by: (Signature)				Date/Time		Received by: (Signature)				Relinquished by: (Signature)				Date/Time		Received by: (Signature)	
Dennis Bird				6-2-97 1520													
Relinquished by: (Signature)				Date/Time		Received by: (Signature)				Relinquished by: (Signature)				Date/Time		Received by: (Signature)	
Relinquished by: (Signature)				Date/Time		Received for Laboratory by: (Signature)				Date/Time		Remarks:					
						Martin Hopper				6/3/97 0730							
Carrier Co:						Carrier Phone No.						Date Results Reported / by: (Signature)					
Air Bill No.:																	



6-18-97

FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT PROJECT CLOSURE

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	970518
MTR CODE SITE NAME:	93388	Horton 1E MW-1
SAMPLE DATE TIME (Hrs):	6/2/97	1343
PROJECT:	Sample 4 - 3rd Quarter	
DATE OF BTEX EXT. ANAL.:	6/3/97	6/3/97
TYPE DESCRIPTION:	Monitor Well	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	96.1	PPB				
TOLUENE	58.8	PPB				
ETHYL BENZENE	1.07	PPB				
TOTAL XYLENES	6.82	PPB				
TOTAL BTEX	163	PPB				

The Surrogate Recovery was at 96.6 for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By:

Date:

6/16/97



EL PASO FIELD SERVICES

Well Development and Purging Data

Site Name HORTON 1E

- ☐ Development
☒ Purging

Well Number MW-1

Meter Code 93388

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) 64.50
Initial Depth to Water (feet) 48.94
Height of Water Column in Well (feet) 15.56
Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>10.3</u>	<u>30.9</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Water Disposal

KUTZ SEPARATOR

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)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
6-2-97	1227										20.4	6.44	2170		
6-2-97	1235						5.0	5.0			19.0	6.70	2020		
6-2-97	1244						5.0	10.0			18.4	6.73	2120		
6-2-97	1255						5.0	15.0			18.6	6.75	2160		
6-2-97	1304						5.0	20.0			18.0	6.74	2130		
6-2-97	1314						5.0	25.0			18.0	6.76	2150		
6-2-97	1330						5.0	30.0			19.0	6.91	2190	3.5	

Comments _____

Developer's Signature

Lennie Bish

Date

6-2-97

Reviewer

John Lull

Date

6/16/97

Project No.		Project Name				Type and No. of Sample Containers	Preservation Technique	Requested Analysis		Remarks	
Samplers: (Signature)		Date:									
	Date	Time	Comp.	GRAB	Sample Number						
WATER	9-29-97	1400	X		970960	G-1	4°C	X		HORTON 1E MW-1	
[The following 10 rows of the table are crossed out with a large diagonal line.]											
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Dennis Bied		9-29-97 1601									
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received for Laboratory by: (Signature)		Date/Time		Remarks:			
				Mason Hopper		9/29/97 1630					
Carrier Co:				Carrier Phone No.				Date Results Reported / by: (Signature)			
Air Bill No.:											



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	970960
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	9/8/97	1400
PROJECT:	Sample 4 4th Quarter	
DATE OF BTEX EXT. ANAL.:	9/9/97	9/9/97
TYPE DESCRIPTION:	MW-1	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	132	PPB				
TOLUENE	80.7	PPB				
ETHYL BENZENE	1.59	PPB				
TOTAL XYLENES	9.46	PPB				
TOTAL BTEX	224	PPB				

--BTEX is by EPA Method 8020 --

The Surrogate Recovery was at 114.4 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By:

John Labele

Date:

9-16-97

970960BTEX,9/15/97



EL PASO FIELD SERVICES

Well Development and Purging Data

Site Name HORTON 1E

- ☐ Development
☒ Purging

Well Number MW-1

Meter Code 93388

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) 64.50
Initial Depth to Water (feet) 48.88
Height of Water Column in Well (feet) 15.62
Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>10.3</u>	<u>31.0</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Water Disposal

KUT2 SEPARATOR

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)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
9-8-97	1254										20.6	6.50	1806		
9-8-97	1301						5.0	5.0			19.0	6.84	1911		
9-8-97	1309						5.0	10.0			19.1	6.65	1988		
9-8-97	1319						5.0	15.0			19.5	6.68	1979		
9-8-97	1327						5.0	20.0			19.3	6.69	1994		
9-8-97	1337						5.0	25.0			19.0	6.70	2040		
9-8-97	1348						5.0	30.0			19.3	6.73	2030	2.5	

Comments _____

Developer's Signature

Dennis Bird

Date

9-8-97

Reviewer

John Lardi

Date

9-16-97

SAMPLE 4 5TH QTR



Natural Gas Company

A 2164

CHAIN OF CUSTODY RECORD

Project No.		Project Name				Type and No. of Sample Containers	Preservation Technique	Requested Analysis			Remarks
Samplers: (Signature)		Date:									
JENNIE BIRD		12-10-97					BTX/E				
MATRIX	Date	Time	Comp.	GRAB	Sample Number						
WATER	12-10-97	1413	X		971294	5-1	4°C	X			HORTON #1E MW-1
[Large diagonal line across the table]											
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
JENNIE BIRD		12-10-97 1615									
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)	
Relinquished by: (Signature)		Date/Time		Received for Laboratory by: (Signature)		Date/Time		Remarks:			
				MAYDON HOPPER		12/11/97 0745					
Carrier Co:				Carrier Phone No.				Date Results Reported / by: (Signature)			
Air Bill No.:											



FIELD SERVICES LABORATORY
ANALYTICAL REPORT
PIT CLOSURE PROJECT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	971294
MTR CODE SITE NAME:	93388	Horton #1E
SAMPLE DATE TIME (Hrs):	12/10/97	1413
PROJECT:	Sample 4 5th Quarter	
DATE OF BTEX EXT. ANAL.:	12/16/97	12/16/97
TYPE DESCRIPTION:	MW-1	Water

Field Remarks: _____

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	74.9	PPB				
TOLUENE	47.1	PPB				
ETHYL BENZENE	< 1	PPB				
TOTAL XYLENES	5.94	PPB				
TOTAL BTEX	128	PPB				

—BTEX is by EPA Method 8020 —

The Surrogate Recovery was at 102.1 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative: _____

Approved By: John Lavelle

Date: 1/2/98

971294BTEXMW, 12/16/97

Well Development and Purging Data

Site Name HORTON #1E
☐ Development
☒ Purging

Well Number MW-1

Meter Code 93388

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) 64.50
 Initial Depth to Water (feet) 48.76
 Height of Water Column in Well (feet) 15.74
 Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>10.4</u>	<u>31.2</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

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

Water Disposal

KUTZ SEPARATOR

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)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
12-10-97	1251										13.3	6.53	2240		
12-10-97	1258						5.0	5.0			12.9	6.69	2290		
12-10-97	1305						5.0	10.0			12.3	6.73	2220		
12-10-97	1315						5.0	15.0			11.9	6.75	2320		
12-10-97	1324						5.0	20.0			11.8	6.75	2330		
12-10-97	1333						5.0	25.0			11.9	6.78	2370		
12-10-97	1343						5.0	30.0			11.3	6.83	2360		
12-10-97	1354						5.0	35.0			11.3	6.92	2350	2.5	

Comments _____

Developer's Signature

Dennis Bird

Date

12-10-97

Reviewer

John Jardi

Date

1/2/98



QUALITY CONTROL REPORT
EPA METHOD 8020 - BTEX

Samples: 971289 to 971298, 971305

QA/QC for 12/15/97 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	46.3	92.7	75 - 125 %	X
Toluene	Standard	50.0	45.5	91	75 - 125 %	X
Ethylbenzene	Standard	50.0	45.1	90	75 - 125 %	X
m & p - Xylene	Standard	100	90.6	90.6	75 - 125 %	X
o - Xylene	Standard	50.0	45.3	91	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	24.8	99.4	39 - 150	X
Toluene	Standard	25.0	24.6	99	46 - 148	X
Ethylbenzene	Standard	25.0	24.4	98	32 - 160	X
m & p - Xylene	Standard	50.0	49.1	98	Not Given	X
o - Xylene	Standard	25.0	24.5	98	Not Given	X
SAMPLE NUMBER	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE	
					YES	NO
CCV LA-52589 50 PPB					RANGE	
Benzene	Standard	50.0	41.2	82.4	75 - 125 %	X
Toluene	Standard	50.0	40.7	81.4	75 - 125 %	X
Ethylbenzene	Standard	50.0	40.6	81.3	75 - 125 %	X
m & p - Xylene	Standard	100	81.4	81.4	75 - 125 %	X
o - Xylene	Standard	50.0	40.6	81	75 - 125 %	X
SAMPLE NUMBER	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE	
					YES	NO
CCV LA-52589 50 PPB					RANGE	
Benzene	Standard	50.0	54.4	108.8	75 - 125 %	X
Toluene	Standard	50.0	51.9	103.8	75 - 125 %	X
Ethylbenzene	Standard	50.0	51.3	102.6	75 - 125 %	X
m & p - Xylene	Standard	100	102.4	102.4	75 - 125 %	X
o - Xylene	Standard	50.0	51.4	102.8	75 - 125 %	X

Narrative: Acceptable.

SAMPLE NUMBER	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE	
					YES	NO
CCV LA-52589 50 PPB					RANGE	
Benzene	Standard	50.0	53.6	107.2	75 - 125 %	X
Toluene	Standard	50.0	51.9	103.9	75 - 125 %	X
Ethylbenzene	Standard	50.0	51.4	102.9	75 - 125 %	X
m & p - Xylene	Standard	100	103.7	103.7	75 - 125 %	X
o - Xylene	Standard	50.0	51.4	102.8	75 - 125 %	X

Narrative: Acceptable.

LABORATORY DUPLICATES:

SAMPLE ID	TYPE	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	ACCEPTABLE	
					YES	NO
971290					RANGE	
Benzene	Matrix Duplicate	<1	<1	0.00	+/- 20 %	X
Toluene	Matrix Duplicate	<1	<1	0.00	+/- 20 %	X
Ethylbenzene	Matrix Duplicate	<1	<1	0.00	+/- 20 %	X
m & p - Xylene	Matrix Duplicate	<2	<2	0.00	+/- 20 %	X
o - Xylene	Matrix Duplicate	<1	<1	0.00	+/- 20 %	X

Narrative: Acceptable.

LABORATORY SPIKES:

SAMPLE ID	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACCEPTABLE	
					YES	NO
2nd Analysis 971290					RANGE	
Benzene	50	<1	52.9	105.9	75 - 125 %	X
Toluene	50	<1	51.6	103	75 - 125 %	X
Ethylbenzene	50	<1	51.7	103	75 - 125 %	X
m & p - Xylene	100	<2	102.4	102.4	75 - 125 %	X
o - Xylene	50	<1	51.2	102	75 - 125 %	X

Narrative: Acceptable

AUTO BLANK	SOURCE	PPB (4 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 (none 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 (none 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.

12/15/97 TRIP BLANK	SOURCE	PPB (5 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: CV

Approved By: John Lardi

Date: 12/18/97