3R - 239

REPORTS

DATE:

2000

EL PASO FIELD SERVICES

Certified Mail: **#7000 1670 0012 7260 6739**

February 26, 2001

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

RE: 2000 Pit Project Annual Groundwater Report

Dear Mr. Olson:

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

Of the 32 reports (Volumes 1-4), EPFS hereby requests closure of six sites. The six sites EPFS is requesting closure on are presented in one separate binder entitled "San Juan Basin Pit Closures, El Paso Field Services, Pit Closure Reports". Four of the six sites were submitted in last years report and a decision has not been made on closure. The remaining two sites have been submitted in previous years and denied closure.

The Jaquez Com. C #1 and Jaquez Com. E #1 site is not included in with this years report and will be submitted by the required deadline of April 1, 2001

EPFS has also included for your information six Navajo sites in a separate binder.

If you have any questions concerning the enclosed reports or closure requests, 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 # 7000 1670 0012 7260 6722**
Mr. Bill Liesse, BLM – w / enclosures (federal sites only), **Certified Mail # 7000 1670 0012 7260 6715**

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

PSC

EPFS GROUNDWATER PITS
2000 ANNUAL GROUNDWATER REPORT

STATE GAS COM N #1
Meter/Line ID - 71669

SITE DETAILS

Legals - Twn: 31N **Rng:** 12W **Sec:** 16 **Unit:** H
NMOCD Hazard Ranking: 30 **Land Type:** STATE
Operator: AMOCO PRODUCTION COMPANY

PREVIOUS ACTIVITIES

Site Assessment: Mar-94 **Excavation:** May-94 (80 cy) **Soil Boring:** Oct-95
Monitor Well: Oct-95 **Down-gradient MW's:** Nov-95 **PSH Removal Initiated:** Jul-97

2000 ACTIVITIES

Phase Separated Hydrocarbon (PSH) Removal - PSH removal from MW-1, MW-2 and MW-3 continued through 2000.

Monitor Well Installation – Following approval from the State of New Mexico and the completion of an archeological survey, one downgradient monitor well, MW-5, was installed in July of 2000. A sixth monitor well was attempted on July 6, 2000. Drilling was slow and difficult; auger refusal was encountered at 78.65-feet. Groundwater was not observed after several hours and the borehole was grouted (Attachment 2).

SUMMARY TABLES

Groundwater elevation data and PSH recovery data are presented in Table 1. Groundwater analytical data is presented in Table 2. Copies of the laboratory data sheets and associated quality assurance/ quality control data are presented Attachment 1.

SITE MAP

A site map showing the groundwater gradient is presented as Figures 1-4.

GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS

Drilling activities were conducted on July 5, 2000, and the geologic logs and well completion diagrams are presented in Attachment 2.

DISPOSITION OF GENERATED WASTES

All PSH has been disposed of at the EPFS Kutz Separator in Bloomfield, New Mexico.

ISOCONCENTRATION MAPS

Isoconcentration maps were not generated for this site.

CONCLUSIONS

A total of 254.55 gallons of PSH have been removed from the site to date. PSH was not removed from MW-1 in 2000 due to negligible amounts of PSH measured. A total of 3.75 gallons of PSH was removed from MW-2 in 2000, indicating a reduction in PSH by more than 80 percent. A total

of 2.75 gallons of PSH was removed from MW-3 in 2000. Using groundwater elevations, corrected for product, the apparent groundwater gradient is toward the southeast.

An additional downgradient monitor well, MW-5, was installed off-site. Laboratory analyses of the groundwater from MW-5 exceeds the NMWQCC groundwater standards for all analytes.

Pertinent data from previous groundwater reports include the following:
Based on groundwater levels collected from four monitoring wells the groundwater flow trends to the southeast on this site. Product has been measured in monitoring wells MW-1, MW-2, MW-3, and MW-4, but was only observed in monitoring wells MW-1, MW-2 and MW-3 during 2000. Due to the depth to groundwater and difficult drilling conditions the horizontal extent of migration of hydrocarbon constituents in the groundwater has not been determined. Offsite work will be required to determine the down-gradient extent.

RECOMMENDATIONS

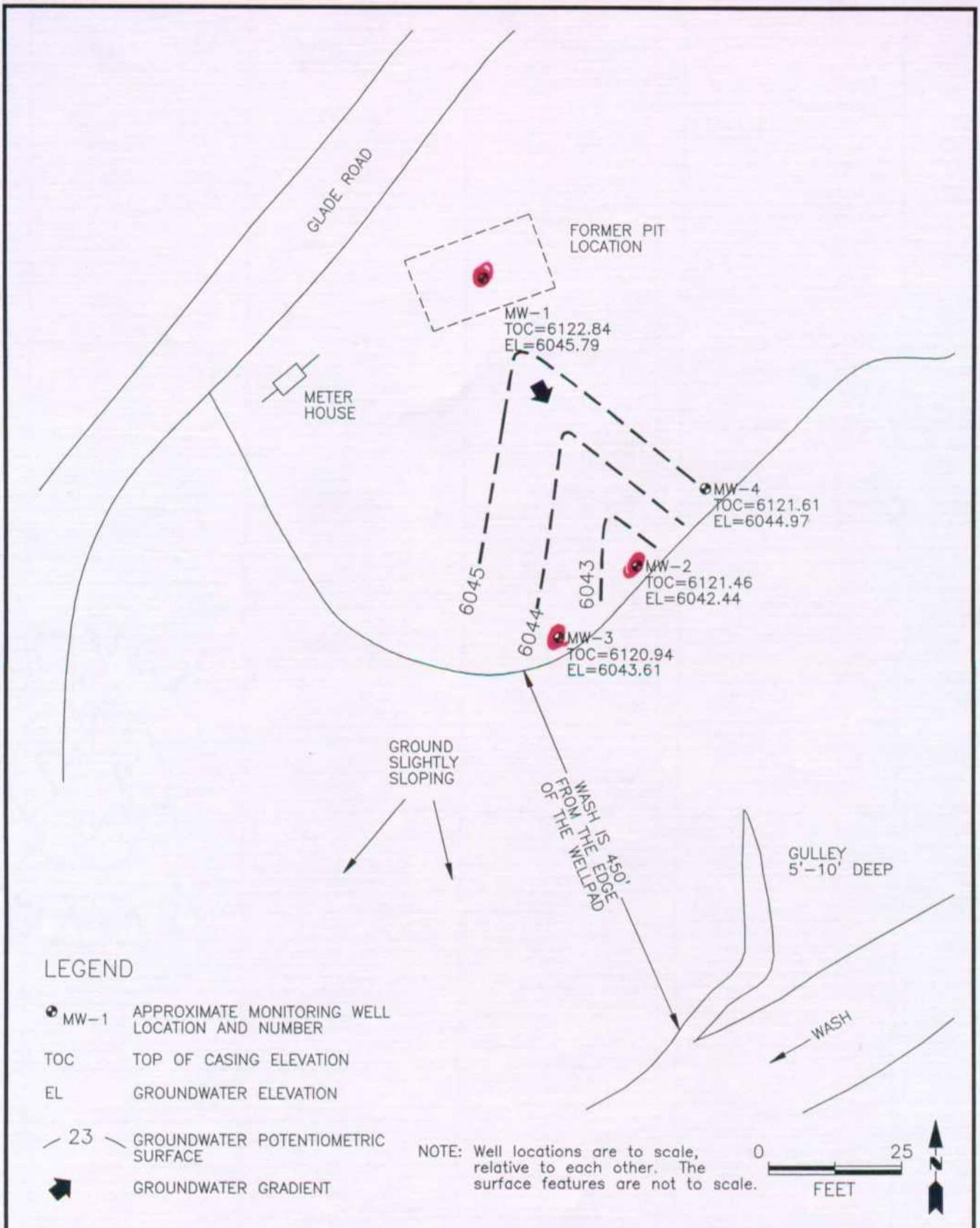
- Continue product removal at MW-1, MW-2, and MW-3 as needed.
- Following removal of product, sample annually until BTEX levels are below New Mexico groundwater standards, then sample quarterly for closure.
- Initiate annual sampling in monitor wells without product until BTEX levels are below NMWQCC, then quarterly for closure.
- Collect groundwater elevation data at least 24 hours after removing passive skimmers from hydrocarbon recovery monitor wells.

Meter/Line #	Location/Line Name	Date	MW	Depth to Product	Depth to Water	Product Thickness	Volume Removed Gallons	Cumulative Gallons
71669	STATE GAS COM #1	02/15/2000	1	76.93	77.3	0.37	0	78.05
71669	STATE GAS COM #1	05/19/2000	1	76.82	77.12	0.3	0	78.05
71669	STATE GAS COM #1	06/08/2000	1	0	76.74	0	0	78.05
71669	STATE GAS COM #1	10/03/2000	1	76.73	76.9	0.17	0	78.05
71669	STATE GAS COM #1	11/21/2000	1	76.8	77.08	0.28	0	78.05
71669	STATE GAS COM #1	12/20/2000	1	76.73	76.92	0.19	0	78.05
71669	STATE GAS COM #1	02/15/2000	2	78.43	80.39	1.96	1	129.71
71669	STATE GAS COM #1	05/19/2000	2	78.68	80.41	1.73	1.25	130.96
71669	STATE GAS COM #1	06/08/2000	2	78.6	78.84	0.24	1.25	132.21
71669	STATE GAS COM #1	07/06/2000	2	78.57	79.99	1.42	0.25	132.46
71669	STATE GAS COM #1	10/03/2000	2	76.4	77.02	0.62	0	132.46
71669	STATE GAS COM #1	11/21/2000	2	76.53	77.16	0.63	0	132.46
71669	STATE GAS COM #1	12/20/2000	2	76.47	77.06	0.59	0	132.46
71669	STATE GAS COM #1	02/15/2000	3	77.3	77.41	0.11	0.25	40.54
71669	STATE GAS COM #1	05/19/2000	3	77.53	78.25	0.72	1.25	41.79
71669	STATE GAS COM #1	06/08/2000	3	77.17	77.63	0.46	1.25	43.04
71669	STATE GAS COM #1	07/06/2000	3	77.2	77.62	0.42	1	44.04
71669	STATE GAS COM #1	10/03/2000	3	76.97	77.12	0.15	0	44.04
71669	STATE GAS COM #1	11/21/2000	3	77.15	77.18	0.03	0	44.04
71669	STATE GAS COM #1	12/20/2000	3	0	77	0	0	44.04
71669	STATE GAS COM #1	02/15/2000	4	0	76.64	0	0	0
71669	STATE GAS COM #1	05/19/2000	4	0	76.68	0	0	0
71669	STATE GAS COM #1	06/08/2000	4	0	76.53	0	0	0
71669	STATE GAS COM #1	10/03/2000	4	0	76.53	0	0	0
71669	STATE GAS COM #1	11/21/2000	4	0	76.79	0	0	0
71669	STATE GAS COM #1	12/20/2000	4	0	76.56	0	0	0
71669	STATE GAS COM #1	10/03/2000	5	0	74.56	0	0	0
71669	STATE GAS COM #1	11/21/2000	5	0	74.44	0	0	0
71669	STATE GAS COM #1	12/20/2000	5	0	74.12	0	0	0

Table 2

Sample #	Meter / Line #	Site Name	Sample Date	MW #	Project	Benzene (PPB)	Toluene (PPB)	Ethyl Benzene (PPB)	Total Xylenes (PPB)	Total BTEX (PPB)
STA-0008-MW5	71669	STATE GAS COM #1	8/30/00	5	Sample 1 - 1st Event	= 27,000	= 570	= 930	= 8,600	309

Sample 1 - Annual Sampling



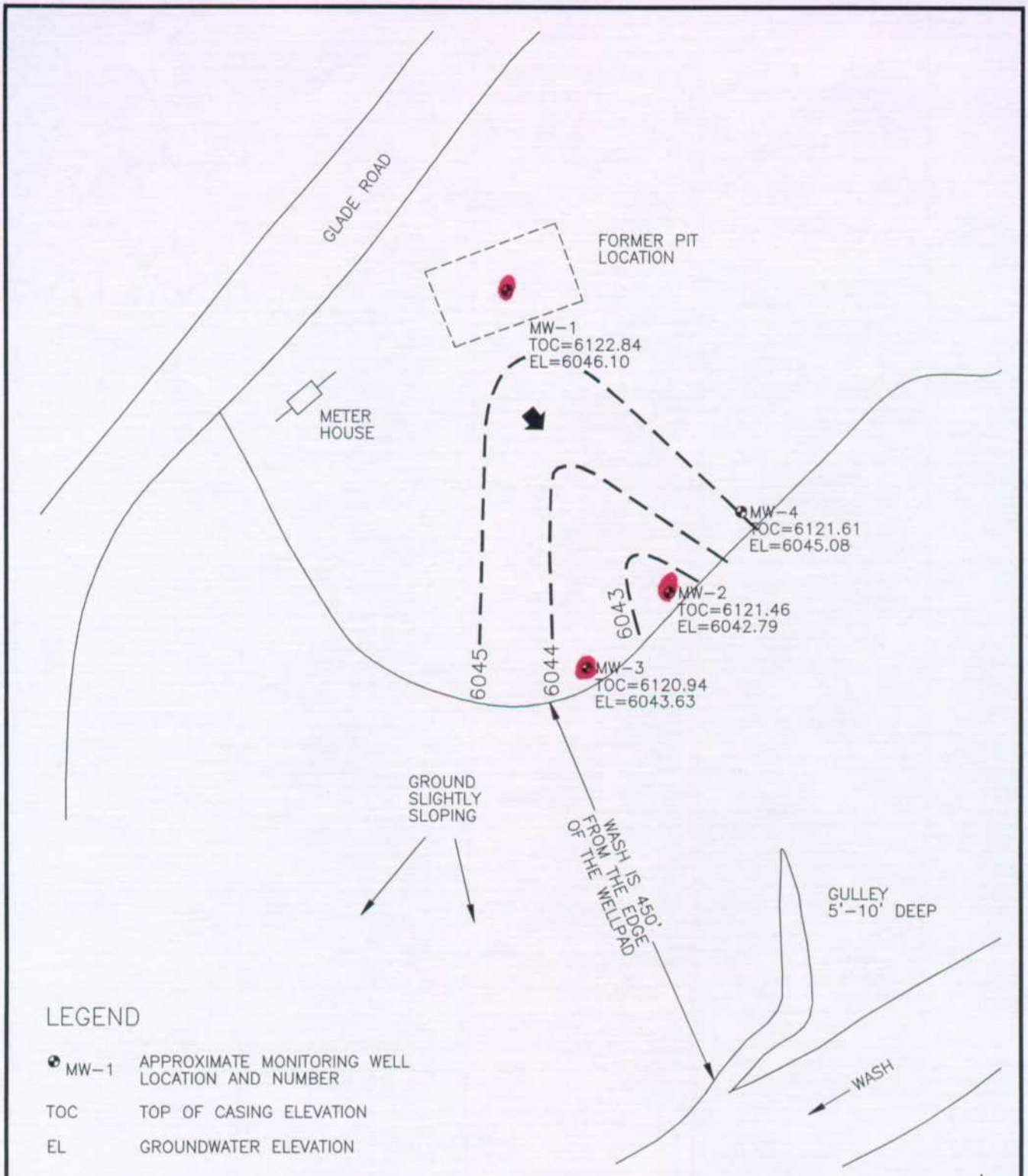
PHILIP SERVICES CORP

TITLE:

STATE GAS COM N#1
METER 71669
FEBRUARY 15, 2000

DWN:	DES.:	PROJECT NO.: 62800219
TMM	LW	EPFS GW PITS
CHKD:	APPD:	
LW	MN	
DATE:	REV.:	FIGURE 1
1/30/01	0	

COL 628\00219380-007



PHILIP SERVICES CORP

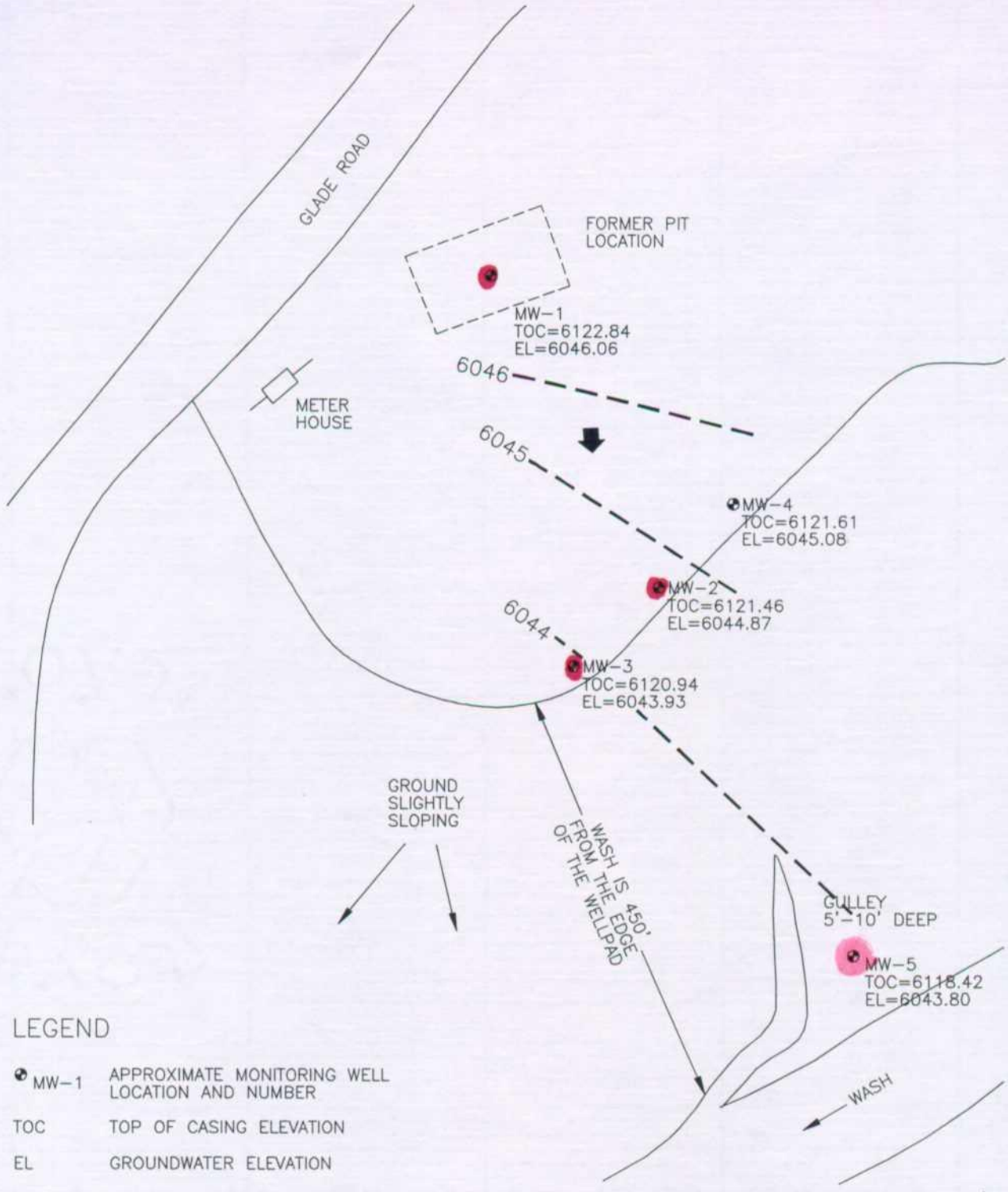
TITLE:
STATE GAS COM N#1
METER 71669
JUNE 8, 2000

DWN:	DES.:
TMM	LW
CHKD:	APPD:
LW	MN
DATE:	REV.:
1/30/01	0

PROJECT NO.: 62800219
EPFS GW PITS

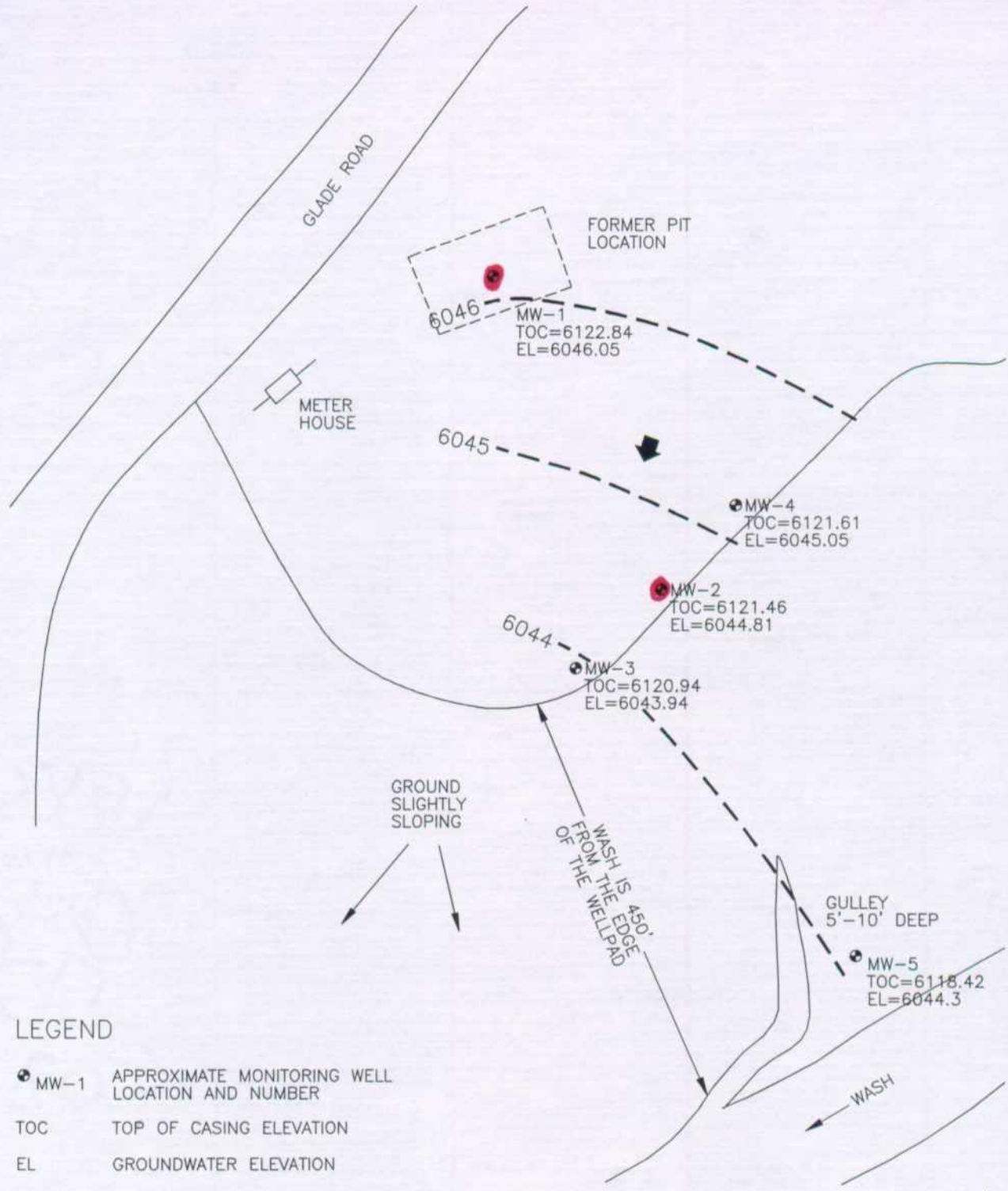
FIGURE 2

COL 626\00219380-008



PHILIP SERVICES CORP	TITLE: STATE GAS COM N#1 METER 71669 OCTOBER 3, 2000	DWN: TMM / DES.: LW	PROJECT NO.: 62800219 EPFS GW PITS
		CHKD: LW / APPD: MN	
		DATE: 1/30/01 / REV.: 0	FIGURE 3

COL 628\00219380-009



PHILIP SERVICES CORP

TITLE:

STATE GAS COM N#1
METER 71669
DECEMBER 20, 2000

DWN:	DES.:
TMM	LW
CHKD:	APPD:
LW	MN
DATE:	REV.:
1/30/01	0

PROJECT NO.: 62800219
EPFS GW PITS

FIGURE 4

COL 628\00219380-010

ATTACHMENT 1

2000 GROUNDWATER ANALYTICAL

PHILIP ENVIRONMENTAL

Well Number MW05 ☑ Develop ☐ Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-

Page ____ of ____

Project Name EpFS quarterly Sampling Project Manager R Thompson Project No. 62800102

Client Company EpFS Phase.Task No. 0301

Site Name STATE Gas COM N1 (71669) Site Address Rural San Juan CO.

Development Criteria

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

Methods of Development

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

☐ Other _____

Water Volume Calculation

Initial Depth of Well (feet) 83.16
Initial Depth to Water (feet) 74.19
Height of Water Column in Well (feet) 8.97
Diameter (inches): Well 2" Gravel Pack ____

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	8.97	1.46 x 3	4.38
Gravel Pack			
Drilling Fluids			
Total			4.38

Instruments

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

Water Disposal

K-Z separator Blanco Field N.M.

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
8-30-00	1:20		X				1	1			21.7	7.44	11,430		Cloudy Brown Petroleum Odor
	1:26		X				1	2			20.4	7.56	11,340		" "
	1:32		X				1	3			19.5	7.68	11,160		" "
	1:38		X				1	4			19.6	7.76	11,100		" "
	1:45		X				1	5			18.9	7.76	10,540		no change

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

Comments Sampled for BTEX 1:50 pm

Developer's Signature(s) [signature] Date 8-30-00 Reviewer _____ Date _____

PHILIP

Chain of Custody Record

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

COC Serial No. C 2656

Project Name EpFS quarterly Sampling
Project Number 62800107 Phase . Task 0301 .
Samplers C. MAez
Laboratory Name PINNACLE
Location ALBQ N.M.

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle: 8260												Comments
STA0008 MW05	8 30 00	1:50	H_2O	2	X												Stat Gas Com N1 #21669

Relinquished by:

Signature	Date	Time
Jennifer Wagner	8/31/00	1530

Received By:

Signature	Date	Time

Samples Iced: ☐ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Cyanide ..... Sodium hyroxide (NaOH)
- ☐ Volatile Organic Analysis ..... Hydrochloric acid (HCl)
- ☐ Metals ..... Nitric acid (HNO_3)
- ☐ TPH (418.1) ..... Sulfuric acid (H_2SO_4)
- ☒ Other (Specify) $HgCl_2$
- ☐ Other (Specify) _____

Carrier: Greyhound Lines

Airbill No. 6CF160691854544

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 **009003**
September 06, 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 09/01/00 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE LABORATORIES

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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 009003
PROJECT #	: 62800107	DATE RECEIVED	: 09/01/00
PROJECT NAME	: EPFS QUARTERLY SAMPLING	REPORT DATE	: 09/06/00

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	STA0008 MW05	AQUEOUS	08/30/00

PINNACLE LABORATORIES

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

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PINNACLE I.D.: 009003
PROJECT # : 62800107
PROJECT NAME : EPFS QUARTERLY SAMPLING

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	STA0008 MW05	AQUEOUS	08/30/00	NA	09/05/00	250

PARAMETER	DET. LIMIT	UNITS	STA0008 MW05
BENZENE	0.5	**UG/L**	**27000**
TOLUENE	0.5	**UG/L**	**570**
ETHYLBENZENE	0.5	**UG/L**	**930**
TOTAL XYLENES	0.5	**UG/L**	**8600**

SURROGATE:
BROMOFLUOROBENZENE (%) 115
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

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

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 009003
BLANK I. D.	: 090500	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 09/05/00
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 (%)		102
SURROGATE LIMITS:	(80 - 120)	

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

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

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST	: EPA 8021 MODIFIED		
MSMSD #	: 090500	PINNACLE I.D.	: 009003
CLIENT	: PHILIP ENVIRONMENTAL	DATE EXTRACTED	: NA
PROJECT #	: 62800107	DATE ANALYZED	: 09/05/00
PROJECT NAME	: EPFS QUARTERLY SAMPLING	SAMPLE MATRIX	: AQUEOUS
		UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	20.5	103	19.8	99	3	(80 - 120)	20
TOLUENE	<0.5	20.0	21.3	107	20.5	103	4	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	21.9	110	21.2	106	3	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	66.0	110	63.5	106	4	(80 - 120)	20

CHEMIST NOTES:
N/A

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

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

009005

PHILIP ENVIRONMENTAL

Chain of Custody Record

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

COC Serial No. C 2656

Project Name EpFS quarterly Sampling
Project Number 62600107 Phase . Task 0301 .
Samplers C. MAez
Laboratory Name PINNACLE
Location ALBQ N.M.

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	BTEX 8021	Comments
STA0008 MW05	8 30 00	1:50	H_2O	2	X	State Gas Com N1 (71669)

Relinquished by:

Signature	Date	Time
Jennifer Wagner	8/31/00	1530

Received By:

Signature	Date	Time
Francine Jones	9/1/00	0930

Samples Iced: ☐ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Cyanide ..... Sodium hyroxide (NaOH)
- ☐ Volatile Organic Analysis ..... Hydrochloric acid (HCl)
- ☐ Metals ..... Nitric acid (HNO_3)
- ☐ TPH (418.1) ..... Sulfuric acid (H_2SO_4)
- ☑ Other (Specify) $HgCl_2$
- ☐ Other (Specify) _____

Carrier: Grey Hound lines

Airbill No. 6GT160691845744

Shipping and Lab Notes:

Rec'd @ 2.6°c

PE-176 4/95

ATTACHMENT 2

2000 MONITOR WELL INSTALLATION RECORDS

MONITORING WELL INSTALLATION RECORD

Borehole # MW-05
Well #
Page 1 of 1

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

Project Name: EPFS Drilling
Project Number: 62800219 Cost Code: 35
Project Location: R12, T31, S16, QH

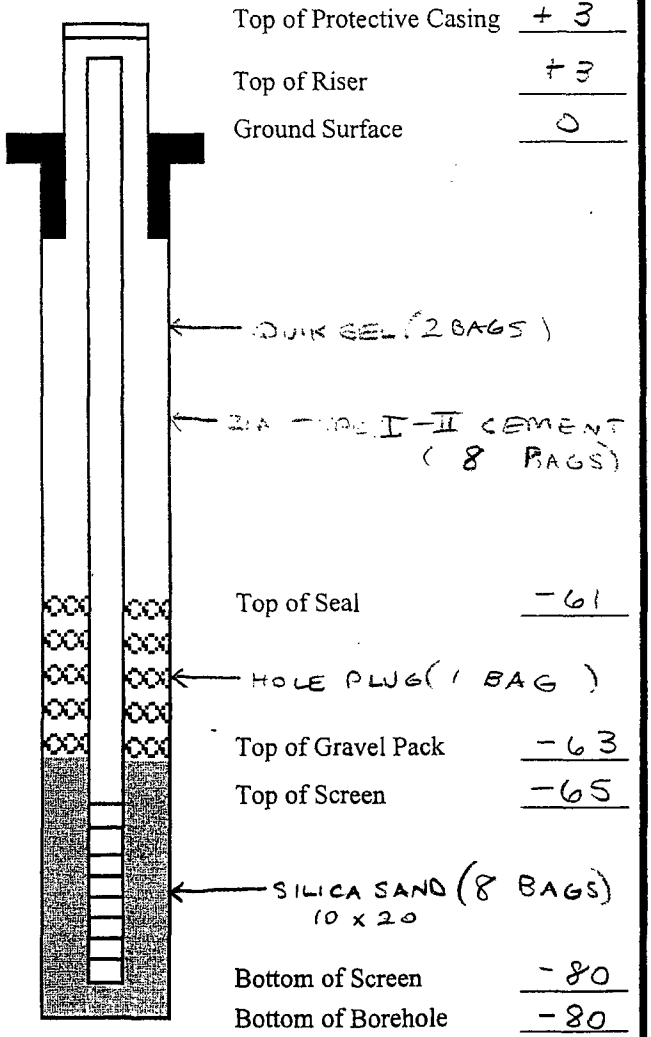
Elevation:
Well Location: STATE GAS COM N-1
GWL Depth: 72.93'
Installed By: K. Padilla

On-Site Geologist: J. Wagnon
Personnel On-Site: R. Lefebre, D. PADILLA
Contractors On-Site: None
Client Personnel On-Site: None

Date/Time Started: 6/30/00 1158
Date/Time Completed: 7/5/00

Depths in Reference to Ground Surface

Item	Material	Depth (feet)
Top of Protective Casing		+3
Bottom of Protective Casing		0
Top of Permanent Borehole Casing		0
Bottom of Permanent Borehole Casing		-80
Top of Concrete	QUIKRETE	+0.04
Bottom of Concrete		0
Top of Grout		0
Bottom of Grout		-61
Top of Well Riser		+3
Bottom of Well Riser		-80
Top of Well Screen		-65
Bottom of Well Screen		-80
Top of Peltonite Seal	3/8 HOLEPLUG BENTONITE	-61
Bottom of Peltonite Seal		-63
Top of Gravel Pack	CO SIO2 SAND 10 x 20	-63
Bottom of Gravel Pack		-80
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		-72.93
Total Depth of Borehole		-80



Comments:

Geologist Signature: Jenn Wagnon

RECORD OF SUBSURFACE EXPLORATION

Borehole # MW-05
Well #
Page 1 of 2

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

Project Name EPFS Drilling
Project Number 62800219 Cost Code 35
Project Location R12, T31, S16, QH

Elevation
Borehole Location STATE GAS COM N-1
GWL Depth 72.93
Logged By J. Wagnon
Drilled By K. Padilla
Date/Time Started 6/30/00 1158
Date/Time Completed 7/5/00

Well Logged By J. Wagnon
Personnel On-Site R. Lefebre
Contractors On-Site None
Client Personnel On-Site None

Drilling Method 4 1/4 ID ~~HAS~~ HSA
Air Monitoring Method PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ	Air Monitoring Units: NDU BH	Air Monitoring Units: NDU PID	Drilling Conditions & Blow Counts
0										
5										
1215	1	5-7'	3"	0-7' V. DENSE, FINE BROWN SAND, DRILLING IS HARD. MINOR CLAY					0.1 ppm	20 COUNTS
10										
1222	2	10-12	5"	7-12' AS ABOVE					0.2 ppm	35 COUNTS
15										
1234	3	15-17	12"	12-17' AS ABOVE ; LESS COMPACTED					0.2 ppm	27 COUNTS
20										
1239	4	20-22	5"	17-22' AS ABOVE					0.6 ppm	19 COUNTS
25										
1245	5	25-27	12"	22-27 FINE TO (-) CSE BROWN SAND, SOME CLAY					0.3 ppm	30 COUNTS
30										
1259	6	30-32	10"	27-32 BROWN FINE TO CSE SAND; SEMI TO POORLY COMPACTED					0 ppm	28 COUNTS
35										
40										

Comments:

Geologist Signature Jana Wagnon

RECORD OF SUBSURFACE EXPLORATION

Borehole # MW-05
Well #
Page 1 of 2

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

Project Name: EPFS Drilling
Project Number: 62800219 Cost Code: 35
Project Location: R12, T31, S16, QH

Elevation:
Borehole Location: STATE GAS COM N-1
GWL Depth: 72.93'
Logged By: J. Wagnon
Drilled By: K. Padilla
Date/Time Started: 6/30/00 1158
Date/Time Completed: 7/5/00

Well Logged By: J. Wagnon
Personnel On-Site: R. Lefebre
Contractors On-Site: None
Client Personnel On-Site: None

Drilling Method: 4 1/4 ID ~~HAS~~ HSA
Air Monitoring Method: PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ	BH	PID	Drilling Conditions & Blow Counts
1316 40	7	40-42'	3"	37-42' FINE-MED BROWN SAND DENSELY COMPACTED. DRILLING IS HARD.					0 ppm	49 COUNTS AT 1325, ADDED 3 gal H_2O
45										
50										
1342	8	50-52	24	47-52' MOIST FINE BROWN SAND + CLAY (MOISTURE FROM ESTIMATED CONDENSATION ON DRIVED CUTTINGS)					1.6 ppm	50 COUNTS
55										
60										
1420	9	60-62	3"	57-62' DRY FINE TO MED BROWN SAND. LOOSELY COMPACTED					1.8	30 COUNTS
65										
1016	10	65-67	12"	62-67' FINE-MED BROWN SAND, (-) RED BROWN CLAYS, SEMI COMPETENT - COMPETENT					12.3	40 COUNTS
70										
20										
75										
1114	11	75-77	18"	72-77' WET BROWN - GREY MUD + CLAYS STRONG HC ODOR					1039 ppm	11 COUNTS
80				TOTAL DEPTH 80' BGS						

Comments: Left augers at 60' to complete on Wed. 7/5/00

Geologist Signature Jana Wagnon

RECORD OF SUBSURFACE EXPLORATION

Borehole # MW-06
Well #
Page 1 of 2

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

Project Name EPFS Drilling
Project Number 62800219 Cost Code 35
Project Location R12, T31, S16, QH

Elevation
Borehole Location STATE GAS COM N-1
GWL Depth
Logged By J. Wagnon
Drilled By K. Padilla
Date/Time Started ~~6/30/00~~ 7/5 1:00
Date/Time Completed HOLE GROUTED; NO WATER.

Well Logged By J. Wagnon
Personnel On-Site R. Lefebre, D. PADILLA
Contractors On-Site None
Client Personnel On-Site None

Drilling Method 4 1/4 ID ~~HAS~~ HSA
Air Monitoring Method PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ	BH	S	Drilling Conditions & Blow Counts
0										
5										
10										
1415	1	10-12'	9"	7-12' DP, FINE-MED BROWN SAND, some [illegible]					61.4 Ppm	16 COUNTS
15										
20										
1429	2	20-22	12"	17-22' AS ABOVE					30.8 Ppm	13 COUNTS
25										
30										
1445	3	30-32	12"	27-32' AS ABOVE, LESS CONSOLIDATED, MINOR CLAY					2.3 Ppm	14 COUNTS
35										
40										

Comments:

Geologist Signature J. Wagnon

J:\Z Misc folders\Drilling\1-40ft

RECORD OF SUBSURFACE EXPLORATION

Borehole # MW-06
Well #
Page 2 of 2

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

Project Name EPFS Drilling
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Project Location R12, T31, S16, QH

Elevation
Borehole Location STATE GAS COM N-1
GWL Depth
Logged By J. Wagnon
Drilled By ~~K. Padilla~~ D. PADILLA
Date/Time Started ~~6/30/00~~ 7/5/00
Date/Time Completed HOLE GROUTED; NO WATER

Well Logged By J. Wagnon
Personnel On-Site R. Lefebre, R. PADILLA
Contractors On-Site None
Client Personnel On-Site None

Drilling Method 4 1/4 ID ~~HAS~~ HSA
Air Monitoring Method PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ	BH	S	Drilling Conditions & Blow Counts
40	4	40-42	4"	37-42' FINE BROWN SAND, CLAY; V. WELL CONSOLIDATED.					1.0 ppm	48 COUNTS
1508										
45										
50	5	50-52	4"	47-52' AS ABOVE, [illegible] CONSOLIDATION					2.7 ppm	39 COUNTS
1531										
55				DRILLING IS SLOW & DIFFICULT.						
7/6/00										
60	6	[illegible]	12"	57-62' DRY BROWN FINE SAND WITH CLAY, CALICHE LENSES WELL COMPACTED.					1039 ppm	50 COUNTS DRILLING VERY TIGHT.
0915										
65	7	65-70	10"	62-67 SHALE: BROWN, HARD, WELL-COMPACTED CLAY, BRITTLE IN DRY SPOTS.					149 ppm	60 COUNTS
1006										
70										1103 ADDED 4 gal H_2O
75									1039	
1130	8	75-77	10"	72-77 DRY, COMPACT SHALE - BROWN.					ppm	60 COUNTS
1215	9	78-80		GREY/BLUE FINE SAND & CLAY. RESISTANT TD=78.65						58 COUNTS
80										

Comments: WILL PAUSE DRILL AT 60'; CONTINUE 7/6/00. 7/6/00: DRILLING SLOW & DIFFICULT, TIGHT. 1155: TOOK SAMPLE AT 78', WHERE WE HAVE REFUSAL. WILL WAIT FOR WATER, 1335: NO WATER. GROUT HOLE.

Geologist Signature Jan Wagnon

J:\Z Misc folders\Drilling\40-80ft