2R - 31

REPORTS

DATE:

Dec 15, 2001

Highlander Environmental Corp.

Midland, Texas

December 15, 2001

Mr. Michael C. Stubblefield
Environmental Bureau
Oil Conservation Division
Drawer DD
Artesia, New Mexico 88240

RE: 2001 Summary Report for the Well Blowout Located at the Pogo McMillan 24 State #1, Eddy County, New Mexico

Dear Mr. Stubblefield:

Highlander Environmental Corp. (Highlander) was contacted by Pogo Producing Company (Pogo) to assess the impact from a well blowout on April 12, 2001, which occurred at the Pogo McMillan 24 State #1 in Eddy County, New Mexico. The Site is located in Section 24, Township 20 South, Range 26 East. The Site is shown in Figure 1.

1.0 Background

The well blowout occurred at the Site on April 12, 2001. During the initial blowout, the fluids that were not contained on location (drilling mud, produced water and condensate) flowed off the Site and down an unnamed dry wash south of the location a distance of approximately 1250'. The dry wash was remediated by tilling peat moss and fertilizer into the affected soils.

Trench and berm containments were constructed on the west (Trench #1) and south sides (Trench #2) of the location to control the runoff of fluids from the well. The contained fluid was immediately pumped into an open, lined pit located west of the Site using both vacuum trucks and trash pumps. A third trench (Trench #3) was dug approximately 200' south of the location to be used as an overflow pit during fire fighting operations. A flare pit was constructed on the east end of Trench #3 to be used when the well flow was diverted and controlled. The locations of the containment trenches are shown in Figure 2.

After the rig was removed from the well, the fire was extinguished and gas, produced water and condensate were discharged into the air. Due to shifting winds, three major overspray areas occurred. Most of fluids fell into the reserve pit and onto the well location and were captured. The

offsite overspray affected three areas that are northwest, east and southwest of the well. The areas of offsite impact are estimated to cover approximately 9 acres. The well was brought under control on April 18, 2001.

2.0 Regulatory

According to published data, groundwater in the area of the Site is sparse. The published data indicated that historically, groundwater in the vicinity of the Site was found at a depth of approximately 120 feet below the surface. During a field reconnaissance, two abandoned windmills were found west and southwest of the Site. These wells were both dry and each measured an approximate total depth of 130 feet below the surface. A total of four monitor wells were installed at the Site. Groundwater was encountered at depths ranging from 110' to 168' below the surface.

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene and xylene). Based on the regional groundwater data, the proposed recommended remedial action level (RRAL) for TPH is 5,000 mg/kg.

3.0 Surface Remediation

As discussed in the Subsurface Investigation letter report dated September 17, 2001, the overspray areas inside the firebreak have been tilled and fertilized. At the direction of the State Land Office, an estimated 5 acres of the most impacted overspray area (north of pad, north of fire break, and east of pad) were brush hogged. The surface spills around the well pad were immediately tilled and fertilized. The open trenches (T-1, T-2 and T-3) and flare pit used for fluid containment required further evaluation for closure. Soil samples collected from the trenches flare pit, drywash and soil stockpiles were all below the New Mexico Oil Conservation Division RRAL for TPH and BTEX and these areas were closed.

In the September 17, 2001 Subsurface Investigation report, it was recommended that the open lined pit located west of the Site be closed and soil restoration activities be performed. The lined pit was closed on September 11, 2001. Manure was tilled into the disturbed soil areas around the well pad during the week of December 10, 2001 in preparation for Summer seeding activities.

4.0 Monitor Well Sampling

On April 26, 2001, water levels measurements were collected from each well. Referring to Table 1, the monitor wells that were found to have groundwater, showed static water levels of 129.30' in MW-1 and 143.98' in MW-2. Monitor wells MW-3 and MW-4 were dry and required

additional time for the groundwater to seep into the wells. On June 1, 2001, water levels were measured from the monitor wells and showed: MW-1 (131.67'), MW-2 (121.95'), MW-3 (142.65') and MW-4 (173.06'). On October 10 2001, water level measurements indicated a rise in water level elevation for monitor wells MW-2, MW-3 and MW-4, while MW-1 decreased by 0.68 feet.

Based on depth-to-groundwater measurements from monitor wells installed at the Site, groundwater occurs at depths of approximately 110 to 168 feet below ground surface (BGS). The Site water levels from the monitor wells are shown in Table 1. The regional groundwater flow is generally from the northwest to the southeast, however, the Site groundwater gradient shows a southwest to northeast trend. Figures 3 presents the groundwater potentiometric surface map for the most recent (October 10, 2001) monitoring event.

On April 26, 2001, one grab sample each was collected from MW-1 and MW-2 for chloride evaluation. MW-3 and MW-4 were both dry during the sampling event. On June 1, 2001 the monitor wells, MW-1, MW-2 and MW-4 were purged and sampled for BTEX and chloride evaluation. Monitor well (MW-3) did not have sufficient amount of groundwater in the well to sample. The results of sampling are shown in Table 1. Referring to Table 1, the BTEX levels were below the method detection limit. The chloride levels detected in the wells do not indicate impact to the groundwater.

On October 10, 2001 all four (4) monitor wells were sampled and analyzed for BTEX and chloride. The results of the sampling were below detection limits for all BTEX constituents in all of the monitor wells with the exception of benzene in MW-1 at a level of 0.0012 mg/L. This level is well below the New Mexico Water Quality Conservation Commission (WQCC) standard of 0.005 mg/L. The chloride levels detected in the wells do not indicate impact to the groundwater.

5.0 Conclusions

1. According to published data, groundwater in the area of the Site is sparse. The published data indicated that groundwater in the vicinity of the Site was found at a depth of approximately 120 feet below the surface. During a field reconnaissance, two abandoned windmills were found west and southwest of the Site. These wells were both dry and each measured an approximate total depth of 130 feet below the surface. A total of four monitor wells were installed at the Site. Groundwater was encountered at depths ranging from 110' to 168' below the surface. During the installation of the wells, each well drilled dry and did not appear to encounter groundwater. The wells were completed and allowed time for the limited groundwater to collect. The regional groundwater flow is generally from the northwest to the southeast, however, the Site groundwater flow shows a southwest to northeast trend.

2. A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene and xylene). Based on the regional groundwater data, the proposed recommended remedial action level (RRAL) for TPH is 5,000 mg/kg.

3. In the September 17, 2001 Subsurface Investigation report, it was recommended that the open lined pit located west of the site be closed and soil restoration activities be performed. The lined pit was closed on September 11, 2001.

4. Manure was tilled into the disturbed soil areas around the well pad during the week of December 10, 2001 in preparation for Summer seeding activities.

5. Through three sampling events, no BTEX levels have been reported above the method detection limit, with the exception of benzene in MW-1 at a level of 0.0012 mg/L (October 10, 2001 monitoring event). This level is well below the New Mexico Water Quality Conservation Commission (WQCC) standard of 0.005 mg/L. The chloride levels detected in the wells do not indicate impact to the groundwater at the Site.

6.0 Recommendations

1. The continued Site restoration activities, as recommended by the New Mexico State Land Office, will be performed in the late summer of 2002. The Site will be seeded with an approved seeding mixture.

2. The overspray areas will continue to be visually inspected to ensure vegetation growth has not been affected.

3. Pogo will continue to monitor the groundwater for the agreed upon one year on a quarterly basis. Samples will be collected from the four (4) monitor wells at the Site. The samples will be analyzed for BTEX and chloride evaluation. One annual report will be submitted on monitoring events and the progress on the Site restoration activities.

If you require any additional information or have any questions or comments concerning the report, please call.

Respectfully Submitted
Highlander Environmetal Corp.

Ike Tavarez
Project Manager/Geologist

Gary E. Miller
President

cc: Don Riggs – Pogo Producing Co.
Rex Jasper – Pogo Producing Co.
Jim Carr - New Mexico State Land Office
Roger Anderson – NMOCD, Santa Fe

FIGURES

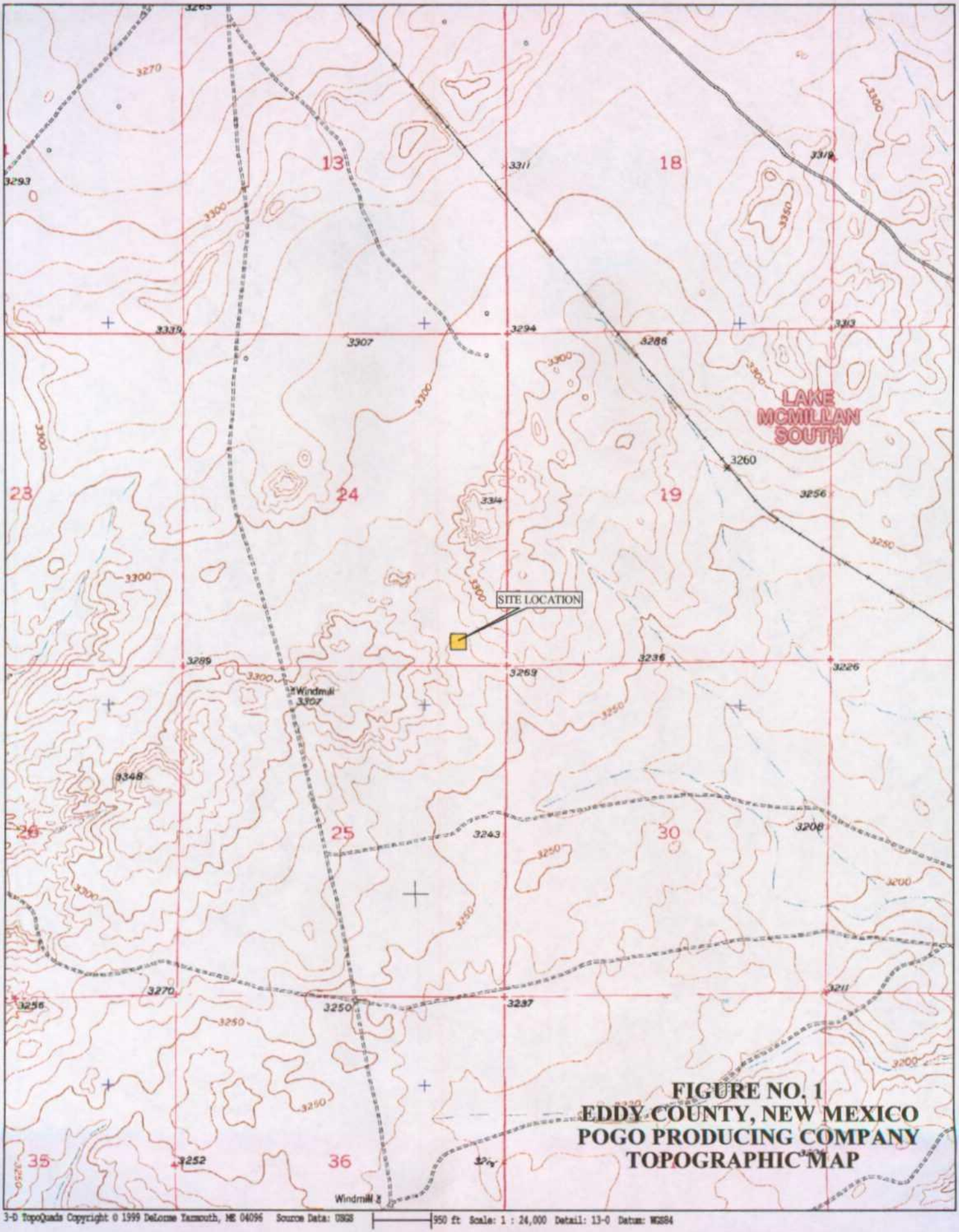
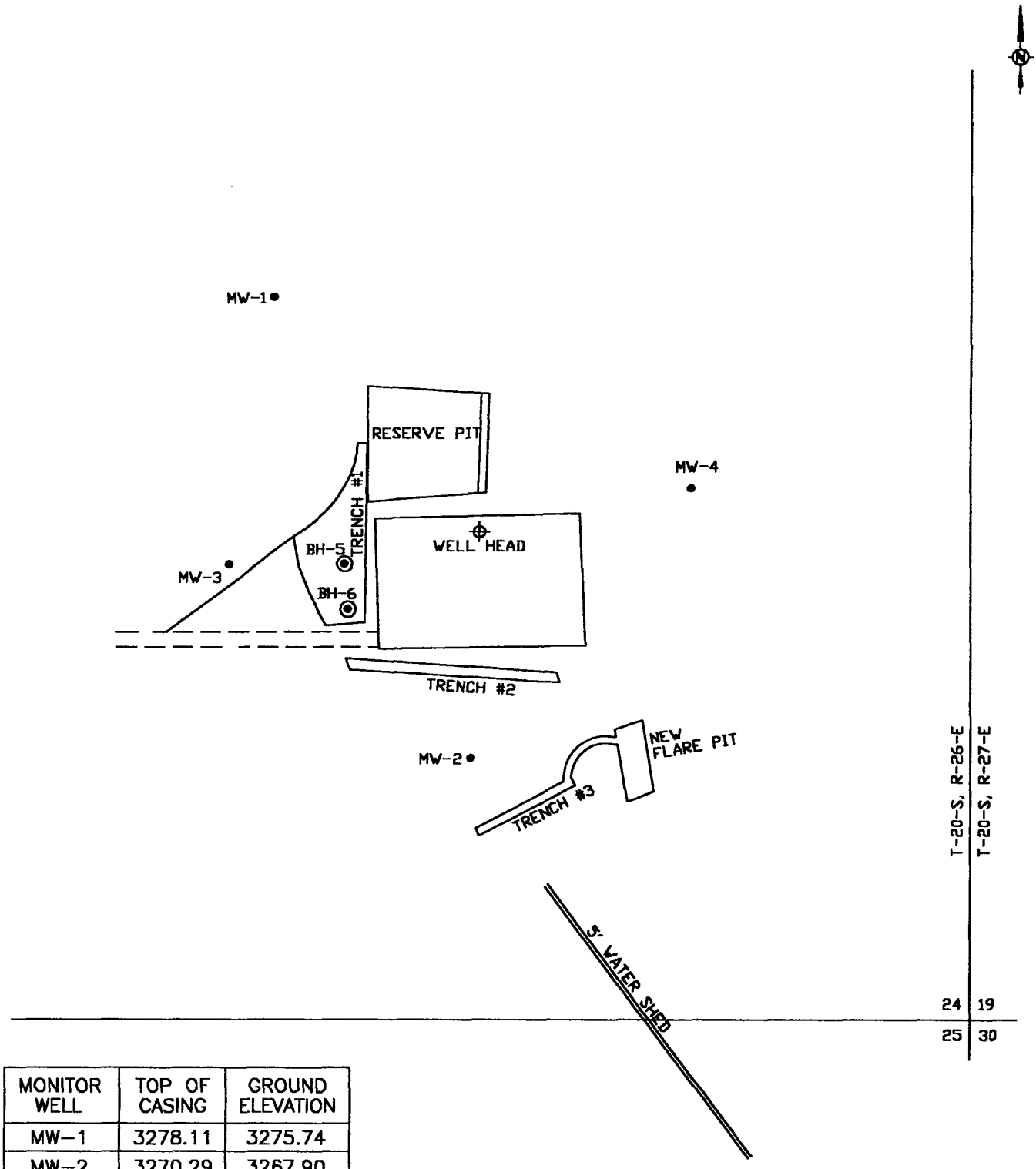


FIGURE NO. 1
EDDY COUNTY, NEW MEXICO
POGO PRODUCING COMPANY
TOPOGRAPHIC MAP



MONITOR WELL	TOP OF CASING	GROUND ELEVATION
MW-1	3278.11	3275.74
MW-2	3270.29	3267.90
MW-3	3274.71	3272.70
MW-4	3284.18	3282.00

● MONITOR WELL LOCATION

◉ BOREHOLE LOCATIONS

100 0 200

DATE: 7/16/01
DWG. BY: JDA
FILE:

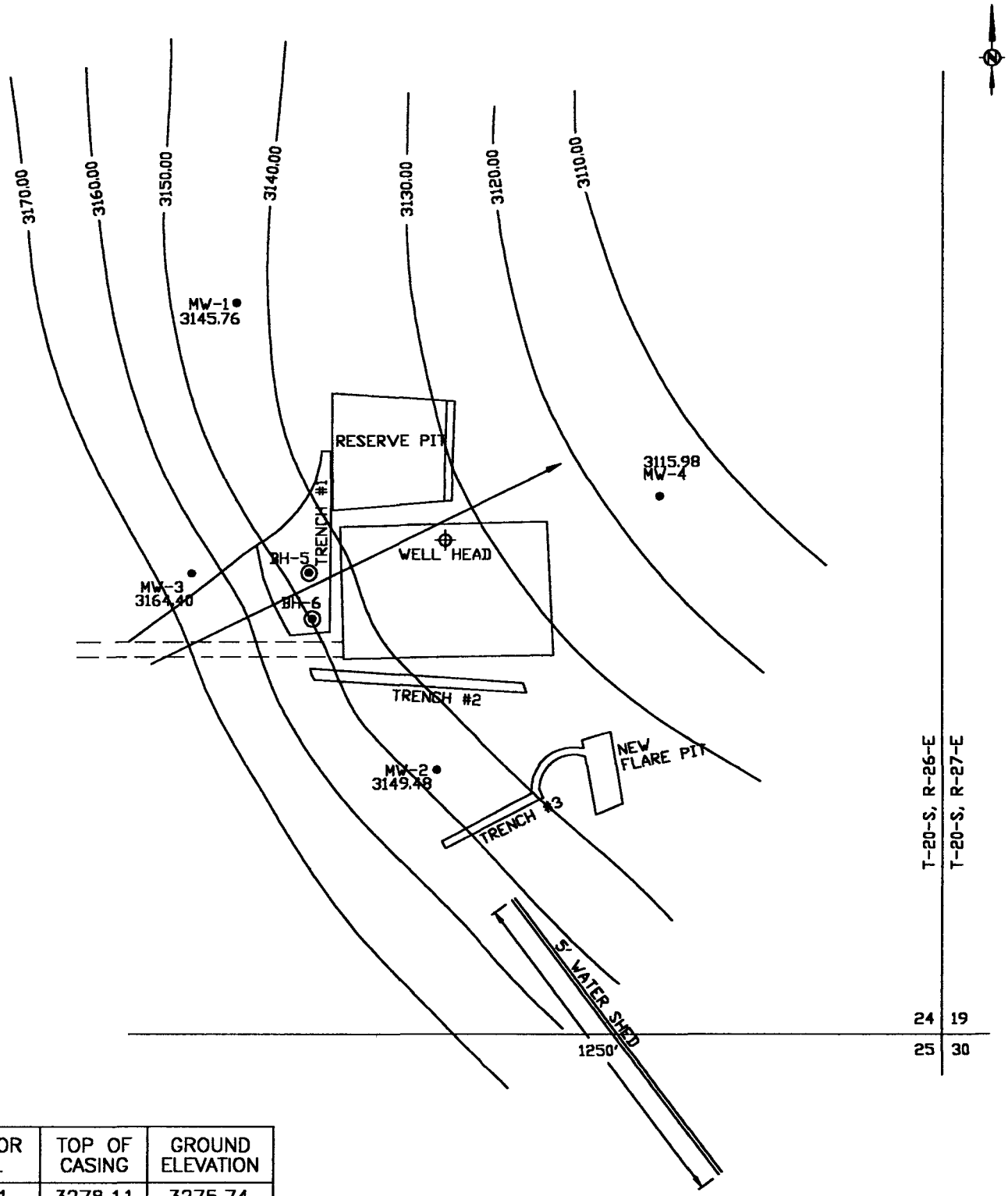
FIGURE NO. 2

EDDY COUNTY, NEW MEXICO

POGO PRODUCING COMPANY

WELL BLOWOUT
SITE PLAN
McMILLAN 24 STATE #1

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS



MONITOR WELL	TOP OF CASING	GROUND ELEVATION
MW-1	3278.11	3275.74
MW-2	3270.29	3267.90
MW-3	3274.71	3272.70
MW-4	3284.18	3282.00

● MONITOR WELL LOCATION

◉ BOREHOLE LOCATIONS

100 0 200

DATE: 12/11/01
DWG. BY: JDA
FILE: C:\POGO\1999\WATER_TABLE-10-01

FIGURE NO. 3

EDDY COUNTY, NEW MEXICO

POGO PRODUCING COMPANY

WATER TABLE MAP
McMILLAN 24 STATE #1
10/10/01

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

TABLES

Table 1

CUMULATIVE LIST OF GROUNDWATER ANALYTICAL RESULTS
Pogo Producing Company - McMillan 24 State #1, Eddy County, New Mexico

Well ID:	MW-1	MW-2	MW-3	MW-4
Casing Elev., ft:	3278.11	3270.29	3274.71	3284.18
Total Depth, ft.:	140.00	165.00	150.00	180.00

Well Number	Depth to water ft.	Water Elevation (ft)	Chloride mg/l	BTEX (mg/l)			
				B	T	E	X
Monitoring Date: April 26, 2001							
MW-1	129.30	3148.81	13.6	*	*	*	*
MW-2	143.98	3126.31	13.60	*	*	*	*
MW-3	Dry	-	Dry	*	*	*	*
MW-4	Dry	-	Dry	*	*	*	*
Remarks:	*Not Analyzed (-) No data						
Monitoring Date: May 2, 2001							
MW-1	130.07	3148.04	-	-	-	-	-
MW-2	124.20	3146.09	-	-	-	-	-
MW-3	151.95	3122.76	-	-	-	-	-
MW-4	177.03	3107.15	-	-	-	-	-
Remarks:	(-) no sampling performed, collected water levels from each well						
Monitoring Date: June 1, 2001							
MW-1	131.67	3146.44	ND	ND	ND	ND	ND
MW-2	121.95	3148.34	ND	ND	ND	ND	ND
MW-3	142.65	3132.06	*	*	*	*	*
MW-4	173.06	3111.12	ND	ND	ND	ND	ND
Remarks:	*Not Sampled - did not have sufficient amount of groundwater in the well						
Monitoring Date: October 10, 2001							
MW-1	132.35	3145.76	9.63	**0.0012**	ND	ND	ND
MW-2	120.81	3149.48	54.3	ND	ND	ND	ND
MW-3	110.31	3164.40	72.7	ND	ND	ND	ND
MW-4	168.2	3115.98	23.60	ND	ND	ND	ND
Remarks:							

APPENDIX A

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:

Pogo Producing Company

Certificate of Analysis Number:

01100575

Report To:		Project Name:	Pogo/McMillan 24 State#1/1650
Highlander Environmental Corp		Site:	Eddy CO,NM
Ike Tavarez		Site Address:	
1910 N. Big Spring Street			
Midland		PO Number:	
Texas		State:	New Mexico
79705-		State Cert. No.:	
ph: (915) 682-4559	fax: (915) 682-3946	Date Reported:	10/24/01

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

11/6/01

Paul Neschich
Senior Project Manager

Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Pogo Producing Company

Certificate of Analysis Number:

01100575

Report To:	Highlander Environmental Corp Ike Tavarez 1910 N. Big Spring Street Midland Texas 79705- ph: (915) 682-4559 fax: (915) 682-3946	**Project Name:**	Pogo/McMillan 24 State#1/1650
		Site:	Eddy CO,NM
		Site Address:	
		PO Number:	
		State:	New Mexico
		State Cert. No.:	
Fax To:	*Highlander Environmental Corp* *Ike Tavarez* *fax: (915) 682-3946*	**Date Reported:**	10/24/01

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	01100575-01	Water	10/10/01 2:10:00 PM	10/13/01 11:30:00 AM		☐
MW-2	01100575-02	Water	10/10/01 3:35:00 PM	10/13/01 11:30:00 AM		☐
MW-3	01100575-03	Water	10/10/01 1:05:00 PM	10/13/01 11:30:00 AM		☐
MW-4	01100575-04	Water	10/10/01 4:45:00 PM	10/13/01 11:30:00 AM		☐

11/6/01

Paul Neschich
Senior Project Manager

Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID MW-1 **Collected:** 10/10/01 2:10:00 **SPL Sample ID:** 01100575-01

Site: Eddy CO,NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/L**		
Chloride	9.63		1	1		10/22/01 14:00	CV	873301
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/L**		
Benzene	ND		1	1		10/19/01 23:25	D_R	870565
Ethylbenzene	ND		1	1		10/19/01 23:25	D_R	870565
Toluene	ND		1	1		10/19/01 23:25	D_R	870565
Xylenes,Total	ND		1	1		10/19/01 23:25	D_R	870565
Surr: 4-Bromofluorobenzene	102	%	48-156	1		10/19/01 23:25	D_R	870565
Surr: 1,4-Difluorobenzene	94.2	%	72-137	1		10/19/01 23:25	D_R	870565

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID MW-2 **Collected:** 10/10/01 3:35:00 **SPL Sample ID:** 01100575-02

Site: Eddy CO,NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/L**		
Chloride	54.3		1	1		10/22/01 14:00	CV	873304
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/L**		
Benzene	ND		1	1		10/20/01 1:32	D_R	870715
Ethylbenzene	ND		1	1		10/20/01 1:32	D_R	870715
Toluene	ND		1	1		10/20/01 1:32	D_R	870715
Xylenes,Total	ND		1	1		10/20/01 1:32	D_R	870715
Surr: 4-Bromofluorobenzene	99.4	%	48-156	1		10/20/01 1:32	D_R	870715
Surr: 1,4-Difluorobenzene	95.2	%	72-137	1		10/20/01 1:32	D_R	870715

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID MW-3 **Collected:** 10/10/01 1:05:00 **SPL Sample ID:** 01100575-03

Site: Eddy CO,NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/L**		
Chloride	72.7		1	1		10/22/01 14:00	CV	873305
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/L**		
Benzene	ND		1	1		10/20/01 1:57	D_R	870716
Ethylbenzene	ND		1	1		10/20/01 1:57	D_R	870716
Toluene	ND		1	1		10/20/01 1:57	D_R	870716
Xylenes,Total	ND		1	1		10/20/01 1:57	D_R	870716
Surr: 4-Bromofluorobenzene	101	%	48-156	1		10/20/01 1:57	D_R	870716
Surr: 1,4-Difluorobenzene	96.0	%	72-137	1		10/20/01 1:57	D_R	870716

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID MW-4 **Collected:** 10/10/01 4:45:00 **SPL Sample ID:** 01100575-04

Site: Eddy CO,NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/L**		
Chloride	23.6		1	1		10/22/01 14:00	CV	873306
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/L**		
Benzene	1.2		1	1		10/20/01 2:23	D_R	870717
Ethylbenzene	ND		1	1		10/20/01 2:23	D_R	870717
Toluene	ND		1	1		10/20/01 2:23	D_R	870717
Xylenes,Total	ND		1	1		10/20/01 2:23	D_R	870717
Surr: 4-Bromofluorobenzene	88.1	%	48-156	1		10/20/01 2:23	D_R	870717
Surr: 1,4-Difluorobenzene	97.6	%	72-137	1		10/20/01 2:23	D_R	870717

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

Quality Control Documentation

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Pogo Producing Company

Pogo/McMillan 24 State#1/1650

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 01100575
Lab Batch ID: R45826

Method Blank

RunID: HP_U_011019B-870571 Units: ug/L
Analysis Date: 10/19/2001 11:29 Analyst: D_R

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01100575-01A	MW-1

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	94.2	72-137
Surr: 4-Bromofluorobenzene	79.0	48-156

Laboratory Control Sample (LCS)

RunID: HP_U_011019B-870570 Units: ug/L
Analysis Date: 10/19/2001 10:38 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	53	106	70	130
Ethylbenzene	50	53	106	70	130
Toluene	50	55	109	70	130
Xylenes,Total	150	163	109	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01100701-01
RunID: HP_U_011019B-870556 Units: ug/L
Analysis Date: 10/19/2001 18:46 Analyst: D_R

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	96	20	120	119	20	120	100	17.0	21	32	164
Ethylbenzene	25	20	49	121	20	48	115	5.35	19	52	142
Toluene	ND	20	25	127	20	25	127	0.207	20	38	159
Xylenes,Total	ND	60	78	130	60	74	123	5.26	18	53	144

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Pogo Producing Company

Pogo/McMillan 24 State#1/1650

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 01100575
Lab Batch ID: R45833

Method Blank

RunID: HP_U_011020A-870714 Units: ug/L
Analysis Date: 10/20/2001 1:07 Analyst: D_R

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01100575-02A	MW-2
01100575-03A	MW-3
01100575-04A	MW-4

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	95.3	72-137
Surr: 4-Bromofluorobenzene	101.8	48-156

Laboratory Control Sample (LCS)

RunID: HP_U_011020A-870713 Units: ug/L
Analysis Date: 10/20/2001 0:41 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	52	103	70	130
Ethylbenzene	50	52	103	70	130
Toluene	50	53	105	70	130
Xylenes,Total	150	152	101	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01100698-01
RunID: HP_U_011020A-870721 Units: ug/L
Analysis Date: 10/20/2001 18:53 Analyst: D_R

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	1.1	20	20	94.4	20	21	102	7.33	21	32	164
Ethylbenzene	ND	20	18	91.9	20	20	98.0	6.50	19	52	142
Toluene	ND	20	20	99.6	20	21	104	3.95	20	38	159
Xylenes,Total	ND	60	58	96.7	60	61	102	5.04	18	53	144

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Pogo Producing Company

Pogo/McMillan 24 State#1/1650

Analysis: Chloride, Total
Method: E325.3
WorkOrder: 01100575
Lab Batch ID: R45965A

Method Blank

Run ID: WET_011022H-873286 Units: mg/L
Analysis Date: 10/22/2001 14:00 Analyst: CV

Analyte	Result	Rep Limit
Chloride	ND	1.0

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01100575-01B	MW-1
01100575-02B	MW-2
01100575-03B	MW-3
01100575-04B	MW-4

Laboratory Control Sample (LCS)

RunID: WET_011022H-873288 Units: mg/L
Analysis Date: 10/22/2001 14:00 Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	76.2	77.1	101	90	110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01100575-01
RunID: WET_011022H-873302 Units: mg/L
Analysis Date: 10/22/2001 14:00 Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	9.6	50	59.5	99.8	50	59.5	99.8	0	20	85	115

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

10/24/01 12:27:07 PM

Sample Receipt Checklist

And

Chain of Custody

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	01100575	Received By:	NB
Date and Time Received:	10/13/01 11:30:00 AM	Carrier name:	FedEx
Temperature:	4	Chilled by:	Water Ice

1.	Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
2.	Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑	
3.	Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑	
4.	Chain of custody present?	Yes ☑	No ☐		
5.	Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
6.	Chain of custody agrees with sample labels?	Yes ☑	No ☐		
7.	Samples in proper container/bottle?	Yes ☑	No ☐		
8.	Sample containers intact?	Yes ☑	No ☐		
9.	Sufficient sample volume for indicated test?	Yes ☑	No ☐		
10.	All samples received within holding time?	Yes ☑	No ☐		
11.	Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		
12.	Water - VOA vials have zero headspace?	Yes ☑	No ☐	Not Applicable ☐	
13.	Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐	

SPL Representative: _____ **Contact Date & Time:** _____

Client Name Contacted: _____

Non Conformance Issues: _____

Client Instructions: _____

01109575

Analysis Request and Chain of Custody Record

PAGE: 1 OF: 1

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Pogo Producing

SITE MANAGER: IKE TAVAREZ

PROJECT NO.: 1650

PROJECT NAME: POGO/McMillan 24 State #1 - Eddy CO, NM

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 418.1 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 608/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Chloride
	10/10/01	2:10 p.m.	W			MW-1	3				✓		X																X	X
	↓	3:35 p.m.	W			MW-2	3				✓		X																X	
		1:05 p.m.	W			MW-3	3				✓		X																X	
		4:45 p.m.	W			MW-4	3				✓		X																X	
																													4C	

RELINQUISHED BY: (Signature) Jim Armentrout — Date: 10/12/01 Time: _____

RECEIVED BY: (Signature) _____ Date: _____ Time: _____

SAMPLED BY: (Print & Sign) Jim Armentrout — Date: 10/12/01 Time: _____

RELINQUISHED BY: (Signature) _____ Date: _____ Time: _____

RECEIVED BY: (Signature) _____ Date: _____ Time: _____

SAMPLE SHIPPED BY: (Circle)
FEDEX BUS AIRBILL # _____
HAND DELIVERED UPS OTHER: _____

RELINQUISHED BY: (Signature) _____ Date: _____ Time: _____

RECEIVED BY: (Signature) _____ Date: _____ Time: _____

RECEIVING LABORATORY: SPL
ADDRESS: _____
CITY: _____ STATE: _____ ZIP: _____
CONTACT: _____ PHONE: _____

RECEIVED BY: (Signature) Christine Bashaw
DATE: 10/12/01 TIME: 1130

HIGHLANDER CONTACT PERSON: IKE TAVAREZ

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS:

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

2R - 31

REPORTS

DATE:

SEPT. 17. 2001

Highlander Environmental Corp.

Midland, Texas

September 17, 2001

Mr. Michael C. Stubblefield
Environmental Bureau
Oil Conservation Division
Drawer DD
Artesia, New Mexico 88240

RE: Subsurface Investigation for the Well Blowout Located at the Pogo McMillan 24 State #1, Eddy County, New Mexico

Dear Mr. Stubblefield:

Highlander Environmental Corp. (Highlander) was contacted by Pogo Producing Company (Pogo) to assess the impact from a well blowout, which occurred at the Pogo McMillan 24 State #1 in Eddy County, New Mexico. The Site is located in Section 24, Township 20 South, Range 26 East. The Site is shown in Figure 1.

Background

The well blowout occurred at the Site on April 12, 2001. During the initial blowout, the fluids that were not contained on location (drilling mud, produced water and condensate) flowed off the site and down an unnamed dry wash south of the location a distance of approximately 1250'. The dry wash spill was contained and was no more that 5' wide at any point in the dry wash. No estimate has been made as to the total amount of fluid the well produced during the blowout; however, the amount of fluid that was spilled in the dry wash was estimated at less than 25 bbl. This area was initially remediated by tilling peat moss and fertilizer into the affected soils.

Trench and berm containments were constructed on the west (Trench #1) and south sides (Trench #2) of the location to control the runoff of fluids from the well. The majority of the condensate and water migrated to the west edge of the pad into Trench #1 and a small amount flowed into Trench #2. The fluid was immediately pumped into an open, lined pit located west of the Site using both vacuum trucks and trash pumps. A third trench (Trench #3) was dug approximately 200' south of the location to be used as an overflow pit during fire fighting operations. Trench #1 was breached during the wellhead cutting operations, allowing approximately 3 bbl. of fluid to flow to Trench #3. The flow was redirected into Trench #2 to avoid collecting fluid in Trench #3.

A flare pit was constructed on the east end of Trench #3 to be used when the well flow was diverted and controlled. During flaring operations, a small amount of emulsified condensate and water was washed over the back of the flare pit and flowed down the dry wash a distance of

approximately 300'. The flow was discovered within minutes and was diverted to Trench #3. It was estimated that less than 5 bbl. of fluid was spilled into the dry wash. This area was immediately remediated by tilling peat moss and fertilizer.

After the rig was removed from the well, the fire was extinguished and gas, produced water and condensate were discharged into the air. Due to shifting winds, three major overspray areas occurred. Most of fluids fell into the reserve pit and onto the well location and were captured. The offsite overspray affected three areas that are northwest, east and southwest of the well. The areas of offsite impact are estimated to cover approximately 9 acres. The well was brought under control on April 18, 2001. The locations of the containment trenches are shown in Figure 2.

Regulatory

According to published data, groundwater in the area of the Site is sparse. The published data indicated that historically, groundwater in the vicinity of the Site was found at a depth of approximately 120 feet below the surface. During a field reconnaissance, two abandoned windmills were found west and southwest of the Site. These wells were both dry and each measured an approximate total depth of 130 feet below the surface. A total of four monitor wells were installed at the Site. Groundwater was encountered at depths ranging from 121' to 173' below the surface.

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene and xylene). Based on the regional groundwater data, the proposed recommended remedial action level (RRAL) for TPH is 5,000 mg/kg.

Surface Remediation

As discussed in the Workplan dated April 30, 2001, the overspray areas, inside the firebreak, have been tilled and fertilized. An estimated 5 acres of contaminated overspray area (north of pad, north of fire break, and east of pad) were brush hogged. The surface spills around the well pad were immediately tilled and fertilized. The open trenches (T-1, T-2 and T-3) and flare pit, used for fluid containment, required further evaluation for closure. The saturated soil encountered in the bottom of the trenches would be excavated and remediated (landfarmed) onsite. The subsurface investigation consisted of installing four (4) monitor wells to evaluate the groundwater qualities. In addition, two boreholes were installed in Trench #1 (T-1) to define the vertical extent of impact.

Based on the investigation, the soil samples collected from the trenches flare pit, drywash and soil stockpiles were all below the New Mexico Oil Conservation Division RRAL for TPH and BTEX. The open trenches at the Site have been backfilled. The locations of the investigated areas are shown in Figure 2. A discussion of each area is summarized below. Selected soil samples

collected were analyzed for total petroleum hydrocarbon (TPH) by method EPA 418.1, benzene, toluene, ethylbenzene and xylene (BTEX) by method SW 846-8020 and chloride by method SW846-9252. The laboratory reports are shown in Appendix B.

Boreholes Installation

From April 20, 2001 to April 26, 2001, Highlander personnel supervised the installation of six (6) boreholes at the Site. Four (4) of the boreholes were converted to monitor wells. The location of the wells and boreholes are shown in Figure 2. Two (2) boreholes (BH-5 and BH-6), not converted to monitor wells, were installed west of the pad in Trench #1. The soil sample results of the monitor wells/boreholes are discussed in the monitor well section of the report. Boreholes (BH-5 and BH-6) are discussed in the trench (T-1) section of the report.

During the installation of boreholes and monitor wells, soil samples were collected during rotary drilling operations using a split spoon sampler or core barrel sampler. During sample collection, a portion of each soil sample was placed into a clean plastic sample bag and sealed. After a short period of time at ambient temperature storage, the concentration of organic vapors in the headspace of the sample bag was measured with a Thermo Environmental Instruments, Model 580B, Organic Vapor Meter (OVM). The OVM is a photoionization detection instrument that measures the total ionizable hydrocarbon content of the soil headspace gas. The borehole logs are shown in Appendix A.

The splitspoon and core barrel samplers were washed between boreholes and sampling events using potable water and laboratory grade detergent. All down hole equipment (i.e., drill rods, drill bits, etc.) was thoroughly decontaminated between each use with a high-pressure hot water wash and rinse. Soil cuttings from drilling will be stockpiled adjacent to the well until disposal is arranged. Following the completion of the drilling activities, all boreholes were grouted to surface.

Trench #1 (T-1)

The trench (T-1) measured approximately 80'x 120'. The trench was located on the west edge of the well pad and was used to control the runoff of fluids from the well. Prior to the borehole installation, the bottom of the trench was excavated to remove all visible impact from the trench to a depth of approximately 3-4' below surface. Approximately 500 cubic yards of soil was removed from the area, blended and fertilized. The soil was stockpiled for sampling and a total of eight (8) composite samples were collected from the stockpiles. The borehole locations and stockpiles are shown in Figure 3.

On April 26, 2001, two boreholes (BH-5 and BH-6) were installed to a depth of 32 feet below the bottom of the trench. Soil samples were collected at five-foot intervals and screened with an OVM. OVM levels were all less than 10 ppm. The borehole logs are shown in Appendix A. Referring to Table 1, the soil samples selected from the boreholes showed TPH levels that ranged from 10 mg/kg to 15 mg/kg. In addition, BTEX levels were all below the RRAL. The chloride detected in the boreholes ranged from 127 mg/kg to 661 mg/kg and do not appear to be an environmental concern.

Referring to Table 2, the stockpiles showed TPH levels ranging from 620 mg/kg to 3,700 mg/kg. Three soil samples were analyzed for BTEX evaluation and detected traces of toluene, ethylbenzene and xylene. The chloride concentrations detected ranged from 322 mg/kg to 830 mg/kg. Based on the results, the TPH and BTEX were all below the RRAL. The chloride levels detected do not appear to be an environmental concern. The stockpiles were used to backfill Trench #1.

Trench (T-2)

The trench (T-2) measured approximately 5'x 280' at a depth of 2' to 3' below surface. The trench was located on the south edge of the well pad and retained small amount of fluids from the well. The bottom of the trench (T-2) was excavated to a depth ranging from 3' to 13' below surface. The trench bottom was segregated into four areas for sampling. Each bottom area measured approximately 5'x70'. Deeper impact (13') was encountered in Area 2. Approximately 450 cubic yards of soil was removed from the trench. The soil stockpiles were worked and fertilized. The stockpile was then segregated into thirteen (13) stockpiles, less than 50 cubic yards each, for composite sampling. The trench area and soil stockpiles are shown in Figure 4.

On May 9 and 16, 2001, composite samples were collected from the bottom of the trench (Area 1, Area 2, Area 3 and Area 4). Referring to Table 3, the TPH levels were 190 mg/kg, 25 mg/kg, 1,800 mg/kg and 4,400 mg/kg, respectively. One samples (Area 1) was analyzed for BTEX and did not exceed the method detection limit. Samples from Area 1 and Area 2 were selected for chloride evaluation and detected 50.8 mg/kg and 33.9 mg/kg, respectively. The TPH and BTEX results were below the RRAL.

On May 16, 2001, composite samples were collected from the thirteen (13) stockpiles. Referring to Table 2, the soil stockpiles showed TPH levels ranging from 470 mg/kg to 2,200 mg/kg. Four soil samples were analyzed for BTEX evaluation and detected traces of toluene, ethylbenzene and xylene. The chloride concentrations detected ranged from 93.3 mg/kg to 169 mg/kg. The TPH and BTEX were all below the RRAL. The chloride levels detected were not elevated and do not appear to be an environmental concern. The soil stockpile was used to backfill Trench #2.

Trench (T-3)

Trench (T-3) measured approximately 6'x 800' at a depth of 5-6' below surface. The trench was located approximately 200 feet south of the well. The trench was segregated in to four areas (Area 1, Area 2, Area 3 and Area 4) for composite sampling. The trench and sample locations are shown in Figure 5. On May 16, 2001, four composite samples were collected from the bottom of the trench. Referring to Table 3, the TPH results showed levels ranging from 2,700 mg/kg to 3,800 mg/kg. The sample with the highest TPH was selected for BTEX analysis. The TPH and BTEX levels detected were all below the RRAL. The chloride concentrations detected at the bottom of the trench were elevated. The chloride ranged from 5,250 mg/kg to 7,120 mg/kg. Based on the chloride levels, the vertical extent of the impact needed to be further defined.

On June 1, 2001, a total of four test trenches were installed at the bottom of each area to define the vertical extent of the chloride impact. Samples were collected using a backhoe. Referring to Table 3, Area 1 showed a chloride level of 9,740 mg/kg at 3.0', which decreased to 1,660 mg/kg at 8.0' below the trench bottom. One sample was collected from Area 2 at 2.0' and showed a chloride of 7,460 mg/kg. Deeper samples could not be obtained due to the dense limestone encountered during the trenching. Area 3 and Area 4 show a decreasing chloride level with depth. The shallow samples at 2' and 3' showed chloride levels of 10,000 mg/kg and 7,790 mg/kg. However, the chloride levels at 6.0' decreased to 271 mg/kg and 966 mg/kg, respectively. Based on the investigation, the chloride impact appears to be shallow and showed a significant reduction with depth. The trench was backfilled with the original soil.

Flare Pit Area

The flare pit area measured approximately 25'x 50' at a depth of 3.5' below surface. The flare pit was located east of Trench #3 and used when the well flow was diverted and controlled. Prior to sampling, the flare pit bottom was excavated to a depth of 5' below surface. One composite sample at 5.0' was collected from the bottom of the flare pit. The west sidewall of the flare pit was excavated and appeared to have only surface impact. Approximately 170 cubic yards was excavated from the flare pit area. The soil stockpiles were blended and fertilized. Composite soil samples were collected from four (4) stockpiles, one stockpile from the Flare pit bottom and three stockpiles from the Flare west sidewall. The flare pit and stockpiles are shown in Figure 5.

On May 16, 2001, a composite sample was collected from the bottom of the flare pit. Referring to Table 4, the bottom sample showed a TPH of 480 mg/kg and the BTEX analysis detected trace amounts of ethylbenzene and xylene. The TPH and BTEX were all below the RRAL. The chloride level was 847 mg/kg and does not appear to be an environmental concern.

All four stockpiles were below the RRAL for TPH and BTEX. Referring to Table 4, the flare pit stockpile showed a TPH of 490 mg/kg and traces of BTEX levels. The chloride level was 847 mg/kg. The flare pit west sidewall stockpiles #1, #2 and #3 detected a TPH level of 400 mg/kg, 6,000 mg/kg and 830 mg/kg, respectively. The TPH and BTEX analysis were below the RRAL with the exception of stockpile #2, which exceeded the RRAL for TPH. The flare pit west sidewall stockpile #2 was blended and fertilized. On June 1, 2001, stockpile #2 was resampled for TPH and BTEX. The results showed a TPH of 840 mg/kg and traces of BTEX below the RRAL.

Dry wash Area

During the initial blowout, the fluids that were not contained on location (drilling mud, produced water and condensate) flowed off the site and down an unnamed dry wash south of the location a distance of approximately 1250'. The dry wash spill was contained and was no more that 5' wide at any point in the dry wash. This area was immediately remediated by tilling peat moss and fertilizer into the affected soils.

On July 6, 2001, composite samples were collected from the dry wash area. The dry wash was segregated into five (5) areas for sampling. Each area measured approximately 250' in length. Referring to Table 4, the TPH detected ranged from 400 mg/kg to 4,800 mg/kg. The two samples with the highest TPH were selected for BTEX evaluation and showed traces of toluene, ethylbenzene and xylene. The TPH and BTEX were below the RRAL. The chloride levels detected, ranged from 1,050 mg/kg to 2,030 mg/kg.

Monitor Well Installation

From April 20, 2001 to April 26, 2001, Highlander supervised the installation of (4) four monitor wells at the Site. During the installation of the wells, soil samples were collected to evaluate the subsurface conditions. The soil samples were screened with an OVM at selected depths and detected levels ranging from 0 ppm to 1 ppm. Soil samples were also collected for chloride evaluation at selected depths. Referring to Table 1, the detectable chloride levels ranged from 16.9 mg/kg to 25.4 mg/kg. The chloride levels detected do not show impact in the vicinity of the wells.

The monitor wells were constructed using two-(2) inch diameter schedule 40 PVC threaded casing and factory slotted screen. The wells were constructed with 0.020-millslot screens and surrounded with graded silica sand to a depth 3 feet above the screen. A layer of bentonite pellets, 3 feet thick, was placed in the borehole above the sand. The remainder of the annulus was filled with cement and bentonite grout to about one (1) foot below ground. The wells were secured with a locking steel protector anchored in a concrete pad measuring approximately 3 feet by 3 feet. The wells were surveyed for elevation and location. The survey plat is shown in Appendix A. The well construction details are shown in Table 5.

The well construction logs and lithologic descriptions are in Appendix A. During the installation of the wells, each well drilled dry and did not appear to encounter groundwater. It appears the groundwater at the Site may be sparse. The wells were completed and allowed time for the limited groundwater to collect.

On April 26, 2001, water levels measurements were collected from each well. Referring to Table 5, the monitor wells that were found to have groundwater, showed static water levels of 129.30' in MW-1 and 143.98' in MW-2. Monitor wells MW-3 and MW-4 were dry and required additional time for the groundwater to seep into the wells. On June 1, 2001, water levels were collected from the monitor wells and showed MW-1 (131.67'), MW-2 (121.95'), MW-3 (142.65') and MW-4 (173.06'). Based on depth-to-groundwater measurements from monitor wells installed at the Site from June 1, 2001, groundwater occurs at depths of approximately 121 to 173 feet below ground surface (BGS). The Site water levels from the monitor wells are shown in Table 5. The regional groundwater flow is generally from the northwest to the southeast, however, the Site groundwater gradient shows a southwest to northeast trend. Figure 6 presents a groundwater potentiometric surface map for June 1, 2001.

On April 26, 2001, a grab sample was collected from MW-1 and MW-2 for chloride

evaluation. MW-3 and MW-4 were both dry during the sampling event. On May 2, 2001, the monitor wells (MW-1, MW-2 and MW-4) were purged and sampled for BTEX and chloride evaluation. Monitor well (MW-3) did not have sufficient amount of groundwater in the well to sample. The results of sampling are shown in Table 5. Referring to Table 5, the BTEX levels were below the method detection limit. The chloride levels detected in the wells do not indicate impact to the groundwater.

Conclusion

1. According to published data, groundwater in the area of the Site is sparse. The published data indicated that groundwater in the vicinity of the Site was found at a depth of approximately 120 feet below the surface. During a field reconnaissance, two abandoned windmills were found west and southwest of the Site. These wells were both dry and each measured an approximate total depth of 130 feet below the surface. A total of four monitor wells were installed at the Site. Groundwater was encountered at depths ranging from 121' to 173' below the surface. During the installation of the wells, each well drilled dry and did not appear to encounter groundwater. The wells were completed and allowed time for the limited groundwater to collect. The regional groundwater flow is generally from the northwest to the southeast, however, the Site groundwater flow shows a southwest to northeast trend.

2. A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene and xylene). Based on the regional groundwater data, the proposed recommended remedial action level (RRAL) for TPH is 5,000 mg/kg.

3. The overspray area, inside the firebreak, has been tilled and fertilized. An estimated 5 acres of overspray areas around the location (north of pad, north of fire break, and east of pad) were brush hogged. The surface spills around the well pad were immediately tilled and fertilized.

4. Trench #1 measured approximately 80'x 120'. The trench was located on the west edge of the well pad and was used to control the runoff of fluids from the well. Two boreholes (BH-5 and BH-6) were installed in the area to evaluate the subsurface soil and showed TPH and BTEX levels below the RRAL. The chloride detected in the boreholes and stockpiles do not appear to be an environmental concern. The trench area has been backfilled.

5. Trench #2 measured approximately 5'x 280' at a depth of 2' to 3' below surface. The trench was located on the south edge of the well pad. The bottom of the trench (T-2) was excavated to a depth ranging from 3' to 13' below surface. Deeper impact (13') was

encountered in Area 2. The trench bottom was segregated into four areas for sampling and each area measured a length of approximately 70' each. The TPH and BTEX levels were below the RRAL.

6. Trench #3 measured approximately 6'x 800' at a depth of 5-6' below surface. The trench was located approximately 200 feet south of the well. The trench was segregated in to four areas (Area 1, Area 2, Area 3 and Area 4) for sampling. The TPH and BTEX levels detected were all below the RRAL. The chloride concentrations detected at the bottom of the trench were elevated ranging from 5,250 mg/kg to 7,120 mg/kg. The additional investigation, revealed a shallow chloride impact to the subsurface soil.

7. Flare pit area measured approximately 25'x 50' at a depth of 3.5' below surface. The flare pit was located east of Trench #3 and was used when the well flow was diverted and controlled. Prior to sampling, the flare pit bottom was excavated to a depth of 5' below surface. One composite sample at 5.0' was collected from the bottom of the flare pit and showed TPH and BTEX levels below the RRAL. The chloride level was 847 mg/kg and does not appear to be an environmental concern.

8. A dry wash is located south of the well pad and the runoff from the blowout impacted the dry wash for a distance of approximately 1250'. The dry wash spill was contained and was no more than 5' wide. This area was remediated by tilling peat moss and fertilizer into the affected soils. The dry wash area was segregated into five (5) areas for sampling. Each area measured approximately 250' in length. The TPH and BTEX levels were below the RRAL. The chloride levels ranged from 1,050 mg/kg to 2,030 mg/kg.

9. The soil excavated from the Trench #1, #2 and the flare pits areas were worked and fertilized onsite. Approximately 500 cubic yards of soil was removed from Trench #1 and segregated into eight (8) stockpiles for sampling. The bottom of Trench #2 was excavated and included approximately 450 cubic yards of soil. The soil was segregated into thirteen (13) stockpiles for sampling. Approximately 170 cubic yards was excavated from the flare pit area and four (4) stockpiles were segregated for sampling. All samples for TPH and BTEX were below the RRAL.

10. On April 26, 2001, grab samples were collected from MW-1 and MW-2 for chloride evaluation. MW-3 and MW-4 were both dry during the sampling event. On May 2, 2001, monitor wells (MW-1, MW-2 and MW-4) were purged and sampled for BTEX and chloride evaluation. Monitor well (MW-3) did not have sufficient amount of groundwater in the well to sample. No BTEX levels were reported above the method detection limit. The chloride levels detected in the wells do not indicate impact to the groundwater at the Site.

Recommendation

1. The surface soil remediation performed (Trenches #1, #2 and #3), flare pit and dry wash have met the New Mexico Oil Conservation Division (NMOCD) guidelines for

Remediation of Leaks, Spills and Releases. The areas will not require any additional remediation. These areas will be included in the Site restoration activities.

2. The Site restoration activities on the disturbed areas around the well pad will consist of soil preparation and seeding. The seedbed preparation will be performed this year (2001) and the areas seeded in the late summer of next year (2002). The seed preparation will involve addition of cow manure (5-7 tons per acre) to the surface soil and disking. As recommended by the New Mexico State Land Office, the Site will than be seeded with an approved seeding mixture.

3. The overspray areas will be visually inspected to ensure vegetation growth has not been affected. The open lined pit, located west of the well, will be properly closed. During the well blowout, fluids were pumped into the lined pit using vacuum trucks and trash pumps. The fluids in the pit will be removed and disposed of properly. This area will be included in the restoration activities.

4. Pogo proposes to monitor the groundwater for one year on a quarterly basis. Samples will be collected from the four (4) monitor wells at the Site. The samples will be analyzed for BTEX and chloride evaluation. One annual report will be submitted on monitoring events and the progress on the Site restoration activities.

If you require any additional information or have any questions or comments concerning the report, please call.

Very truly yours,

Ike Tavarez
Project Manager/Geologist

Gary E. Miller
President

cc: Don Riggs – Pogo Producing Co.
Rex Jasper – Pogo Producing Co.
Jim Carr - New Mexico State Land Office
Roger Anderson – NMOCD, Santa Fe

FIGURES

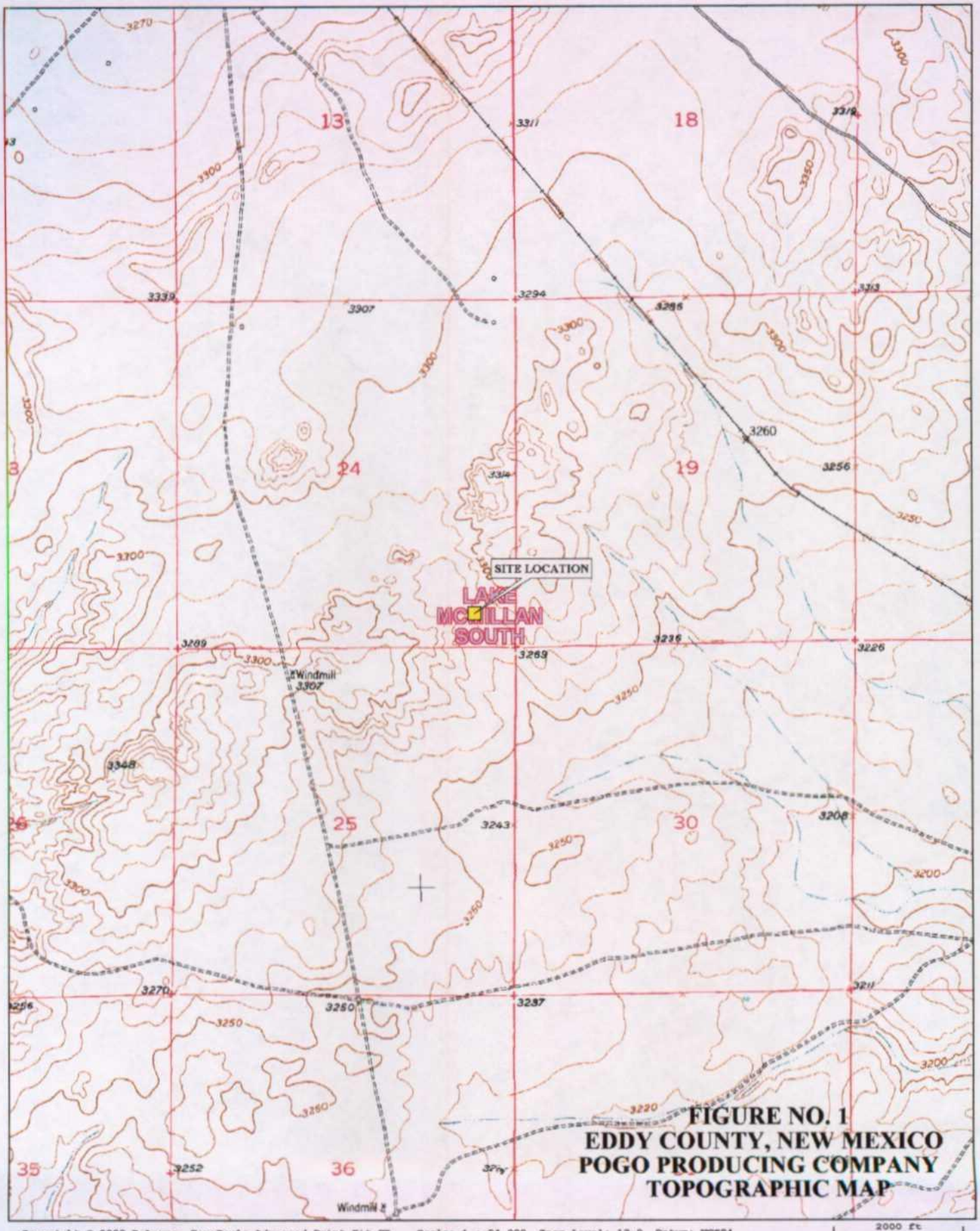
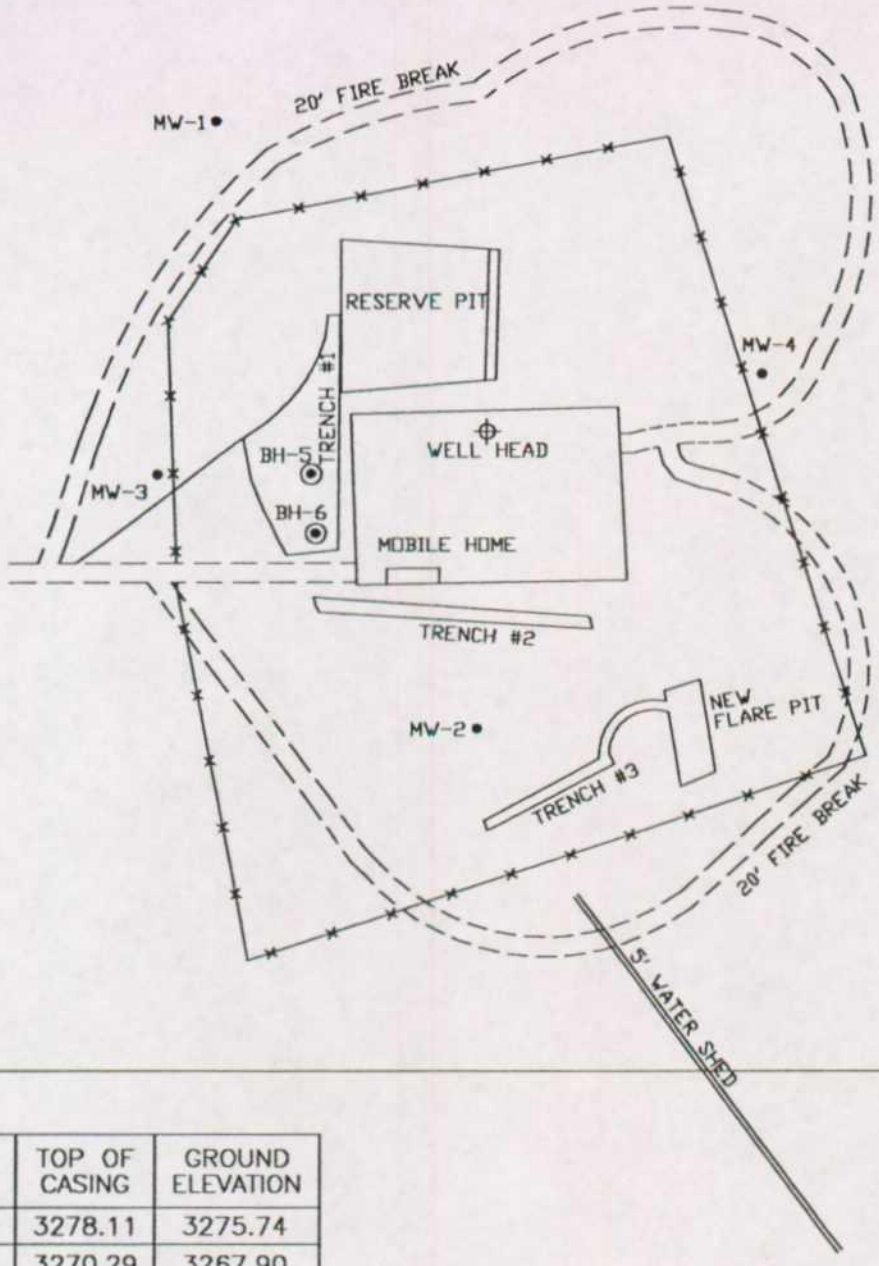


FIGURE NO. 1
EDDY COUNTY, NEW MEXICO
POGO PRODUCING COMPANY
TOPOGRAPHIC MAP

 Scale: 1 : 24,000 Zoom Level: 13-0 Datum: WGS84



T-20-S, R-26-E | T-20-S, R-27-E

24 | 19

25 | 30

MONITOR WELL	TOP OF CASING	GROUND ELEVATION
MW-1	3278.11	3275.74
MW-2	3270.29	3267.90
MW-3	3274.71	3272.70
MW-4	3284.18	3282.00

● MONITOR WELL LOCATION

⊙ BOREHOLE LOCATIONS

200 0 200

DATE: 7/16/01

DWG. BY: JDA

FILE:

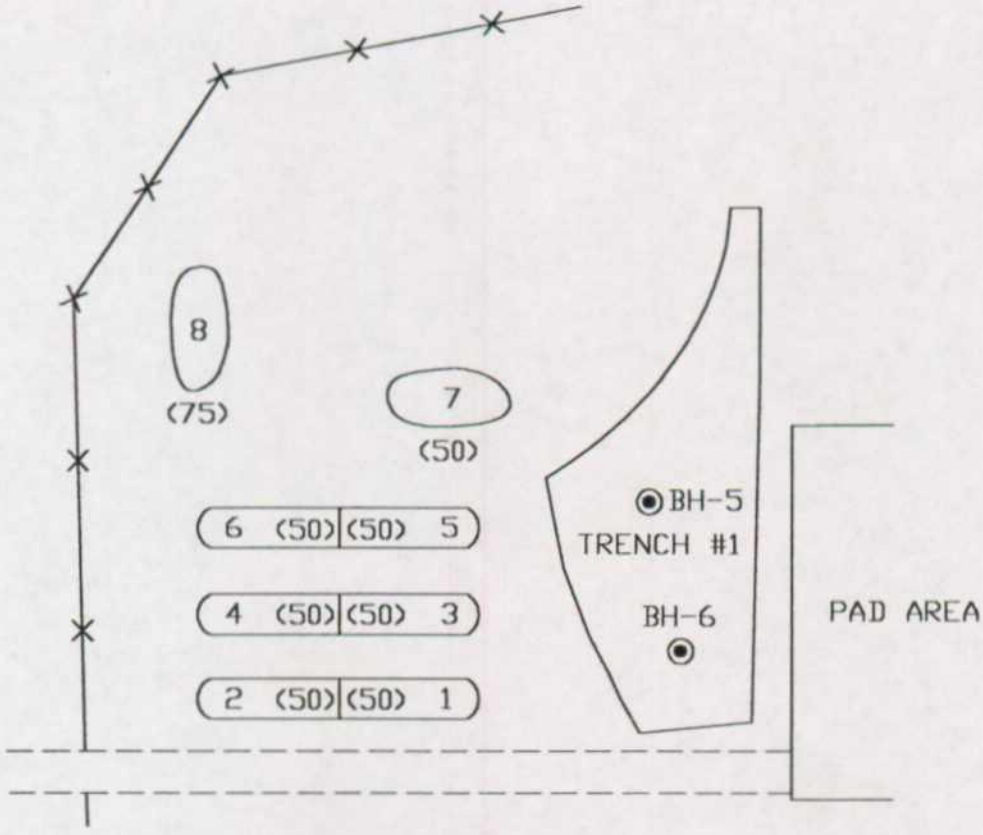
FIGURE NO. 2

EDDY COUNTY, NEW MEXICO

POGO PRODUCING COMPANY

WELL BLOWOUT
SITE PLAN
McMILLAN 24 STATE #1

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS



LEGEND

(50) - ESTIMATED YARDAGE

◉ BOREHOLE

NOT TO SCALE

DATE: 7/16/01

DWG. BY: JDA

FILE: G:\POGO\1800\ DWG-7-01

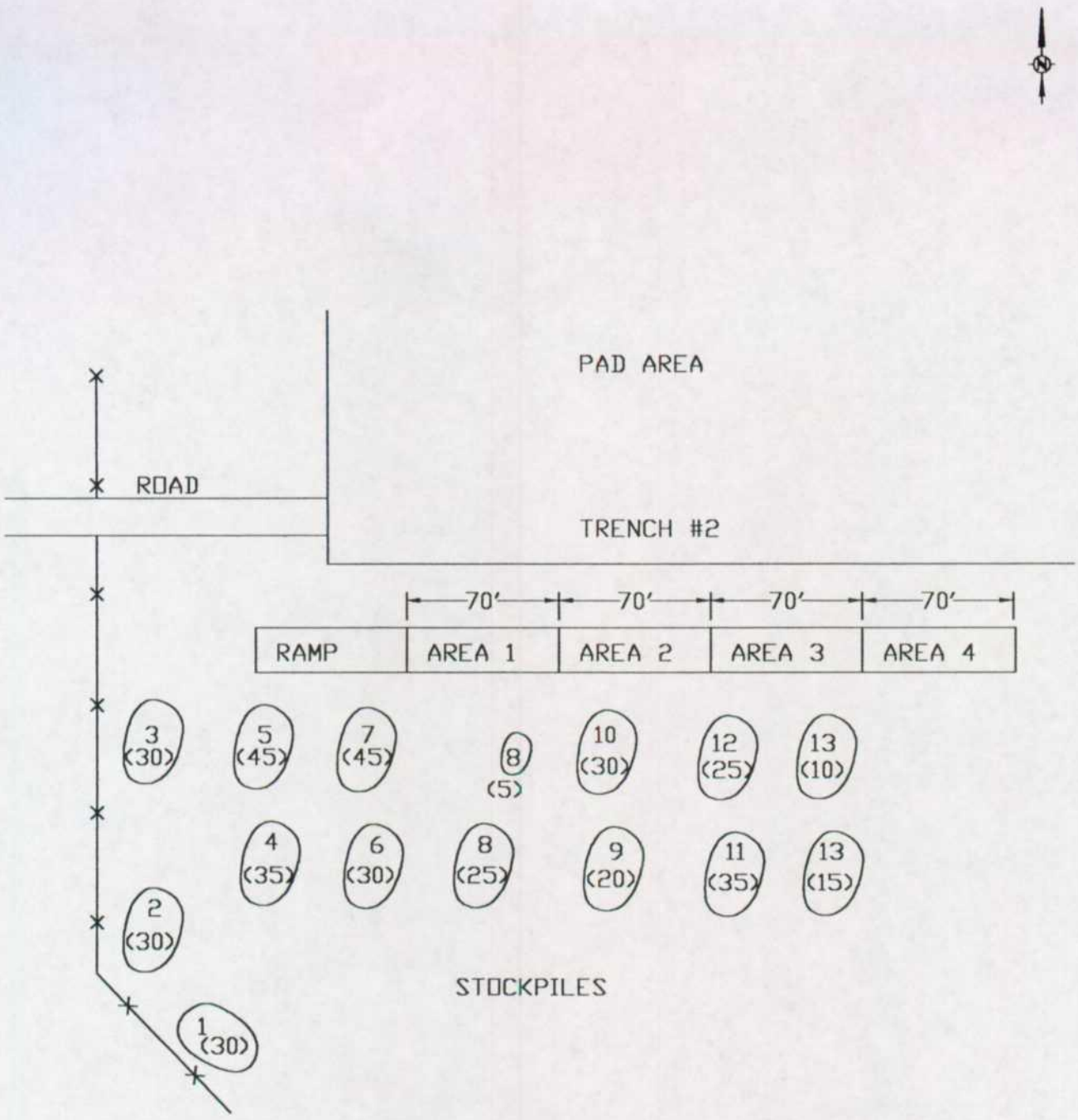
FIGURE NO. 3

EDDY COUNTY, NEW MEXICO

POGO PRODUCING COMPANY

WELL BLOWOUT
McMILLAN 24 STATE #1
TRENCH #1 & STOCK PILES

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS



LEGEND

(30) - ESTIMATED YARDAGE

NOT TO SCALE

FIGURE NO. 4

EDDY COUNTY, NEW MEXICO

POGO PRODUCING COMPANY

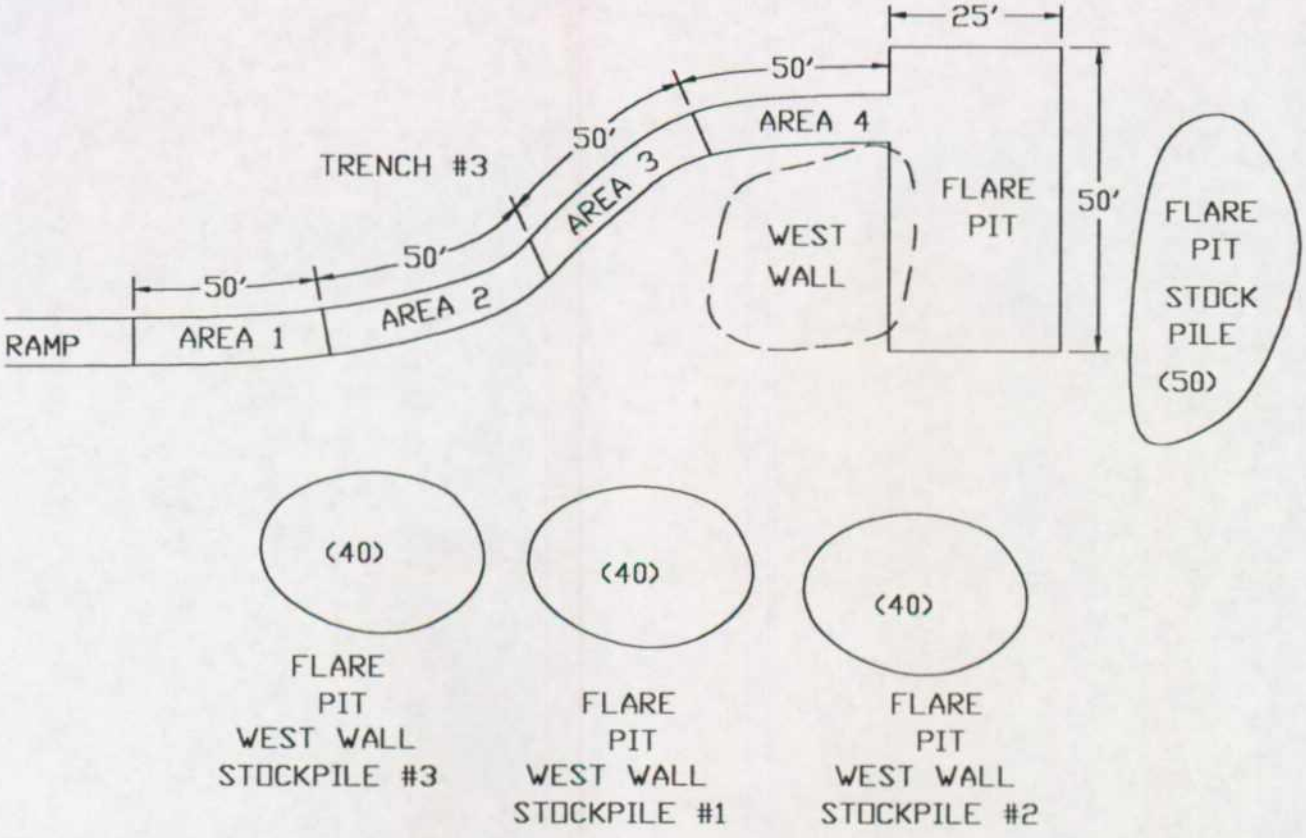
WELL BLOWOUT
McMILLAN 24 STATE #1
TRENCH #2 & STOCK PILES

DATE: 7/16/01

DRG. BY: JDA

FILE: C:\POGO\1602\TRENCH-2

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS



FLARE PIT WEST WALL STOCKPILE #3

FLARE PIT WEST WALL STOCKPILE #1

FLARE PIT WEST WALL STOCKPILE #2

LEGEND

(40) - ESTIMATED YARDAGE

NOT TO SCALE

FIGURE NO. 5

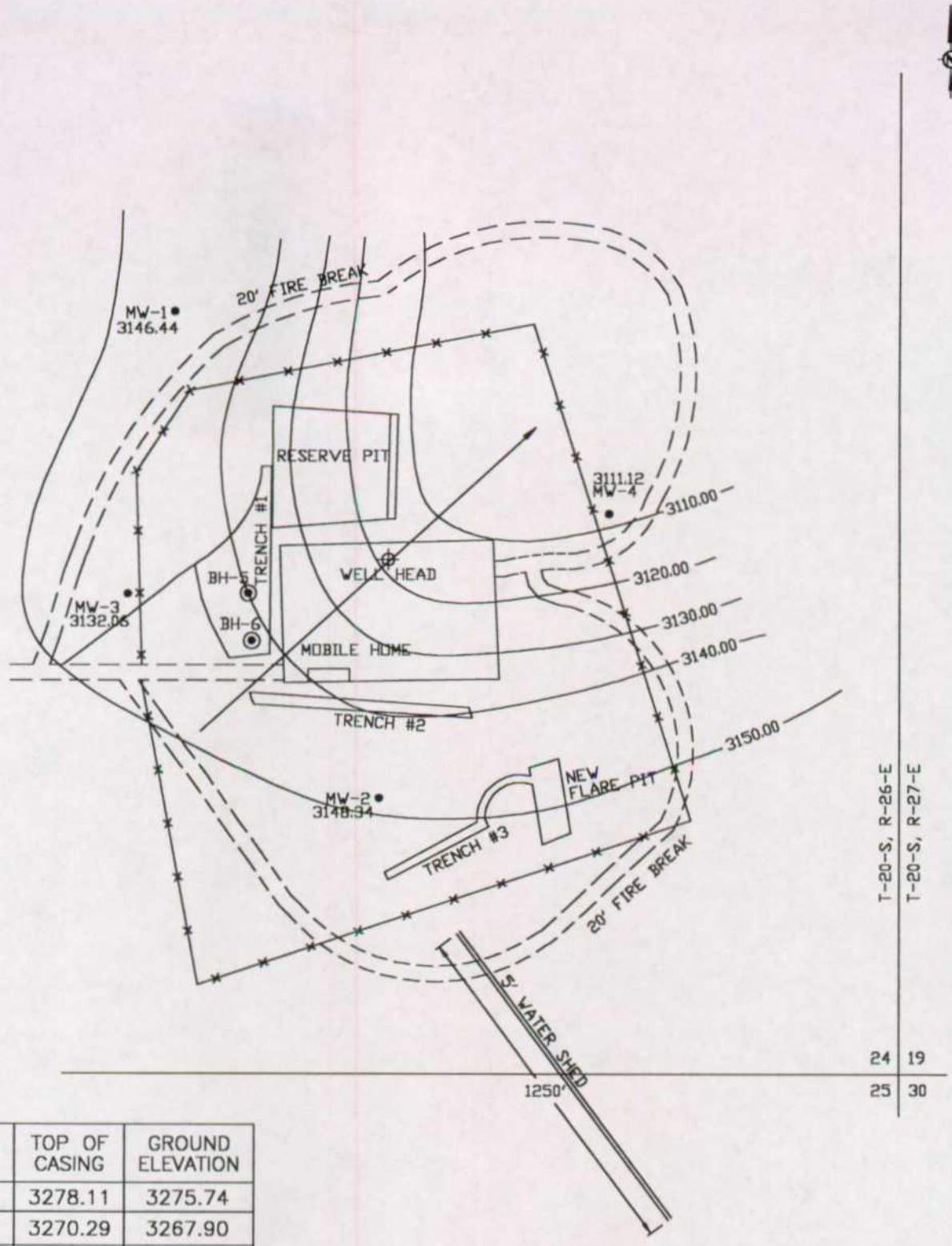
EDDY COUNTY, NEW MEXICO

POGO PRODUCING COMPANY

WELL BLOWOUT
McMILLAN 24 STATE #1
TRENCH #3 & STOCK PILES

DATE: 7/16/01
DWG. BY: JDA
FILE: C:\POGO\MMA TRENCH-2

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS



MONITOR WELL	TOP OF CASING	GROUND ELEVATION
MW–1	3278.11	3275.74
MW–2	3270.29	3267.90
MW–3	3274.71	3272.70
MW–4	3284.18	3282.00

● MONITOR WELL LOCATION

◉ BOREHOLE LOCATIONS

200 0 200

FIGURE NO. 6

EDDY COUNTY, NEW MEXICO

POGO PRODUCING COMPANY

WATER TABLE MAP
McMILLAN 24 STATE #1

DATE: 7/16/01
DWG. BY: JDA
FILE:

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

TABLES

Table 1: **Summary of Laboratory Analysis of Soil Samples and Ground water**
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

Sample ID	Depth (ft)	Date Collected	Benzene mg/Kg	Toluene mg/Kg	Ethylbenzene mg/Kg	Xylene mg/Kg	Total BTEX mg/Kg	TPH mg/Kg	Chloride mg/Kg
Boreholes (Monitor Wells)									
BH-1 (MW-1)	40-42	4/20/01	-	-	-	-	-	-	ND
BH-1 (MW-1)	50-52	4/20/01	-	-	-	-	-	-	ND
BH-2 (MW-2)	55-57	4/21/01	-	-	-	-	-	-	16.9
BH-2 (MW-2)	60-62	4/21/01	-	-	-	-	-	-	16.9
BH-3 (MW-3)	40-42	4/23/01	-	-	-	-	-	-	25.4
BH-3 (MW-3)	60-62	4/23/01	-	-	-	-	-	-	16.9
BH-4 (MW-4)	68-70	4/25/01	-	-	-	-	-	-	16.9
Trench #1 (boreholes)									
BH-5	5-7	4/26/01	ND	ND	ND	ND	ND	ND	271
BH-5	10-12	4/26/01	-	-	-	-	-	10	271
BH-5	15-17	4/26/01	-	-	-	-	-	50	424
BH-5	20-21	4/26/01	-	-	-	-	-	ND	254
BH-5	25-27	4/26/01	-	-	-	-	-	-	288
BH-5	30-32	4/26/01	-	-	-	-	-	10	186
BH-6	5-7	4/26/01	1.7	4.8	1.1	19.6	27.2	10	186
BH-6	10-12	4/26/01	-	-	-	-	-	10	661
BH-6	15-17	4/26/01	-	-	-	-	-	10	237
BH-6	20-21	4/26/01	-	-	-	-	-	15	390
BH-6	25-27	4/26/01	-	-	-	-	-	-	127
BH-6	30-32	4/26/01	-	-	-	-	-	10	322

Notes: All analysis performed by SPL - Houston, Texas

1. mg/Kg: Denotes concentration in milligrams per kilogram
2. -: Not analyzed
3. ND: Not Detected, below method detection limit
4. TPH : Total Petroleum Hydrocarbon (method -418.1)

Table 2: **Summary of Laboratory Analysis of Soil Samples**
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

Sample ID	Depth (ft)	Date Collected	Benzene ug/Kg	Toluene ug/Kg	Ethylbenzene ug/Kg	Xylene ug/Kg	Total BTEX ug/Kg	TPH mg/Kg	Chloride mg/Kg
Trench #1 Stockpiles									
T-1 Stockpile #1	-	5/16/01	-	-	-	-	-	760	322
T-1 Stockpile #2	-	5/16/01	-	-	-	-	-	2,000	-
T-1 Stockpile #3	-	5/16/01	ND	190	67	680	937	3,700	474
T-1 Stockpile #4	-	5/16/01	ND	ND	35	529	564	2,900	-
T-1 Stockpile #5	-	5/16/01	ND	ND	10	33	43	2,600	830
T-1 Stockpile #6	-	5/16/01	-	-	-	-	-	620	-
T-1 Stockpile #7	-	5/16/01	-	-	-	-	-	1,800	610
T-1 Stockpile #8	-	5/16/01	-	-	-	-	-	1,300	-
Trench #2 Stockpiles									
T-2 Stockpile #1	-	5/16/01	-	-	-	-	-	1,500	127
T-2 Stockpile #2	-	5/16/01	ND	1.3	ND	1.4	2.7	2,200	-
T-2 Stockpile #3	-	5/16/01	-	-	-	-	-	1,800	153
T-2 Stockpile #4	-	5/16/01	ND	ND	ND	3.3	3.3	1,900	-
T-2 Stockpile #5	-	5/16/01	-	-	-	-	-	1,100	110
T-2 Stockpile #6	-	5/16/01	-	-	-	-	-	1,400	-
T-2 Stockpile #7	-	5/16/01	ND	4.3	ND	4.3	8.6	2,000	169
T-2 Stockpile #8	-	5/16/01	-	-	-	-	-	1,200	-
T-2 Stockpile #9	-	5/16/01	-	-	-	-	-	1,100	136
T-2 Stockpile #10	-	5/16/01	-	-	-	-	-	1,700	-
T-2 Stockpile #11	-	5/16/01	-	-	-	-	-	1,100	102
T-2 Stockpile #12	-	5/16/01	ND	2.1	ND	3.5	5.6	2,000	-
T-2 Stockpile #13	-	5/16/01	-	-	-	-	-	470	93.2

Notes: All analysis performed by SPL - Houston, Texas

1. mg/Kg: Denotes concentration in milligrams per kilogram
2. ug/Kg: Denotes concentration in micrograms per kilogram
3. -: Not analyzed
4. ND: Not Detected, below method detection limit
5. TPH : Total Petroleum Hydrocarbon (method -418.1)

Table 3: **Summary of Laboratory Analysis of Soil Samples**
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

Sample ID	Depth (ft)	Date Collected	Benzene ug/Kg	Toluene ug/Kg	Ethylbenzene ug/Kg	Xylene ug/Kg	Total BTEX ug/Kg	TPH mg/Kg	Chloride mg/Kg
Trench #2 (bottom)									
T-2 (Area 1)	10	5/16/01	-	-	-	-	-	190	50.8
T-2 (Area 2)	13	5/16/01	-	-	-	-	-	25	33.9
T-2 (Area 3)	3	5/9/01	-	-	-	-	-	1,800	-
T-2 (Area 4)	2	5/9/01	-	-	-	-	-	4,400	-
Trench #3 (bottom)									
T-3 (Area 1)	5	5/16/01	-	-	-	-	-	3,700	-
T-3 (Area 2)	5	5/16/01	ND	730	1,200	12,800	14,730	3,800	5,250
T-3 (Area 3)	5	5/16/01	-	-	-	-	-	3,400	7,290
T-3 (Area 4)	5	5/16/01	-	-	-	-	-	2,700	7,120
Trench #3 Test Trench									
Area 1	3	6/1/01	-	-	-	-	-	-	9,740
Area 1	6	6/1/01	-	-	-	-	-	-	6,780
Area 1	8	6/1/01	-	-	-	-	-	-	1,660
Area 2	2	6/1/01	-	-	-	-	-	-	7,460
Area 3	3	6/1/01	-	-	-	-	-	-	10,000
Area 3	6	6/1/01	-	-	-	-	-	-	271
Area 4	2	6/1/01	-	-	-	-	-	-	7,790
Area 4	6	6/1/01	-	-	-	-	-	-	966

Notes: All analysis performed by SPL - Houston, Texas

1. mg/Kg: Denotes concentration in milligrams per kilogram
2. ug/Kg: Denotes concentration in micrograms per kilog
3. -: Not analyzed
4. ND: Not Detected, below method detection limit
5. TPH : Total Petroleum Hydrocarbon (method -418.1)

Table 4: **Summary of Laboratory Analysis of Soil Samples**
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

Sample ID	Depth (ft)	Date Collected	Benzene ug/Kg	Toluene ug/Kg	Ethylbenzene ug/Kg	Xylene ug/Kg	Total BTEX ug/Kg	TPH mg/Kg	Chloride mg/Kg
Drywash Area									
Area 1	0-1	6/1/01	ND	16	22	140	178	4,800	1,050
Area 2	0-1	6/1/01	-	-	-	-	-	1,200	2,370
Area 3	0-1	6/1/01	-	-	-	-	-	400	2,030
Area 4	0-1	6/1/01	ND	ND	ND	7.5	7.5	3,900	2,030
Area 5	0-1	6/1/01	-	-	-	-	-	2,800	1,150
Flare Pit Bottom									
Flare Pit Bottom	5-6	5/16/01	ND	ND	5.9	11	16.9	480	847
Flare Pit Stockpile		6/1/01	ND	ND	7.7	49	56.7	490	847
Flare Pit Area: Westwall Stockpiles									
Stockpile #1		5/16/01	-	-	-	-	-	400	491
Stockpile #2		5/16/01	33	ND	350	1,930	2,313	6,000	491
Stockpile #2		6/1/01	ND	ND	9.8	ND	9.8	840	-
Stockpile #3		6/1/01	ND	ND	5.4	30.6	36	830	-

Notes: All analysis performed by SPL - Houston, Texas

1. mg/Kg: Denotes concentration in milligrams per kilogram
2. ug/Kg: Denotes concentration in micrograms per kilogram
3. -: Not analyzed
4. ND: Not Detected, below method detection limit
5. TPH : Total Petroleum Hydrocarbon (method -418.1)

Table 5
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

Soil Boring/ Monitor Well	Date Drilled	Drilled Depth Feet, BGS	Ground Elev. Feet, MSL	TOC Elev. Feet, MSL	Well Diameter Inches	Well Screen Feet/BGS
MW-1	4/20/01	140.00	3275.74	3278.11	2	120.0-140.0
MW-2	4/21/01	165.00	3267.90	3270.29	2	145.0-165.0
MW-3	4/23/01	150.00	3272.70	3274.71	2	130.0-150.0
MW-4	4/25/01	180.00	3282.00	3284.18	2	140.0-180.0

Soil Boring/ Monitor Well	Depth-to-Ground Water Feet (TOC) 4/26/01	Depth-to-Ground Water Feet (TOC) 6/1/01
MW-1	129.30	131.67
MW-2	143.98	121.95
MW-3	Dry	142.65
MW-4	Dry	173.06

Monitor Well	Date Sampled	Benzene (mg/l)	Ethyl-benzene (mg/l)	Toluene (mg/l)	Xylene (mg/l)	Chloride (mg/l)
MW-1	4/26/01	-	-	-	-	13.6
MW-2	4/26/01	-	-	-	-	13.6
*MW-3	4/26/01	Dry	Dry	Dry	Dry	Dry
*MW-4	4/26/01	Dry	Dry	Dry	Dry	Dry

Monitor Well	Date Sampled	Benzene (mg/l)	Ethyl-benzene (mg/l)	Toluene (mg/l)	Xylene (mg/l)	Chloride (mg/l)
MW-1	5/2/01	ND	ND	ND	ND	14.4
MW-2	5/2/01	ND	ND	ND	ND	45.8
*MW-3	5/2/01	-	-	-	-	-
MW-4	5/2/01	ND	ND	ND	ND	35.60

(*)	No sample collected - did not have sufficient amount of ground water in the well
ND	Not Detected
(TOC)	Top of casing
(-)	Not Analyzed

PHOTOGRAPHIC DOCUMENTATION

Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

1. View of Trench #1 - pumping saltwater and oil to offsite pit.

2. Trench #1 - pumping saltwater and oil to offsite pit.

PHOTOGRAPHIC DOCUMENTATION
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

3. Trench #1 - pumping saltwater and oil to offsite pit.

4. Trench #1 - after fluids pumped out of trench.

PHOTOGRAPHIC DOCUMENTATION
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

5. Trench #1 - soil excavation and remediation.

6. Trench #1 - soil excavation and remediation.

PHOTOGRAPHIC DOCUMENTATION
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

7. Trench #1 - excavated area.

8. Trench #1 - excavated area and stockpiles.

PHOTOGRAPHIC DOCUMENTATION
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

9. Trench #1 - stockpiled soil.

10. Trench #1 - installation of boreholes (BH-5 and BH-6).

PHOTOGRAPHIC DOCUMENTATION
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

11. Trench #1 - installation of boreholes (BH-5 and BH-6).

12. Trench #2 - fluids in trench during blowout.

PHOTOGRAPHIC DOCUMENTATION
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

13. Trench #2 - fluids in trench during blowout.

14. Trench #2 - soil excavation and remediation.

PHOTOGRAPHIC DOCUMENTATION
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

15. Trench #2 - soil excavation and remediation.

16. Trench #2 - stockpiles.

PHOTOGRAPHIC DOCUMENTATION
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

17. Trench #2 - stockpiles.

18. View of Trench #3 - fluids in trench during blowout.

PHOTOGRAPHIC DOCUMENTATION
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

19. View of Trench #3 - fluids in trench during blowout.

20. View of Trench #3 - excavation.

PHOTOGRAPHIC DOCUMENTATION
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

21. View of Flare Pit - excavation.

22. View of Dry Wash Area - before soil blending.

PHOTOGRAPHIC DOCUMENTATION
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

23. Dry Wash - soil remediation, tilling in fertilizer and peat moss.

24. Dry Wash - soil remediation, tilling in fertilizer and peat moss.

PHOTOGRAPHIC DOCUMENTATION
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

25. Dry Wash - soil remediation, after tilling.

26. North view of overspray area after brush hog work.

PHOTOGRAPHIC DOCUMENTATION
Pogo Producing Company
McMillan 24 State #1
Eddy County, New Mexico

27. Northeast view of overspray area after brush hog work.

28. View of overspray - southwest of well pad.

APPENDIX A

SAMPLE LOG

Boring/Well: BH-1 (MW-1)
Project /No.: 1650
Site Location: McMillan 24 State #1
Drilling Date: 4/20/01
Total Depth Borehole: 200'
Total Depth Monitor well: 140'

Sample Depth (ft)	OVM (ppm)	Sample Description
0-8	-	Tan, fine grain sand to silty sand, trace of caliche and limestone
8-17	-	White and gray, limestone, broken and porous formation, some white gypsum, dense
17-25	-	Reddish, silty sandy/clay, layers of greenish dense clay, streaks of dense limesone and caliche
25-27	0	Reddish, silty sand, trace of clay
30-32	0	Reddish, silty /clay
35-37	0	Reddish, silty/clay, some layers of fine grain sand, damp at 35-36'
40-42	0	Reddish, silty/clay and yellowish fine grain sand, damp
50-52	0	Reddish, silty/ clay, trace small layers of limestone
53-85	-	White and gray, limestone and gypsum layers, dense, small layer of red clay encountered at 73' and 83'
85-134	-	Reddish, dense limestone layer, some gray and white layer of limestone
134-136	-	Tan, fine grain sand, loose, damp
136-140	-	White and gray, dense limestone
140-150	-	Layers of white and gray limestone/gypsum and silty sand to clay matrix
150-160	-	152-155' silty clay (dry), white and gray limestone/gypsum, dense
160-183	-	White and gray, dense limestone
183-200	-	Reddish, clay (dry), small streaks of dense limestone

SS - splitspoon

SAMPLE LOG

Boring/Well: BH-2 (MW-2)
Project /No.: 1650
Site Location: McMillan 24 State #1
Drilling Date: 4/23/01
Total Depth Borehole: 165'
Total Depth Monitor well: 165'

Sample Depth (ft)	OVM (ppm)	Sample Description
0-5	-	Tan, fine grain sand to silty sand, trace of caliche and limestone
5-7	0	Tan, fine grain sand to silty sand, trace of caliche and limestone 7.0' dense, porous limestone, gray
10-12	1	White and gray, limestone, broken and porous formation, some white gypsum, dense, losing air circulation
20-50	-	White and gray, limestone, broken and porous formation, some white gypsum, dense, losing air circulation, silty/clay at 50'
50-55	-	Reddish, silty sandy/clay, layers of greenish dense clay, streaks or small layers of dense limesone/gypsum
55-57	0	Reddish, silty sand/clay, damp, dense layer limestone at 55'
60-62	0	Reddish, silty /clay, becoming sandy with depth, small streaks of dense limestone
62-73	-	Reddish, silty /clay, becoming sandy with depth, small streaks of dense limestone
73-83	-	Reddish, silty/clay and yellowish fine grain sand, damp small streaks of dense limestone
83-125		White and gray, limestone/gypsum, dense, small layer of silty/clay
125-145	-	Reddish, dense limestone layer, some gray and white layer of limestone, streaks of reddish silty/clay, encountering clay at 145'
145-155	-	Tan, fine grain sand, loose, damp at 151'-154'
155-164	-	Reddish, silty/clay and clay, dry
164-165	-	White and gray, dense limestone

SS - splitspoon

SAMPLE LOG

Boring/Well: BH-3 (MW-3)
Project /No.: 1650
Site Location: McMillan 24 State #1
Drilling Date: 4/24/01
Total Depth Borehole: 150'
Total Depth Monitor well: 150'

Sample Depth (ft)	OVM (ppm)	Sample Description
0-5	-	Tan, fine grain sand to silty sand, trace of caliche and limestone
5-7	-	Tan, fine grain sand to silty sand, trace of caliche and limestone
10-12	1	Tan, fine grain sand to silty sand, trace of caliche and limestone porous limestone encountered at 14.0'
14-20	-	White and gray, limestone, broken and porous formation,
20-22	0	White and gray, limestone, broken and porous formation, some white gypsum, dense
22-28	-	White and gray, limestone, broken and porous formation, some white gypsum, dense
28-40	-	Reddish, silty sandy/clay and brown clay layers streaks or small layers of dense limestone/gypsum
40-42	0	Reddish-tan, silty sandy/clay and brown clay layers,' streaks or small layers of dense limestone/gypsum
42-69	-	Reddish-tan, silty sandy/clay and brown clay layers, damp at 49'-65' streaks or small layers of dense limestone/gypsum
69-130	-	White and gray, limestone/gypsum, dense, small layer of silty/clay and clay layers (115'-117' and 127'-129'), Trace of reddish limestone
130-145	-	Reddish, silty /clay, becoming sandy with depth, damp 140-142' thin layers of dense limestone and gypsum
145-150	-	White and gray, limestone/gypsum, dense, small layer of silty/clay, dry

SS - splitspoon

SAMPLE LOG

Boring/Well: BH-4 (MW-4)
Project /No.: 1650
Site Location: McMillan 24 State #1
Drilling Date: 4/25/01
Total Depth Borehole: 200'
Total Depth Monitor well: 180'

Sample Depth (ft)	OVM (ppm)	Sample Description
0-7	-	Tan, fine grain sand to silty sand, trace of caliche and limestone some sandy clay at 5-7'
7-12	-	White and gray, limestone, some broken and porous formation, some white gypsum, dense
12-25	-	White and gray, limestone, some broken, becoming porous with depth, sandy/clay encountered at 19'-22'
20-22	0	Reddish sandy/clay, traces of limestone
25-35	-	White and gray, limestone, broken and porous formation, some white gypsum, dense, becoming softer with depth
35-50	-	Reddish, silty /clay, some layer of dense limestone/gypsum
50-65	-	Layers of white and gray limestone/gypsum and silty sand to clay matrix layers
65-67	-	Reddish, silty/clay and some fine grain sand, damp at 67'-68'
68-70	0	Reddish, fine grain sand, brown clay at 70'
70-85	-	Reddish, fine grain sand, trace of clay matrix, damp at 73'-85'
85-110	-	White and gray, limestone and gypsum layers, dense, fractured and porous formation,
110-150	-	White and gray, limestone, dense
150-165	-	White and gray, limestone, dense, reddish limestone 160'
165-180	-	Reddish dense limestone, sandy/clay 165'-168' (dry)
180-200	-	White, limestone/gypsum, dense

SS - splitspoon

SAMPLE LOG

Boring/Well: BH-5 **Project /No.: 1650**
Area: West of well pad (Trench #1)

Site Location: McMillan 24 State #1 **Drilling Date: 4/26/01**

Total Depth Borehole: 32'

Sample Depth (ft)	OVM (ppm)	Sample Type	Sample Description
0-5	-	-	Tan, fine grain sand to silty sand, trace of caliche and limestone
5-7	0	SS	Tan, fine grain sand to silty sand, trace of caliche and limestone at 7'
10-12	1	SS	Gray, limestone, dense, broken layer and silty/clay 50%-50%
15-17	7	SS	Gray, limestone, dense, broken layer and silty/clay 50%-50%
20-21	2	SS	White and gray, limestone, some broken, streak of silty/clay
25-27	0	SS	Brown clay and yellowish very fine grain sand, streaks of dense limestone
30-32	0	SS	Reddish/brown, silty/clay, some fine grain sand

SS - splitspoon

SAMPLE LOG

Boring/Well: BH-6 **Project /No.: 1650**
Area: West of well pad (Trench #1)

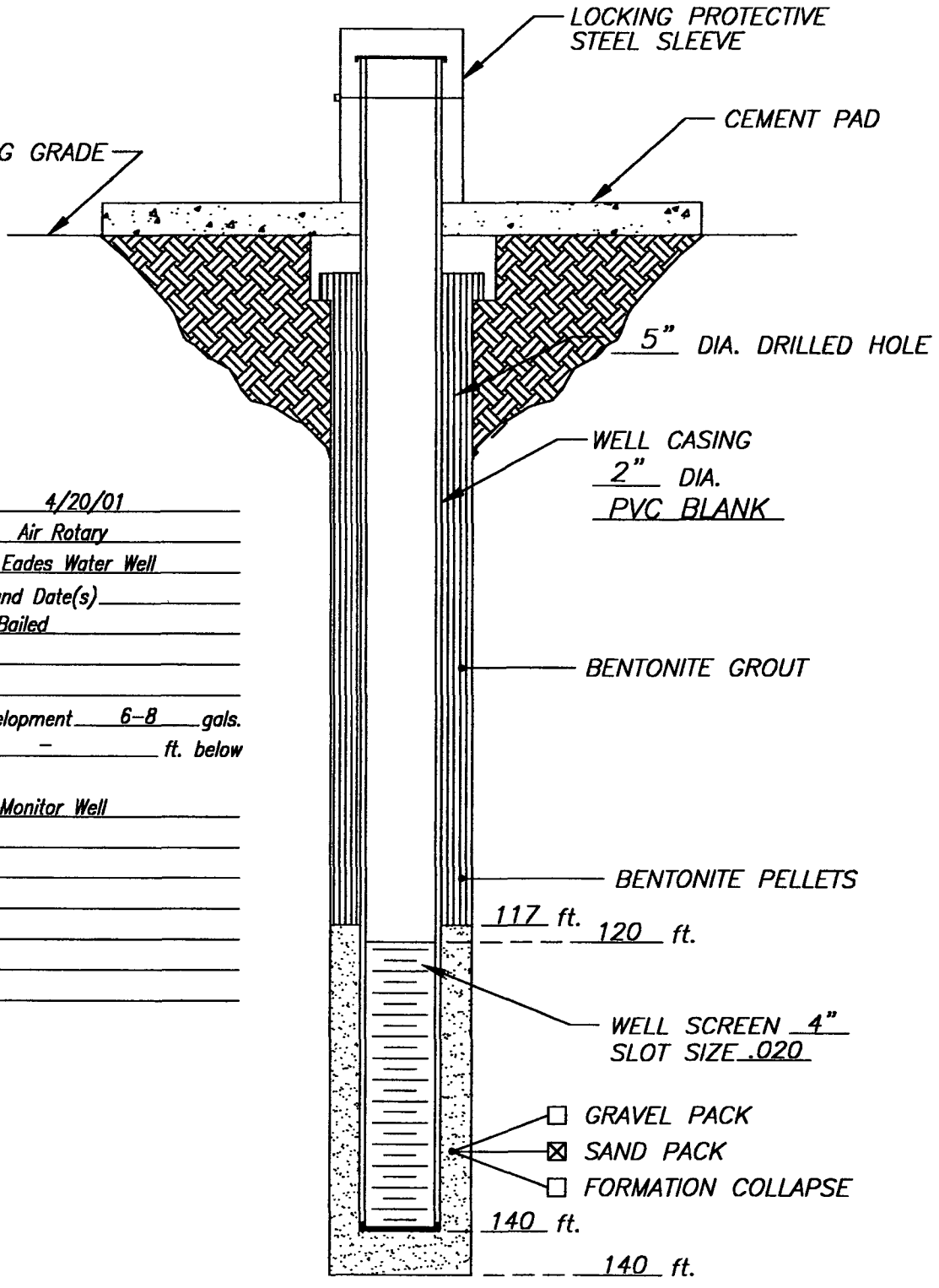
Site Location: McMillan 24 State #1 **Drilling Date: 4/26/01**

Total Depth Borehole: 32'

Sample Depth (ft)	OVM (ppm)	Sample Type	Sample Description
0-5	-	-	Tan, fine grain sand to silty sand, trace of caliche and limestone
5-7	0	SS	Tan, fine grain sand to silty sand, trace of caliche and limestone at 7'
10-12	2	SS	Gray, limestone, dense, broken layer and silty/clay 50%-80%
15-17	0	SS	Gray, limestone, dense, broken layer and silty/clay 50%-50% dense limestone at 18'
20-21	0	SS	White and gray, limestone, some broken, streak of silty/clay clay matrix at 23'
25-27	0	SS	Brown clay and yellowish very fine grain sand, streaks of dense limestone broken limestone at 28'-29'
30-32	0	SS	Reddish/brown, silty/clay, some fine grain sand

SS - splitspoon

WELL CONSTRUCTION LOG



Installation Date(s) 4/20/01
Drilling Method Air Rotary
Drilling Contractor Eades Water Well
Development Technique(s) and Date(s) Hand Bailed

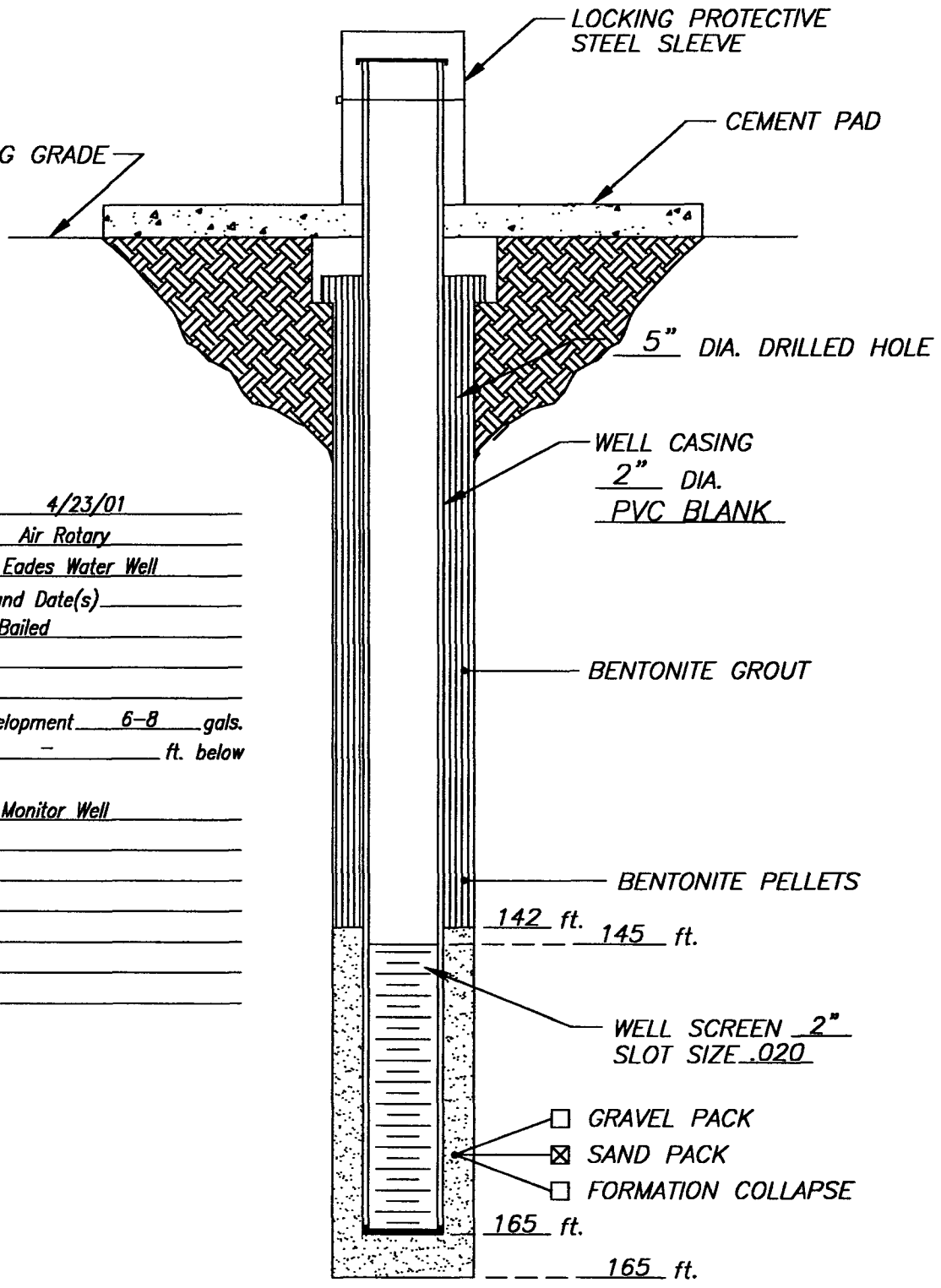
Water Removed During Development 6-8 gals.
Static Depth to Water - ft. below Ground Level
Well Purpose Monitor Well

Remarks

DATE: 4/20/01	CLIENT: Pogo Producing Company PROJECT: McMillan 24 State #1 LOCATION: Eddy County, New Mexico	WELL NO. MW-1

Highlander Environmental

WELL CONSTRUCTION LOG



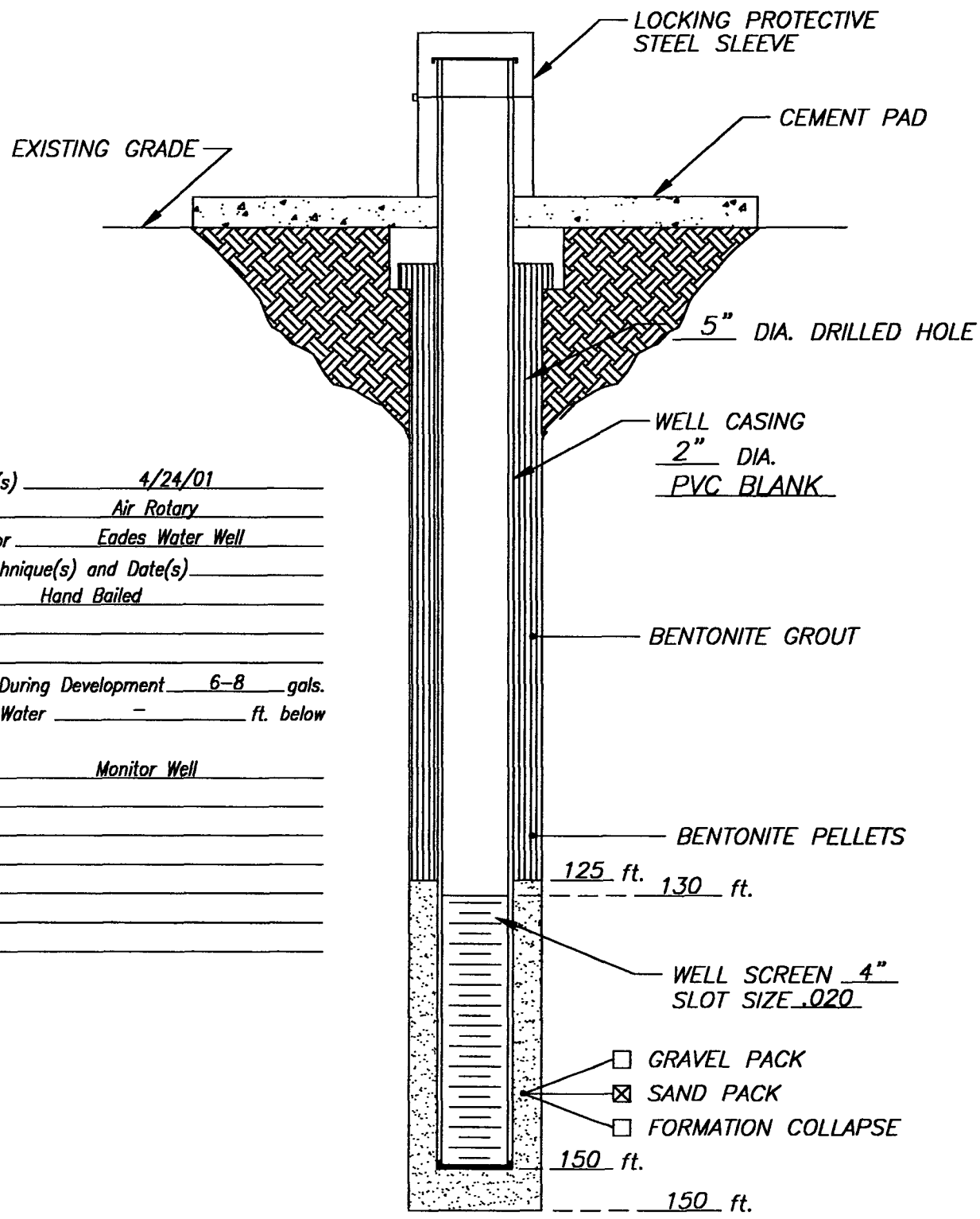
Installation Date(s) 4/23/01
Drilling Method Air Rotary
Drilling Contractor Eades Water Well
Development Technique(s) and Date(s)
Hand Bailed

Water Removed During Development 6-8 gals.
Static Depth to Water – ft. below Ground Level
Well Purpose Monitor Well

Remarks

DATE: 4/20/01	CLIENT: Pogo Producing Company	WELL NO.
Highlander Environmental	PROJECT: McMillan 24 State #1	MW-2
	LOCATION: Eddy County, New Mexico	

WELL CONSTRUCTION LOG



Installation Date(s) 4/24/01
Drilling Method Air Rotary
Drilling Contractor Eades Water Well
Development Technique(s) and Date(s) Hand Bailed

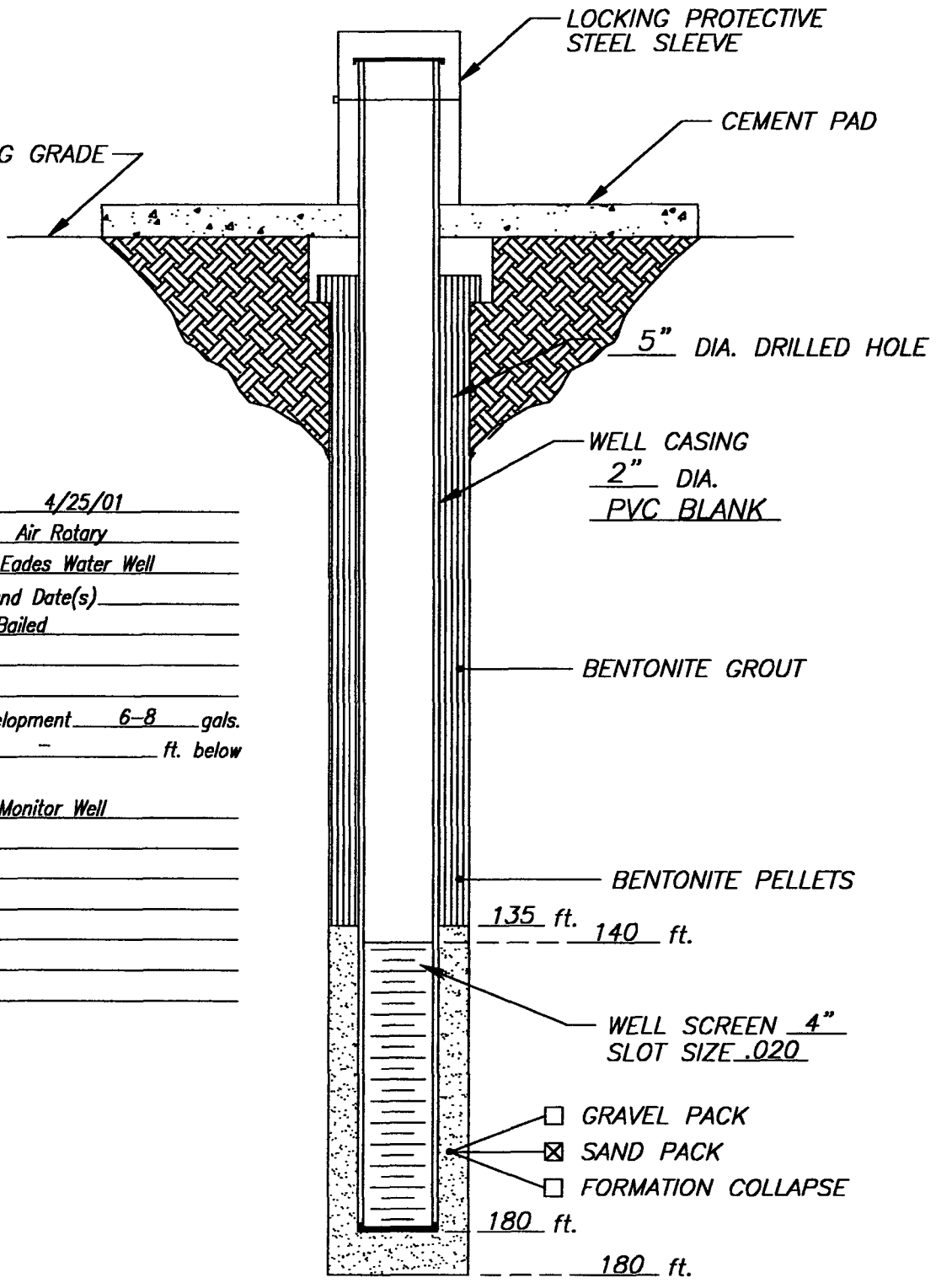
Water Removed During Development 6-8 gals.
Static Depth to Water - ft. below Ground Level
Well Purpose Monitor Well

Remarks

DATE: 4/24/01	CLIENT: Pogo Producing Company PROJECT: McMillan 24 State #1 LOCATION: Eddy County, New Mexico	WELL NO. MW-3

Highlander Environmental

WELL CONSTRUCTION LOG



Installation Date(s) 4/25/01
Drilling Method Air Rotary
Drilling Contractor Eades Water Well
Development Technique(s) and Date(s) Hand Bailed

Water Removed During Development 6-8 *gals.*
Static Depth to Water – *ft. below Ground Level*
Well Purpose Monitor Well

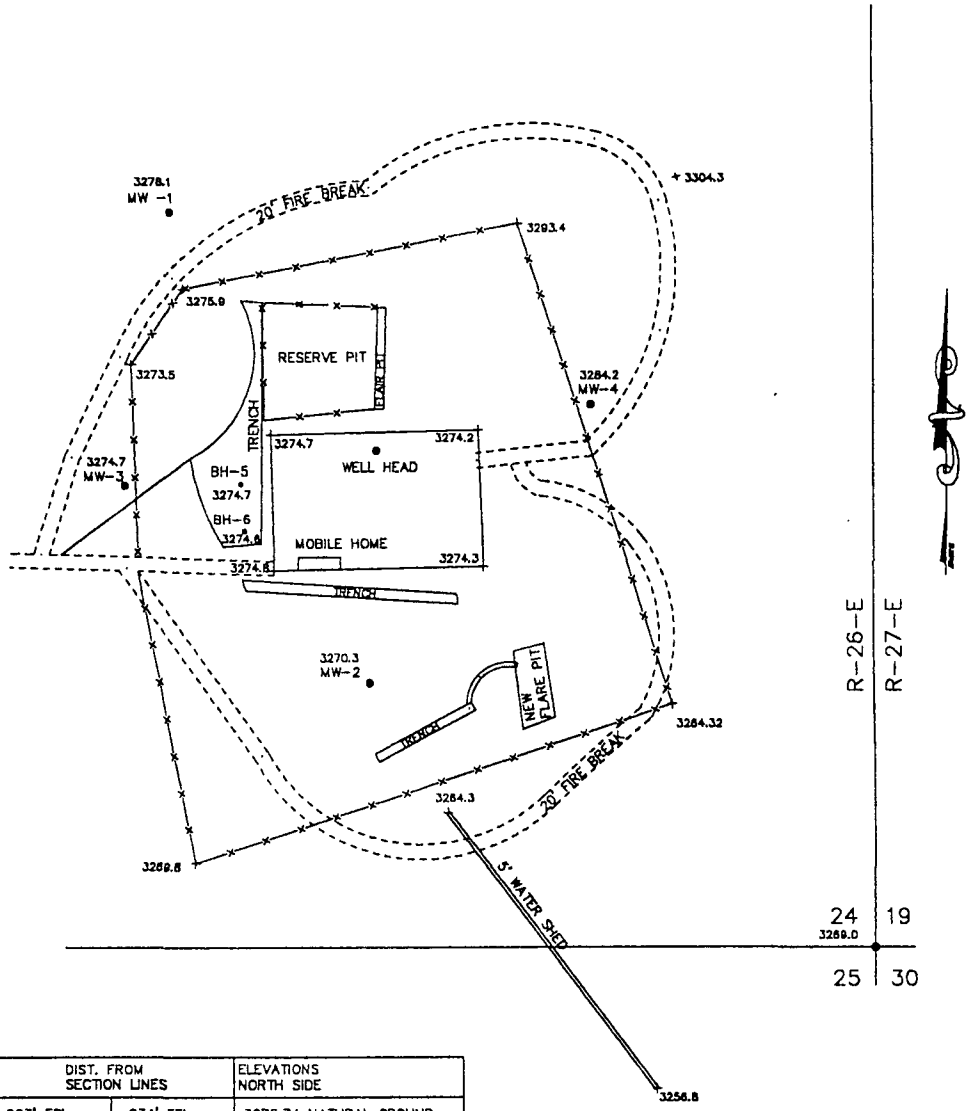
Remarks

DATE: 4/25/01

Highlander Environmental

CLIENT: *Pogo Producing Company*
PROJECT: *McMillan 24 State #1*
LOCATION: *Eddy County, New Mexico*

WELL NO. MW-4



WELL NO.	DIST. FROM SECTION LINES		ELEVATIONS NORTH SIDE
MW #1	983' FSL	934' FEL	3275.74 NATURAL GROUND 3275.83 TOP CONC. SLAB 3278.11 TOP OF PVC
MW #2	355' FSL	671' FEL	3267.90 NATURAL GROUND 3267.98 TOP CONC. SLAB 3270.29 TOP OF PVC
MW #3	618' FSL	997' FEL	3272.70 NATURAL GROUND 3272.83 TOP OF CONC. SLAB 3274.71 TOP 2" PVC CAP
MW #4	724' FSL	375' FEL	3282.00 NATURAL GROUND 3282.18 TOP OF CONC. SLAB 3284.18 TOP 2" PVC CAP

LEGEND

+ 3270.3 DENOTES SPOT ELEVATION

—x— DENOTES FENCE LINE

200 0 200 400 FEET

Scale:1"=200'

I HEREBY CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

GARY G. EIDSON NEW MEXICO 12641 PROFESSIONAL SURVEYOR

5/11/01

RONALD J. EIDSON, N.M. P.S. No. 3239
GARY G. EIDSON, N.M. P.S. No. 12641
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO – HOBBS, NEW MEXICO – 505-393-3117

HIGHLANDER ENVIRONMENTAL CORP.

MONITOR WELLS AND
MISC. FACILITIES AT
THE POGO McMILLIAN 24 STATE #1 WELL
SECTION 24,
TOWNSHIP 20 SOUTH,
RANGE 26 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

Survey Date: 5/3-4/01		Sheet 1 of 1 Sheets	
W.O. Number: 01-11-0541		Drawn By:D.COLLINS	
Date: 5/9/01		HIGHLAND0541	Scale:1"=200'

APPENDIX B

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Pogo Producing Company

Certificate of Analysis Number:

01040874

Report To:		Project Name:	Pogo/McMillan 24 State#1/1650
Pogo Producing Company		Site:	Eddy Co. NM
Don Riggs		Site Address:	
P.O Box 2504			
5 Greenway Plaza, Suite 2700	77042	PO Number:	
Houston		State:	New Mexico
Texas		State Cert. No.:	
77252-2504		Date Reported:	5/8/01
ph: (713) 297-5045	fax: (915) 682-3946		

This Report Contains A Total Of 33 Pages

Excluding This Page

And

Chain Of Custody

5/8/01

Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Case Narrative for:

Pogo Producing Company

Certificate of Analysis Number:

01040874

Report To:		Project Name:	Pogo/McMillan 24 State#1/1650
Pogo Producing Company		Site:	Eddy Co. NM
Don Riggs		Site Address:	
P.O Box 2504			
5 Greenway Plaza, Suite 2700	77042	PO Number:	
Houston		State:	New Mexico
Texas		State Cert. No.:	
77252-2504		Date Reported:	5/8/01
ph: (713) 297-5045	fax: (915) 682-3946		

Your samples were received at ambient temperature on April 30, 2001. Per your request via phone conversation on April 30, 2001, SPL continued with all analysis requested.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Paul Neschich
Senior Project Manager

5/8/01
Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Pogo Producing Company

Certificate of Analysis Number:

01040874

Report To: Pogo Producing Company
Don Riggs
P.O Box 2504
5 Greenway Plaza, Suite 2700 77042
Houston
Texas
77252-2504
ph: (713) 297-5045 fax: (713) 297-4952

Fax To: Highlander Environmental Corp
Ike Tavarez fax : (915) 682-3946

Project Name: Pogo/McMillan 24 State#1/1650
Site: Eddy Co. NM
Site Address:
PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 5/8/01

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
BH-1(40-42')	01040874-01	Soil	4/20/01	4/30/01 9:00:00 AM		☐
BH-1(50-52')	01040874-02	Soil	4/20/01	4/30/01 9:00:00 AM		☐
BH-2(5-7')	01040874-03	Soil	4/21/01	4/30/01 9:00:00 AM		☑
BH-2(10-12')	01040874-04	Soil	4/21/01	4/30/01 9:00:00 AM		☑
BH-2(55-57')	01040874-05	Soil	4/21/01	4/30/01 9:00:00 AM		☐
BH-2(60-62')	01040874-06	Soil	4/21/01	4/30/01 9:00:00 AM		☐
BH-3(10-12')	01040874-07	Soil	4/23/01	4/30/01 9:00:00 AM		☑
BH-3(20-22')	01040874-08	Soil	4/23/01	4/30/01 9:00:00 AM		☑
BH-3(30-32')	01040874-09	Soil	4/23/01	4/30/01 9:00:00 AM		☑
BH-3(40-42')	01040874-10	Soil	4/23/01	4/30/01 9:00:00 AM		☐
BH-3(60-62')	01040874-11	Soil	4/23/01	4/30/01 9:00:00 AM		☐
BH-4(20-22')	01040874-12	Soil	4/25/01	4/30/01 9:00:00 AM		☑
BH-4(68-70')	01040874-13	Soil	4/25/01	4/30/01 9:00:00 AM		☐
BH-5(5-7')	01040874-14	Soil	4/26/01	4/30/01 9:00:00 AM		☐
BH-5(10-12')	01040874-15	Soil	4/26/01	4/30/01 9:00:00 AM		☐
BH-5(15-17')	01040874-16	Soil	4/26/01	4/30/01 9:00:00 AM		☐
BH-5(20-21')	01040874-17	Soil	4/26/01	4/30/01 9:00:00 AM		☐
BH-5(25-27')	01040874-18	Soil	4/26/01	4/30/01 9:00:00 AM		☐
BH-5(30-32')	01040874-19	Soil	4/26/01	4/30/01 9:00:00 AM		☐
BH-6(5-7')	01040874-20	Soil	4/26/01	4/30/01 9:00:00 AM		☐
BH-6(10-12')	01040874-21	Soil	4/26/01	4/30/01 9:00:00 AM		☐
BH-6(15-17')	01040874-22	Soil	4/26/01	4/30/01 9:00:00 AM		☐
BH-6(20-22')	01040874-23	Soil	4/26/01	4/30/01 9:00:00 AM		☐
BH-6(25-27')	01040874-24	Soil	4/26/01	4/30/01 9:00:00 AM		☐

Paul Neschich
Senior Project Manager

5/8/01
Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

5/8/01 3:02:47 PM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Pogo Producing Company

Certificate of Analysis Number:

01040874

Report To: Pogo Producing Company
Don Riggs
P.O Box 2504
5 Greenway Plaza, Suite 2700 77042
Houston
Texas
77252-2504
ph: (713) 297-5045 fax: (713) 297-4952

Fax To: Highlander Environmental Corp
Ike Tavarez fax : (915) 682-3946

Project Name: Pogo/McMillan 24 State#1/1650
Site: Eddy Co. NM
Site Address:
PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 5/8/01

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
BH-6(30-32')	01040874-25	Soil	4/26/01	4/30/01 9:00:00 AM		☐
MW-1	01040874-26	Water	4/26/01	4/30/01 9:00:00 AM		☐
MW-2	01040874-27	Water	4/26/01	4/30/01 9:00:00 AM		☐

Paul Neschich
Senior Project Manager

5/8/01
Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

5/8/01 3:02:47 PM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID BH-1(40-42') **Collected:** 4/20/01 **SPL Sample ID:** 01040874-01

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL		**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	ND	10	1		05/03/01 10:45	CV	660253

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID BH-1(50-52') **Collected:** 4/20/01 **SPL Sample ID:** 01040874-02

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	ND	10		1		05/03/01 10:45	CV	660256

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID BH-2(55-57') **Collected:** 4/21/01 **SPL Sample ID:** 01040874-05

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL		**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	16.9	10	1		05/03/01 10:45	CV	660257

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID BH-2(60-62') **Collected:** 4/21/01 **SPL Sample ID:** 01040874-06

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	16.9	10	1		05/03/01 10:45	CV	660258

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID BH-3(40-42') **Collected:** 4/23/01 **SPL Sample ID:** 01040874-10

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	25.4	10	1		05/03/01 10:45	CV	660259

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID BH-3(60-62') **Collected:** 4/23/01 **SPL Sample ID:** 01040874-11

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL		**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	16.9	10	1		05/03/01 10:45	CV	660260

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID BH-4(68-70') **Collected:** 4/25/01 **SPL Sample ID:** 01040874-13

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL		**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	16.9	10	1		05/03/01 10:45	CV	660261

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID BH-5(5-7') **Collected:** 4/26/01 **SPL Sample ID:** 01040874-14

Site: Eddy Co. NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	271		20	2		05/03/01 10:45	CV	660263
PURGEABLE AROMATICS				**MCL**	**SW8021B**	**Units: ug/Kg**		
Benzene	ND		1	1		05/02/01 15:42	TM	659661
Ethylbenzene	ND		1	1		05/02/01 15:42	TM	659661
Toluene	ND		1	1		05/02/01 15:42	TM	659661
m,p-Xylene	ND		1	1		05/02/01 15:42	TM	659661
o-Xylene	ND		1	1		05/02/01 15:42	TM	659661
Xylenes,Total	ND		1	1		05/02/01 15:42	TM	659661
Surr: 1,4-Difluorobenzene	99.5	%	59-127	1		05/02/01 15:42	TM	659661
Surr: 4-Bromofluorobenzene	97.9	%	48-156	1		05/02/01 15:42	TM	659661
TOTAL PETROLEUM HYDROCARBONS				**MCL**	**E418.1**	**Units: ppm**		
Petroleum Hydrocarbons,TR	ND		10	1		05/01/01 11:00	EE	657299

Prep Method	Prep Date	Prep Initials
	05/01/2001 11:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID BH-5(10-12') **Collected:** 4/26/01 **SPL Sample ID:** 01040874-15

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	271	10	1		05/03/01 10:45	CV	660264
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: ppm**		
Petroleum Hydrocarbons,TR	10	10	1		05/01/01 11:00	EE	657300

Prep Method	Prep Date	Prep Initials
	05/01/2001 11:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID BH-5(15-17') **Collected:** 4/26/01 **SPL Sample ID:** 01040874-16

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	424	10	1		05/03/01 10:45	CV	660265
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: ppm**		
Petroleum Hydrocarbons,TR	50	10	1		05/01/01 11:00	EE	657304

Prep Method	Prep Date	Prep Initials
	05/01/2001 11:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID BH-5(20-21') **Collected:** 4/26/01 **SPL Sample ID:** 01040874-17

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	254	10		1		05/03/01 10:45	CV	660266
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: ppm**		
Petroleum Hydrocarbons,TR	ND	10		1		05/01/01 11:00	EE	657305

Prep Method	Prep Date	Prep Initials
	05/01/2001 11:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID BH-5(25-27') **Collected:** 4/26/01 **SPL Sample ID:** 01040874-18

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	288	10	1		05/03/01 10:45	CV	660269

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID BH-5(30-32') **Collected:** 4/26/01 **SPL Sample ID:** 01040874-19

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	186	10		1		05/03/01 10:45	CV	660270
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: ppm**		
Petroleum Hydrocarbons,TR	10	10		1		05/01/01 11:00	EE	657307

Prep Method	Prep Date	Prep Initials
	05/01/2001 11:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID BH-6(5-7') **Collected:** 4/26/01 **SPL Sample ID:** 01040874-20

Site: Eddy Co. NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	186		10	1		05/03/01 10:45	CV	660271
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	1.7		1	1		05/02/01 16:13	TM	659662
Ethylbenzene	1.1		1	1		05/02/01 16:13	TM	659662
Toluene	4.8		1	1		05/02/01 16:13	TM	659662
m,p-Xylene	6.6		1	1		05/02/01 16:13	TM	659662
o-Xylene	13		1	1		05/02/01 16:13	TM	659662
Xylenes,Total	19.6		1	1		05/02/01 16:13	TM	659662
Surr: 1,4-Difluorobenzene	107	%	59-127	1		05/02/01 16:13	TM	659662
Surr: 4-Bromofluorobenzene	109	%	48-156	1		05/02/01 16:13	TM	659662
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: ppm**		
Petroleum Hydrocarbons,TR	10		10	1		05/01/01 11:00	EE	657308

Prep Method	Prep Date	Prep Initials
	05/01/2001 11:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID BH-6(10-12') **Collected:** 4/26/01 **SPL Sample ID:** 01040874-21

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	661	10		1		05/03/01 10:45	CV	660272
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: ppm**		
Petroleum Hydrocarbons,TR	10	10		1		05/01/01 11:00	EE	657310

Prep Method	Prep Date	Prep Initials
	05/01/2001 11:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID BH-6(15-17') **Collected:** 4/26/01 **SPL Sample ID:** 01040874-22

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL		**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	237	10	1		05/03/01 10:45	CV	660274
TOTAL PETROLEUM HYDROCARBONS		**MCL**	**E418.1**		**Units: ppm**		
Petroleum Hydrocarbons,TR	10	10	1		05/01/01 11:00	EE	657311

Prep Method	Prep Date	Prep Initials
	05/01/2001 11:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID BH-6(20-22') **Collected:** 4/26/01 **SPL Sample ID:** 01040874-23

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	390	10		1		05/03/01 10:45	CV	660275
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: ppm**		
Petroleum Hydrocarbons,TR	15	10		1		05/01/01 11:00	EE	657314

Prep Method	Prep Date	Prep Initials
	05/01/2001 11:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID BH-6(25-27') **Collected:** 4/26/01 **SPL Sample ID:** 01040874-24

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL		**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	127	10	1		05/03/01 10:45	CV	660276

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID BH-6(30-32') **Collected:** 4/26/01 **SPL Sample ID:** 01040874-25

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	322	10		1		05/03/01 10:45	CV	660277
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: ppm**		
Petroleum Hydrocarbons,TR	10	10		1		05/01/01 11:00	EE	657315

Prep Method	Prep Date	Prep Initials
	05/01/2001 11:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID MW-1 **Collected:** 4/26/01 **SPL Sample ID:** 01040874-26

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL		**MCL**	**E325.3**		**Units: mg/L**		
Chloride	13.6	1	1		05/02/01 12:00	CV	659022

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID MW-2 **Collected:** 4/26/01 **SPL Sample ID:** 01040874-27

Site: Eddy Co. NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/L**		
Chloride	13.6	1		1		05/02/01 12:00	CV	659025

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

Quality Control Documentation

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Quality Control Report

Pogo Producing Company

Pogo/McMillan 24 State#1/1650

Analysis: Total Petroleum Hydrocarbons
Method: E418.1
WorkOrder: 01040874
Lab Batch ID: R34426

Method Blank

RunID: EX_010501E-657294 Units: ppm
Analysis Date: 05/01/2001 11:00 Analyst: EE
Preparation Date: 05/01/2001 11:00 Prep By: Method

Analyte	Result	Rep Limit
Petroleum Hydrocarbons,TR	ND	10

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01040874-14A	BH-5(5-7')
01040874-15A	BH-5(10-12')
01040874-16A	BH-5(15-17')
01040874-17A	BH-5(20-21')
01040874-19A	BH-5(30-32')
01040874-20A	BH-6(5-7')
01040874-21A	BH-6(10-12')
01040874-22A	BH-6(15-17')
01040874-23A	BH-6(20-22')
01040874-25A	BH-6(30-32')

Laboratory Control Sample (LCS)

RunID: EX_010501E-657296 Units: ppm
Analysis Date: 05/01/2001 11:00 Analyst: EE
Preparation Date: 05/01/2001 11:00 Prep By: Method

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Petroleum Hydrocarbons,TR	200	190	95	86	117

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01040874-15
RunID: EX_010501E-657301 Units: ppm
Analysis Date: 05/01/2001 11:00 Analyst: EE
Preparation Date: 05/01/2001 11:00 Prep By: Method

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Petroleum Hydrocarbons,TR	10	200	200	92.5	200	200	95.0	2.67	20	72	119

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

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Quality Control Report

Pogo Producing Company

Pogo/McMillan 24 State#1/1650

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 01040874
Lab Batch ID: R34503

Method Blank

RunID: HP_O_010502A-658365 Units: ug/Kg
Analysis Date: 05/02/2001 10:21 Analyst: TM

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01040874-14A	BH-5(5-7')
01040874-20A	BH-6(5-7')

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	97.0	59-127
Surr: 4-Bromofluorobenzene	100.3	48-156

Laboratory Control Sample (LCS)

RunID: HP_O_010502A-658358 Units: ug/Kg
Analysis Date: 05/02/2001 9:51 Analyst: TM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	50	101	60	120
Ethylbenzene	50	56	112	68	127
Toluene	50	53	106	64	122
m,p-Xylene	100	110	113	68	129
o-Xylene	50	57	115	68	127
Xylenes,Total	150	167	111	68	129

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 0105024-01A
RunID: HP_O_010502A-659664 Units: ug/Kg
Analysis Date: 05/02/2001 18:46 Analyst: TM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	19	93.6	20	19	92.9	0.827	34	35	139
Ethylbenzene	ND	20	19	92.3	20	18	88.7	3.94	35	31	137
Toluene	ND	20	19	91.8	20	19	91.1	0.796	28	31	137
m,p-Xylene	2.0	40	40	93.9	40	38	89.7	4.54	38	19	144
o-Xylene	ND	20	19	93.4	20	18	88.9	4.94	57	25	139

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

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Quality Control Report

Pogo Producing Company

Pogo/McMillan 24 State#1/1650

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 01040874
Lab Batch ID: R34503

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 0105024-01A
RunID: HP_O_010502A-659664 Units: ug/Kg
Analysis Date: 05/02/2001 18:46 Analyst: TM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Xylenes,Total	2.0	60	59	95.0	60	56	90.0	5.41	38	19	144

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

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Quality Control Report

Pogo Producing Company

Pogo/McMillan 24 State#1/1650

Analysis: Chloride, Total
Method: E325.3

WorkOrder: 01040874
Lab Batch ID: R34547

Method Blank

RunID: WET_010502E-659019 Units: mg/L
Analysis Date: 05/02/2001 12:00 Analyst: CV

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01040874-26A	MW-1
01040874-27A	MW-2

Analyte	Result	Rep Limit
Chloride	ND	1.0

Laboratory Control Sample (LCS)

RunID: WET_010502E-659021 Units: mg/L
Analysis Date: 05/02/2001 12:00 Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	109	108	99	90	110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01040874-26
RunID: WET_010502E-659023 Units: mg/L
Analysis Date: 05/02/2001 12:00 Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	14	50	62.7	98.3	50	62.7	98.3	0	20	85	115

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

5/8/01 3:03:00 PM

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Quality Control Report

Pogo Producing Company

Pogo/McMillan 24 State#1/1650

Analysis: Chloride, Total
Method: E325.3
WorkOrder: 01040874
Lab Batch ID: R34612

Method Blank

RunID: WET_010503C-660251 Units: mg/Kg
Analysis Date: 05/03/2001 10:45 Analyst: CV

Analyte	Result	Rep Limit
Chloride	ND	10

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01040874-01A	BH-1(40-42')
01040874-02A	BH-1(50-52')
01040874-05A	BH-2(55-57')
01040874-06A	BH-2(60-62')
01040874-10A	BH-3(40-42')
01040874-11A	BH-3(60-62')
01040874-13A	BH-4(68-70')
01040874-14A	BH-5(5-7')
01040874-15A	BH-5(10-12')
01040874-16A	BH-5(15-17')

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01040874-01
RunID: WET_010503C-660254 Units: mg/Kg
Analysis Date: 05/03/2001 10:45 Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	ND	500	508	102	500	508	102	0	20	91.8	115

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

5/8/01 3:03:00 PM

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Quality Control Report

Pogo Producing Company

Pogo/McMillan 24 State#1/1650

Analysis: Chloride, Total
Method: E325.3
WorkOrder: 01040874
Lab Batch ID: R34612A

Method Blank

RunID: WET_010503C-660251 Units: mg/Kg
Analysis Date: 05/03/2001 10:45 Analyst: CV

Analyte	Result	Rep Limit
Chloride	ND	10

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01040874-17A	BH-5(20-21')
01040874-18A	BH-5(25-27')
01040874-19A	BH-5(30-32')
01040874-20A	BH-6(5-7')
01040874-21A	BH-6(10-12')
01040874-22A	BH-6(15-17')
01040874-23A	BH-6(20-22')
01040874-24A	BH-6(25-27')
01040874-25A	BH-6(30-32')

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01040874-17
RunID: WET_010503C-660267 Units: mg/Kg
Analysis Date: 05/03/2001 10:45 Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	250	500	763	102	500	763	102	0	20	91.8	115

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

5/8/01 3:03:01 PM

Sample Receipt Checklist

And

Chain of Custody

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	01040874	Received By:	NB
Date and Time Received:	4/30/01 9:00:00 AM	Carrier name:	FedEx
Temperature:	17	Chilled by:	Water Ice

		Yes	No	Not Present
1.	Shipping container/cooler in good condition?	☑	☐	☐
2.	Custody seals intact on shippping container/cooler?	☐	☐	☑
3.	Custody seals intact on sample bottles?	☐	☐	☑
4.	Chain of custody present?	☑	☐	
5.	Chain of custody signed when relinquished and received?	☑	☐	
6.	Chain of custody agrees with sample labels?	☑	☐	
7.	Samples in proper container/bottle?	☑	☐	
8.	Sample containers intact?	☑	☐	
9.	Sufficient sample volume for indicated test?	☑	☐	
10.	All samples received within holding time?	☑	☐	
11.	Container/Temp Blank temperature in compliance?	☐	☑	
	1. Received samples temp@ 17c. Samples were received in a 54qt. With 1-bag of ice melted. The cooler was sent out on Friday and marked for standard overnight delivery.			
12.	Water - VOA vials have zero headspace?	☐	☐	☑
13.	Water - pH acceptable upon receipt?	☑	☐	☐

SPL Representative: Brown, Electa **Contact Date & Time:** 4/30/01 10:40:00 AM

Client Name Contacted: Ike Tavarez

Non Conformance Issues: 1.No sample analysis was checked off for SX ID#BH-3(10-12');BH-3(20-22');BH-3(30--32').

Client Instructions: Per Ike, run samples narrate nonconformance. Sample ID's: BH-3(10-12'), BH-3(20-22') and BH-3(30--32') logged in on hold per Client.

Analysis Request and Chain of Custody Record

PAGE: 1 OF: 3

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Pogo Producing Co. SITE MANAGER: Ike Tavarez

PROJECT NO.: 1650 PROJECT NAME: Pogo McMillan 24 State #1 Eddy Co. NM.

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 418.1 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Chloride	
	4/20/01		S		G	BH-1 (40-42')	1				✓																		X	
	4/20/01		S		G	BH-1 (50-52')	1				✓																		X	
	4/21/01		S		G	BH-2 (5-7')	1				✓								Hold											
	4/21/01		S		G	BH-2 (10-12')	1				✓								Hold.											
	4/21/01		S		G	BH-2 (55-57')	1				✓																		X	
	4/21/01		S		G	BH-2 (60-62')	1				✓																		X	
	4/23/01		S		G	BH-3 (10-12')	1				✓							HOLD												
	4/23/01		S		G	BH-3 (20-22')	1				✓							Hold												
	4/23/01		S		G	BH-3 (30-32')	1				✓							Hold												
	4/23/01		S		G	BH-3 (40-42')	1				✓																		X	

RELINQUISHED BY: (Signature) Date: 4/27/01 Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL #
HAND DELIVERED UPS OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: SPL
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: 4/30/01 TIME: 0900

HIGHLANDER CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS:

17c

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Enviromental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

01000114

PAGE: 2 OF: 3

CLIENT NAME: Pogo Producing Co.

SITE MANAGER: IKE Tavarez

PROJECT NO.: 1656

PROJECT NAME: Pogo/McMillan 24 State #1 Eddy Co. NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8080/608	TPH 418.1 / 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 608/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Chlorides
	4/23/01		S			BH-3 (60-62')	1				✓																			X
	4/25/01		S			BH-4 (20-22')	1				✓										Hold.										
			S			BH-4 (68-70')	1				✓																				X
	4/26/01		S			BH-5 (5-7')	1				✓		X		X															X
	4/26/01		S			BH-5 (10-12')	1				✓				X															X
	4/26/01		S			BH-5 (15-17')	1				✓				X															X
	4/26/01		S			BH-5 (20-21')	1				✓				X															X
	4/26/01		S			BH-5 (25-27')	1				✓																			X
	4/26/01		S			BH-5 (30-32')	1				✓				X															X

RELINQUISHED BY: (Signature) Date: 4/27/01 Time:

RECEIVED BY: (Signature) Date: Time:

SAMPLED BY: (Print & Sign) IKE TAVAREZ Date: Time:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

SAMPLE SHIPPED BY: (Circle)
FEDEX BUS AIRBILL #
HAND DELIVERED UPS OTHER:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Sec.
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature)
DATE: 4/30/01 TIME: 0900

HIGHLANDER CONTACT PERSON: IKE TAVAREZ

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS:

17c

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

PAGE: 3 OF: 3

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705
(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Pogo Producing Co.
SITE MANAGER: Ike Tavarez
PROJECT NO.: 1650
PROJECT NAME: Pogo / McMillan 24 State #1 Eddy Co. N.M.

ANALYSIS REQUEST (Circle or Specify Method No.): BTEX 8020/602 (circled); MTBE 8020/602; TPH 418.1 (circled) 8015 MOD. TX1005; PAH 8270; RCRA Metals Ag As Ba Cd Cr Pb Hg Se; TCLP Metals Ag As Ba Cd Cr Pd Hg Se; TCLP Volatiles; TCLP Semi Volatiles; RCI; GC.MS Vol. 8240/8260/624; GC.MS Semi. Vol. 8270/625; PCB's 8080/608; Pest. 808/608; BOD, TSS, pH, TDS, Chloride; Gamma Spec.; Alpha Beta (Air); PLM (Asbestos); Chloride

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX	TPH	Chloride
	4/26/01		S		✓	BH-6 (5-7')	1				✓		X	X	X
	↓		S		✓	BH-6 (10-12')	1				✓			X	X
	↓		S		✓	BH-6 (15-17')	1				✓			X	X
	↓		S		✓	BH-6 (20-22')	1				✓			X	X
	↓		S		✓	BH-6 (25-27')	1				✓				X
	↓		S		✓	BH 6 (30-32')	1				✓			X	X
	4/26/01		W		✓	MW-1	1				✓				X
	4/26/01		W		✓	MW-2	1				✓				X

RELINQUISHED BY: (Signature) [signature] Date: 4/27/01 Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL # HAND DELIVERED UPS OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: SPL
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature) [signature]
DATE: 4/30/01 TIME: 0900

HIGHLANDER CONTACT PERSON: Ike Tavarez
Results by:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:
MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other
REMARKS: 17c

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Enviromental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Pogo Producing Company

Certificate of Analysis Number:

01050133

Report To:		Project Name:	Pogo/McMilliam 24-1/1650
Pogo Producing Company		Site:	Eddy County, NM
Don Riggs		Site Address:	
P.O Box 2504			
5 Greenway Plaza, Suite 2700	77042	PO Number:	
Houston		State:	Texas
Texas		State Cert. No.:	
77252-2504		Date Reported:	5/14/01
ph: (713) 297-5045	fax: (915) 682-3946		

This Report Contains A Total Of 10 Pages

Excluding This Page

And

Chain Of Custody

5/14/01

Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Case Narrative for:

Pogo Producing Company

Certificate of Analysis Number:

01050133

Report To:		Project Name:	Pogo/McMilliam 24-1/1650
Pogo Producing Company		Site:	Eddy County, NM
Don Riggs		Site Address:	
P.O Box 2504			
5 Greenway Plaza, Suite 2700	77042	PO Number:	
Houston		State:	Texas
Texas		State Cert. No.:	
77252-2504		Date Reported:	5/14/01
ph: (713) 297-5045	fax: (915) 682-3946		

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Paul Neschich
Senior Project Manager

5/14/01
Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Pogo Producing Company

Certificate of Analysis Number:

01050133

Report To:	Highlander Environmental Corp Ike Tavarez 1910 N. Big Spring Street Midland Texas 79705- ph: (915) 682-4559 fax: (915) 682-3946	**Project Name:**	Pogo/McMilliam 24-1/1650
		Site:	Eddy County, NM
		Site Address:	
		PO Number:	
		State:	Texas
		State Cert. No.:	
Fax To:	*Highlander Environmental Corp* *Ike Tavarez* *fax: (915) 682-3946*	**Date Reported:**	5/14/01

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	01050133-01	Water	5/2/01 12:30:00 PM	5/4/01 9:45:00 AM		☐
MW-2	01050133-02	Water	5/2/01 3:30:00 PM	5/4/01 9:45:00 AM		☐
MW-4	01050133-03	Water	5/2/01 1:30:00 PM	5/4/01 9:45:00 AM		☐

7/11/01

Nleschich,Paul
Senior Project Manager

Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

7/11/01 10:22:57 AM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Pogo Producing Company

Certificate of Analysis Number:

01050133

Report To:	Pogo Producing Company Don Riggs P.O Box 2504 5 Greenway Plaza, Suite 2700 77042 Houston Texas 77252-2504 ph: (713) 297-5045 fax: (713) 297-4952	**Project Name:**	Pogo/McMilliam 24-1/1650
		Site:	Eddy County, NM
		Site Address:	
		PO Number:	
		State:	Texas
		State Cert. No.:	
Fax To:	Pogo Producing Company Don Riggs fax : (713) 297-4952 Highlander Environmental Corp Ike Tavarez fax : (915) 682-3946	**Date Reported:**	5/14/01

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	01050133-01	Water	5/2/01 12:30:00 PM	5/4/01 9:45:00 AM		
MW-2	01050133-02	Water	5/2/01 3:30:00 PM	5/4/01 9:45:00 AM		
MW-4	01050133-03	Water	5/2/01 1:30:00 PM	5/4/01 9:45:00 AM		

for Bernadette C. Fini

Paul Neschich
Senior Project Manager

5/14/01
Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

5/14/01 8:12:45 AM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID MW-1 **Collected:** 5/2/01 12:30:00 **SPL Sample ID:** 01050133-01

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/L**		
Chloride	14.4		1	1		05/07/01 15:15	CV	663830
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/L**		
Benzene	ND		1	1		05/11/01 3:39	DL	668596
Ethylbenzene	ND		1	1		05/11/01 3:39	DL	668596
Toluene	ND		1	1		05/11/01 3:39	DL	668596
Xylenes,Total	ND		1	1		05/11/01 3:39	DL	668596
Surr: 1,4-Difluorobenzene	92.0	%	72-137	1		05/11/01 3:39	DL	668596
Surr: 4-Bromofluorobenzene	80.1	%	48-156	1		05/11/01 3:39	DL	668596

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID MW-2 **Collected:** 5/2/01 3:30:00 P **SPL Sample ID:** 01050133-02

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/L**		
Chloride	45.8		1	1		05/07/01 15:15	CV	663833
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/L**		
Benzene	ND		1	1		05/11/01 4:03	DL	668597
Ethylbenzene	ND		1	1		05/11/01 4:03	DL	668597
Toluene	ND		1	1		05/11/01 4:03	DL	668597
Xylenes,Total	ND		1	1		05/11/01 4:03	DL	668597
Surr: 1,4-Difluorobenzene	89.9	%	72-137	1		05/11/01 4:03	DL	668597
Surr: 4-Bromofluorobenzene	68.1	%	48-156	1		05/11/01 4:03	DL	668597

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID MW-4 **Collected:** 5/2/01 1:30:00 P **SPL Sample ID:** 01050133-03

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				**MCL**	**E325.3**		**Units: mg/L**		
Chloride	35.6		1		1		05/07/01 15:15	CV	663834
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/L**		
Benzene	ND		1		1		05/11/01 4:27	DL	668599
Ethylbenzene	ND		1		1		05/11/01 4:27	DL	668599
Toluene	ND		1		1		05/11/01 4:27	DL	668599
Xylenes,Total	ND		1		1		05/11/01 4:27	DL	668599
Surr: 1,4-Difluorobenzene	87.1	%	72-137		1		05/11/01 4:27	DL	668599
Surr: 4-Bromofluorobenzene	64.4	%	48-156		1		05/11/01 4:27	DL	668599

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

Quality Control Documentation

5/14/01 8:12:53 AM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

Pogo Producing Company

Pogo/McMilliam 24-1/1650

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 01050133
Lab Batch ID: R35058

Method Blank

RunID: VARE_010510B-668583 Units: ug/L
Analysis Date: 05/10/2001 20:23 Analyst: DL

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01050133-01A	MW-1
01050133-02A	MW-2
01050133-03A	MW-4

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	90.4	72-137
Surr: 4-Bromofluorobenzene	84.9	48-156

Laboratory Control Sample (LCS)

RunID: VARE_010510B-668582 Units: ug/L
Analysis Date: 05/10/2001 19:59 Analyst: DL

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	54	107	70	130
Ethylbenzene	50	54	108	70	130
Toluene	50	53	107	70	130
Xylenes,Total	150	164	109	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01050150-01
RunID: VARE_010510B-668584 Units: ug/L
Analysis Date: 05/10/2001 20:48 Analyst: DL

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	13	20	34	107	20	34	107	0.0300	21	32	164
Ethylbenzene	ND	20	21	107	20	22	108	0.731	19	52	142
Toluene	ND	20	21	105	20	21	106	0.466	20	38	159
Xylenes,Total	ND	60	64	107	60	65	108	1.55	18	53	144

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

5/14/01 8:12:59 AM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

Pogo Producing Company

Pogo/McMilliam 24-1/1650

Analysis: Chloride, Total
Method: E325.3
WorkOrder: 01050133
Lab Batch ID: R34809

Method Blank

RunID: WET_010507G-663827 Units: mg/L
Analysis Date: 05/07/2001 15:15 Analyst: CV

Analyte	Result	Rep Limit
Chloride	ND	1.0

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01050133-01B	MW-1
01050133-02B	MW-2
01050133-03B	MW-4

Laboratory Control Sample (LCS)

RunID: WET_010507G-663829 Units: mg/L
Analysis Date: 05/07/2001 15:15 Analyst: CV

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	109	108	99	90	110

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01050133-01
RunID: WET_010507G-663831 Units: mg/L
Analysis Date: 05/07/2001 15:15 Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	14	50	64.4	100	50	64.4	100	0	20	85	115

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

5/14/01 8:13:00 AM

Sample Receipt Checklist

And

Chain of Custody

5/14/01 8:13:03 AM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	01050133	Received By:	NB
Date and Time Received:	5/4/01 9:45:00 AM	Carrier name:	FedEx
Temperature:	3	Chilled by:	Water Ice

1.	Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present	☐
2.	Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present	☑
3.	Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present	☑
4.	Chain of custody present?	Yes ☑	No ☐		
5.	Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
6.	Chain of custody agrees with sample labels?	Yes ☑	No ☐		
7.	Samples in proper container/bottle?	Yes ☑	No ☐		
8.	Sample containers intact?	Yes ☑	No ☐		
9.	Sufficient sample volume for indicated test?	Yes ☑	No ☐		
10.	All samples received within holding time?	Yes ☑	No ☐		
11.	Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		
12.	Water - VOA vials have zero headspace?	Yes ☑	No ☐	Not Applicable	☐
13.	Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable	☐

SPL Representative: _____ Contact Date & Time: _____

Client Name Contacted: _____

Non Conformance Issues: _____

Client Instructions: _____

0105013З

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705
(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: [illegible] Producing Co
SITE MANAGER: [illegible]
PROJECT NO.: 1650
PROJECT NAME: [illegible] McMillan 24-1, Eddy County, NM

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 418.1 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Chloride		
	4/2/01	12:30	W		/	MW-1	3				/		X																	X		
	5/2/01	3:00	W		/	MW-2	3				/		X																	X		
	5/2/01	1:30	W		/	MW-4	3				/		X																	X		

RELINQUISHED BY: (Signature) [signature] Date: 5/3/01 Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLED BY: (Print & Sign) [signature] Date: Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL # HAND DELIVERED UPS OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: SPL
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature) [signature]
DATE: 5/4/01 TIME: 09:45

HIGHLANDER CONTACT PERSON: [illegible]
Results by:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS:

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Enviromental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Pogo Producing Company

Certificate of Analysis Number:

01050379

Report To:		Project Name:	Pogo/McMillan 24 State #1
Highlander Environmental Corp		Site:	Eddy County, NM
Ike Tavarez		Site Address:	
1910 N. Big Spring Street			
		PO Number:	
Midland		State:	New Mexico
Texas		State Cert. No.:	
79705-		Date Reported:	5/21/01
ph: (915) 682-4559	fax: (915) 682-3946		

This Report Contains A Total Of 8 Pages

Excluding This Page

And

Chain Of Custody

5/21/01

Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Case Narrative for:

Pogo Producing Company

Certificate of Analysis Number:

01050379

Report To:		Project Name:	Pogo/McMillan 24 State #1
Highlander Environmental Corp		Site:	Eddy County, NM
Ike Tavarez		Site Address:	
1910 N. Big Spring Street			
Midland		PO Number:	
Texas		State:	New Mexico
79705-		State Cert. No.:	
ph: (915) 682-4559	fax: (915) 682-3946	Date Reported:	5/21/01

Your sample ID "Trench #2(Area 3)Bottom" (SPL ID: 01050379-03) was randomly selected for use in SPL's quality control program for the total Petroleum Hydrocarbons analysis by Method 418.1. The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recoveries were outside of the advisable quality control limits (Batch ID: R35208) due to matrix interference. A Laboratory Control Sample (LCS) was analyzed as a quality control check for the analytical batch and all recoveries were within acceptable limits.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

5/21/01

Neschich,Paul
Senior Project Manager

Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Pogo Producing Company

Certificate of Analysis Number:

01050379

Report To: Highlander Environmental Corp
Ike Tavarez
1910 N. Big Spring Street

Midland
Texas
79705-
ph: (915) 682-4559 fax: (915) 682-3946

Fax To: Highlander Environmental Corp
Ike Tavarez fax : (915) 682-3946

Project Name: Pogo/McMillan 24 State #1
Site: Eddy County, NM
Site Address:

PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 5/21/01

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
Trench #2(Area 1)Bottom	01050379-01	Soil	5/9/01	5/11/01 10:00:00 AM		☑
Trench #2(Area 2)Bottom	01050379-02	Soil	5/9/01	5/11/01 10:00:00 AM		☑
Trench #2(Area 3)Bottom	01050379-03	Soil	5/9/01	5/11/01 10:00:00 AM		☐
Trench #2(Area 4)Bottom	01050379-04	Soil	5/9/01	5/11/01 10:00:00 AM		☐

5/21/01

Paul Neschich
Senior Project Manager

Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

5/21/01 8:31:27 AM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID Trench #2(Area 3)Bottom **Collected:** 5/9/01 **SPL Sample ID:** 01050379-03

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEUM HYDROCARBONS		**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	1800	50	5		05/15/01 13:00	HH	671302

Prep Method	Prep Date	Prep Initials
	05/15/2001 10:55	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID Trench #2(Area 4)Bottom **Collected:** 5/9/01 **SPL Sample ID:** 01050379-04

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	4400	50	5		05/15/01 13:00	HH	671303

Prep Method	Prep Date	Prep Initials
	05/15/2001 10:55	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

Quality Control Documentation

5/21/01 8:31:37 AM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

Pogo Producing Company

Pogo/McMillan 24 State #1

Analysis: Total Petroleum Hydrocarbons
Method: E418.1
WorkOrder: 01050379
Lab Batch ID: R35208

Method Blank

Run ID: EX_010515A-671298 Units: ppm
Analysis Date: 05/15/2001 13:00 Analyst: HH
Preparation Date: 05/15/2001 10:55 Prep By: Method

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01050379-03A	Trench #2(Area 3)Bottom
01050379-04A	Trench #2(Area 4)Bottom

Analyte	Result	Rep Limit
Petroleum Hydrocarbons,TR	ND	10

Laboratory Control Sample (LCS)

RunID: EX_010515A-671299 Units: ppm
Analysis Date: 05/15/2001 13:00 Analyst: HH
Preparation Date: 05/15/2001 10:55 Prep By: Method

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Petroleum Hydrocarbons,TR	200	180	90	86	117

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01050379-03
RunID: EX_010515A-671316 Units: ppm
Analysis Date: 05/15/2001 13:00 Analyst: HH
Preparation Date: 05/15/2001 10:55 Prep By: Method

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Petroleum Hydrocarbons,TR	1800	200	2300	283 *	200	2500	345 *	19.6	20	72	119

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

5/21/01 8:31:51 AM

Sample Receipt Checklist

And

Chain of Custody

5/21/01 8:31:53 AM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	01050379	Received By:	RE
Date and Time Received:	5/11/01 10:00:00 AM	Carrier name:	FedEx
Temperature:	5	Chilled by:	Water Ice

		Yes	No	Not Present
1.	Shipping container/cooler in good condition?	☑	☐	☐
2.	Custody seals intact on shippping container/cooler?	☐	☐	☑
3.	Custody seals intact on sample bottles?	☐	☐	☑
4.	Chain of custody present?	☑	☐	
5.	Chain of custody signed when relinquished and received?	☑	☐	
6.	Chain of custody agrees with sample labels?	☑	☐	
7.	Samples in proper container/bottle?	☑	☐	
8.	Sample containers intact?	☑	☐	
9.	Sufficient sample volume for indicated test?	☑	☐	
10.	All samples received within holding time?	☑	☐	
11.	Container/Temp Blank temperature in compliance?	☑	☐	
12.	Water - VOA vials have zero headspace?	☐	☐	Not Applicable ☑
13.	Water - pH acceptable upon receipt?	☐	☐	Not Applicable ☑

SPL Representative: _____ **Contact Date & Time:** _____

Client Name Contacted: _____

Non Conformance Issues: _____

Client Instructions: _____

01050379

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

PAGE: 1 OF: 1

CLIENT NAME: Pogo Producing Co. SITE MANAGER: IKE Tavarez

PROJECT NO.: 1065 PROJECT NAME: Pogo / McMillan 24 State #1 Eddy County NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/608	TPH (418.1) 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	ECI	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 608/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
	5/9/01		S	1		Trench #2 (area 1), bottom	1				✓				✓														
	5/9/01		S	1		Trench #2 (area 2), bottom	1				✓				✓														
	5/9/01		S	1		Trench #2 (area 3), bottom	1				✓				✓														
	5/9/01		S	1		Trench #2 (area 4), bottom	1				✓				✓														

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date: 5/10/01 Time: 2:00	RECEIVED BY: (Signature)	Date: Time:	SAMPLED BY: (Print & Sign) IKE Tavarez	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:	SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS	AIRBILL #: OTHER:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:		

RECEIVING LABORATORY: SPL
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature)
DATE: 5/11/01 TIME: 1000

HIGHLANDER CONTACT PERSON: IKE Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS: Run BTEX on highest TPH result.

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Enviromental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

PBW

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Highlander Environmental Corp

Certificate of Analysis Number:

01050601

Report To:		Project Name:	POGO/McMillan 24 State #1 1650
Highlander Environmental Corp		Site:	Eddy County, NM
Ike Tavarez		Site Address:	
1910 N. Big Spring Street			
		PO Number:	
Midland		State:	New Mexico
Texas		State Cert. No.:	
79705-		Date Reported:	5/30/01
ph: (915) 682-4559	fax: (915) 682-3946		

This Report Contains A Total Of 43 Pages

Excluding This Page

And

Chain Of Custody

5/30/01

Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Case Narrative for:

Highlander Environmental Corp

Certificate of Analysis Number:

01050601

Report To:		Project Name:	POGO/McMillan 24 State #1 1650
Highlander Environmental Corp		Site:	Eddy County, NM
Ike Tavarez		Site Address:	
1910 N. Big Spring Street			
Midland		PO Number:	
Texas		State:	New Mexico
79705-		State Cert. No.:	
ph: (915) 682-4559	fax: (915) 682-3946	Date Reported:	5/30/01

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

5/30/01

Paul Neschich
Senior Project Manager

Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Highlander Environmental Corp

Certificate of Analysis Number:

01050601

Report To: Highlander Environmental Corp
Ike Tavarez
1910 N. Big Spring Street

Midland
Texas
79705-
ph: (915) 682-4559 fax: (915) 682-3946

Fax To: Highlander Environmental Corp
Ike Tavarez fax : (915) 682-3946

Project Name: POGO/McMillan 24 State #1 1650
Site: Eddy County, NM
Site Address:

PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 5/30/01

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
T-1 Stockpile #1	01050601-01	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-1 Stockpile #2	01050601-02	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-1 Stockpile #3	01050601-03	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-1 Stockpile #4	01050601-04	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-1 Stockpile #5	01050601-05	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-1 Stockpile #6	01050601-06	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-1 Stockpile #7	01050601-07	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-1 Stockpile #8	01050601-08	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-2 Stockpile #1	01050601-09	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-2 Stockpile #2	01050601-10	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-2 Stockpile #3	01050601-11	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-2 Stockpile #4	01050601-12	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-2 Stockpile #5	01050601-13	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-2 Stockpile #6	01050601-14	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-2 Stockpile #7	01050601-15	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-2 Stockpile #8	01050601-16	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-2 Stockpile #9	01050601-17	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-2 Stockpile #10	01050601-18	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-2 Stockpile #11	01050601-19	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-2 Stockpile #12	01050601-20	Soil	5/16/01	5/18/01 10:00:00 AM		☐
T-2 Stockpile #13	01050601-21	Soil	5/16/01	5/18/01 10:00:00 AM		☐
Trench #2-bottom Area 1	01050601-22	Soil	5/16/01	5/18/01 10:00:00 AM		☐
Trench #2-bottom Area 2	01050601-23	Soil	5/16/01	5/18/01 10:00:00 AM		☐
Trench #3-bottom Area 1	01050601-24	Soil	5/16/01	5/18/01 10:00:00 AM		☐

5/30/01

Pau Neschich
Senior Project Manager

Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

5/30/01 5:16:53 PM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Highlander Environmental Corp

Certificate of Analysis Number:

01050601

Report To: Highlander Environmental Corp
Ike Tavarez
1910 N. Big Spring Street

Midland
Texas
79705-
ph: (915) 682-4559 fax: (915) 682-3946

Fax To: Highlander Environmental Corp
Ike Tavarez fax : (915) 682-3946

Project Name: POGO/McMillan 24 State #1 1650
Site: Eddy County, NM
Site Address:

PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 5/30/01

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
Trench #3-bottom Area 2	01050601-25	Soil	5/16/01	5/18/01 10:00:00 AM		☐
Trench #3-bottom Area 3	01050601-26	Soil	5/16/01	5/18/01 10:00:00 AM		☐
Trench #3-bottom Area 4	01050601-27	Soil	5/16/01	5/18/01 10:00:00 AM		☐
Flare Pit Bottom (5-6')	01050601-28	Soil	5/16/01	5/18/01 10:00:00 AM		☐
Flare Pit (West Wall Stockpile #1)	01050601-29	Soil	5/16/01	5/18/01 10:00:00 AM		☐
Flare Pit (West Wall Stockpile #2)	01050601-30	Soil	5/16/01	5/18/01 10:00:00 AM		☐

5/30/01

Paul Neschich
Senior Project Manager

Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

5/30/01 5:16:53 PM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID T-1 Stockpile #1 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-01

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	322	10	1		05/23/01 14:30	CV	682197
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	760	10	1		05/22/01 14:30	HH	680104

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

5/30/01 5:17:00 PM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID T-1 Stockpile #2 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-02

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	2000	100	10		05/22/01 14:30	HH	680105

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-1 Stockpile #3 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-03

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	474		10		1		05/23/01 14:30	CV	682200
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		10		10		05/25/01 21:40	FB	685972
Ethylbenzene	67		10		10		05/25/01 21:40	FB	685972
Toluene	190		10		10		05/25/01 21:40	FB	685972
Xylenes,Total	680		10		10		05/25/01 21:40	FB	685972
Surr: 1,4-Difluorobenzene	103	%	59-127		10		05/25/01 21:40	FB	685972
Surr: 4-Bromofluorobenzene	300 MI	%	48-156		10	*	05/25/01 21:40	FB	685972
TOTAL PETROLEUM HYDROCARBONS				**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	3700		100		10		05/22/01 14:30	HH	680106

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

5/30/01 5:17:03 PM

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Client Sample ID T-1 Stockpile #4 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-04

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		10	10		05/25/01 22:11	FB	685973
Ethylbenzene	35		10	10		05/25/01 22:11	FB	685973
Toluene	ND		10	10		05/25/01 22:11	FB	685973
Xylenes,Total	529		10	10		05/25/01 22:11	FB	685973
Surr: 1,4-Difluorobenzene	104	%	59-127	10		05/25/01 22:11	FB	685973
Surr: 4-Bromofluorobenzene	296 MI	%	48-156	10	*	05/25/01 22:11	FB	685973
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	2900		100	10		05/22/01 14:30	HH	680107

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-1 Stockpile #5 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-05

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	830		10		1		05/23/01 14:30	CV	682201
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		5		5		05/25/01 21:09	FB	685971
Ethylbenzene	10		5		5		05/25/01 21:09	FB	685971
Toluene	ND		5		5		05/25/01 21:09	FB	685971
Xylenes,Total	33		5		5		05/25/01 21:09	FB	685971
Surr: 1,4-Difluorobenzene	103	%	59-127		5		05/25/01 21:09	FB	685971
Surr: 4-Bromofluorobenzene	223 MI	%	48-156		5	*	05/25/01 21:09	FB	685971
TOTAL PETROLEUM HYDROCARBONS				**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	2600		100		10		05/22/01 14:30	HH	680108

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-1 Stockpile #6 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-06

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEUM HYDROCARBONS		**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	620	10	1		05/22/01 14:30	HH	680109

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-1 Stockpile #7 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-07

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	610	10		1		05/23/01 14:30	CV	682202
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	1800	100		10		05/22/01 14:30	HH	680110

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

5/30/01 5:17:11 PM

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Client Sample ID T-1 Stockpile #8 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-08

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEUM HYDROCARBONS		**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	1300	100	10		05/22/01 14:30	HH	680111

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-2 Stockpile #1 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-09

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	127	10	1		05/23/01 14:30	CV	682203
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	1500	100	10		05/22/01 14:30	HH	680112

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-2 Stockpile #2 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-10

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		1	1		05/25/01 18:34	FB	685966
Ethylbenzene	ND		1	1		05/25/01 18:34	FB	685966
Toluene	1.3		1	1		05/25/01 18:34	FB	685966
Xylenes,Total	1.4		1	1		05/25/01 18:34	FB	685966
Surr: 1,4-Difluorobenzene	108	%	59-127	1		05/25/01 18:34	FB	685966
Surr: 4-Bromofluorobenzene	110	%	48-156	1		05/25/01 18:34	FB	685966
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	2200		100	10		05/22/01 14:30	HH	680113

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-2 Stockpile #3 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-11

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	153	10		1		05/23/01 14:30	CV	682204
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	1800	100		10		05/22/01 14:30	HH	680114

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

5/30/01 5:17:18 PM

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Client Sample ID T-2 Stockpile #4 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-12

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		1	1		05/25/01 19:05	FB	685967
Ethylbenzene	ND		1	1		05/25/01 19:05	FB	685967
Toluene	ND		1	1		05/25/01 19:05	FB	685967
Xylenes,Total	3.3		1	1		05/25/01 19:05	FB	685967
Surr: 1,4-Difluorobenzene	108	%	59-127	1		05/25/01 19:05	FB	685967
Surr: 4-Bromofluorobenzene	114	%	48-156	1		05/25/01 19:05	FB	685967
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	1900		100	10		05/22/01 14:30	HH	680115

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-2 Stockpile #5 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-13

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	110	10	1		05/23/01 14:30	CV	682205
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	1100	50	5		05/22/01 14:30	HH	680116

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-2 Stockpile #6 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-14

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEUM HYDROCARBONS		**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	1400	50	5		05/22/01 14:30	HH	680117

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-2 Stockpile #7 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-15

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	169		10		1		05/23/01 14:30	CV	682207
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		1		1		05/25/01 19:36	FB	685968
Ethylbenzene	ND		1		1		05/25/01 19:36	FB	685968
Toluene	4.3		1		1		05/25/01 19:36	FB	685968
Xylenes,Total	4.3		1		1		05/25/01 19:36	FB	685968
Surr: 1,4-Difluorobenzene	111	%	59-127		1		05/25/01 19:36	FB	685968
Surr: 4-Bromofluorobenzene	114	%	48-156		1		05/25/01 19:36	FB	685968
TOTAL PETROLEUM HYDROCARBONS				**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	2000		100		10		05/22/01 14:30	HH	680118

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-2 Stockpile #8 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-16

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	1200	50	5		05/22/01 14:30	HH	680119

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-2 Stockpile #9 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-17

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	136	10	1		05/23/01 14:30	CV	682208
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	1100	50	5		05/22/01 14:30	HH	680120

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-2 Stockpile #10 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-18

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	1700	50	5		05/22/01 14:30	HH	680121

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-2 Stockpile #11 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-19

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	102	10	1		05/23/01 14:30	CV	682209
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	1100	50	5		05/22/01 14:30	HH	680122

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-2 Stockpile #12 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-20

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		1	1		05/25/01 20:07	FB	685969
Ethylbenzene	ND		1	1		05/25/01 20:07	FB	685969
Toluene	2.1		1	1		05/25/01 20:07	FB	685969
Xylenes,Total	3.5		1	1		05/25/01 20:07	FB	685969
Surr: 1,4-Difluorobenzene	112	%	59-127	1		05/25/01 20:07	FB	685969
Surr: 4-Bromofluorobenzene	105	%	48-156	1		05/25/01 20:07	FB	685969
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	2000		50	5		05/22/01 14:30	HH	680123

Prep Method	Prep Date	Prep Initials
	05/22/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID T-2 Stockpile #13 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-21

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	93.2	10	1		05/23/01 14:30	CV	682210
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	470	10	1		05/23/01 11:00	G_T	681209

Prep Method	Prep Date	Prep Initials
	05/23/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Trench #2-bottom Area 1 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-22

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	50.8		10	1		05/23/01 14:30	CV	682213
PURGEABLE AROMATICS				**MCL**	**SW8021B**	**Units: ug/Kg**		
Benzene	ND		1	1		05/25/01 20:38	FB	685970
Ethylbenzene	ND		1	1		05/25/01 20:38	FB	685970
Toluene	ND		1	1		05/25/01 20:38	FB	685970
Xylenes,Total	ND		1	1		05/25/01 20:38	FB	685970
Surr: 1,4-Difluorobenzene	100	%	59-127	1		05/25/01 20:38	FB	685970
Surr: 4-Bromofluorobenzene	109	%	48-156	1		05/25/01 20:38	FB	685970
TOTAL PETROLEUM HYDROCARBONS				**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	190		10	1		05/23/01 11:00	G_T	681210

Prep Method	Prep Date	Prep Initials
	05/23/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Trench #2-bottom Area 2 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-23

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	33.9	10	1		05/23/01 14:30	CV	682214
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	25	10	1		05/23/01 11:00	G_T	681211

Prep Method	Prep Date	Prep Initials
	05/23/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Trench #3-bottom Area 1 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-24

Site: **Eddy County, NM**

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEUM HYDROCARBONS		**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	3700	50	5		05/23/01 11:00	G_T	681212

Prep Method	Prep Date	Prep Initials
	05/23/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Trench #3-bottom Area 2 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-25

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	5250		100	10		05/23/01 14:30	CV	682215
PURGEABLE AROMATICS				**MCL**	**SW8021B**	**Units: ug/Kg**		
Benzene	ND		100	100		05/25/01 14:23	FB	685963
Ethylbenzene	1200		100	100		05/25/01 14:23	FB	685963
Toluene	730		100	100		05/25/01 14:23	FB	685963
Xylenes,Total	12800		100	100		05/25/01 14:23	FB	685963
Surr: 1,4-Difluorobenzene	94.0	%	59-127	100		05/25/01 14:23	FB	685963
Surr: 4-Bromofluorobenzene	235 MI	%	48-156	100	*	05/25/01 14:23	FB	685963
TOTAL PETROLEUM HYDROCARBONS				**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	3800		50	5		05/23/01 11:00	G_T	681213

Prep Method	Prep Date	Prep Initials
	05/23/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Trench #3-bottom Area 3 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-26

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	7290	100	10		05/23/01 14:30	CV	682216
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	3400	50	5		05/23/01 11:00	G_T	681214

Prep Method	Prep Date	Prep Initials
	05/23/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Trench #3-bottom Area 4 **Collected:** 5/16/01 **SPL Sample ID:** 01050601-27

Site: Eddy County, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	7120	100		10		05/23/01 14:30	CV	682218
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	2700	50		5		05/23/01 11:00	G_T	681215

Prep Method	Prep Date	Prep Initials
	05/23/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Flare Pit Bottom (5-6') **Collected:** 5/16/01 **SPL Sample ID:** 01050601-28

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	847		10		1		05/23/01 14:30	CV	682219
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		1		1		05/22/01 2:51	TM	678302
Ethylbenzene	5.9		1		1		05/22/01 2:51	TM	678302
Toluene	ND		1		1		05/22/01 2:51	TM	678302
Xylenes,Total	11		1		1		05/22/01 2:51	TM	678302
Surr: 1,4-Difluorobenzene	127	%	59-127		1		05/22/01 2:51	TM	678302
Surr: 4-Bromofluorobenzene	309 MI	%	48-156		1	*	05/22/01 2:51	TM	678302
TOTAL PETROLEUM HYDROCARBONS				**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	480		10		1		05/23/01 11:00	G_T	681216

Prep Method	Prep Date	Prep Initials
	05/23/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Flare Pit (West Wall Stockpile #1) **Collected:** 5/16/01 **SPL Sample ID:** 01050601-29

Site: **Eddy County, NM**

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	491	10		1		05/23/01 14:30	CV	682220
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	400	10		1		05/23/01 11:00	G_T	681217

Prep Method	Prep Date	Prep Initials
	05/23/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Flare Pit (West Wall Stockpile #2) **Collected:** 5/16/01 **SPL Sample ID:** 01050601-30

Site: Eddy County, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	491		10	1		05/23/01 14:30	CV	682221
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	33		25	25		05/25/01 22:42	FB	685974
Ethylbenzene	350		25	25		05/25/01 22:42	FB	685974
Toluene	ND		25	25		05/25/01 22:42	FB	685974
Xylenes,Total	1930		25	25		05/25/01 22:42	FB	685974
Surr: 1,4-Difluorobenzene	111	%	59-127	25		05/25/01 22:42	FB	685974
Surr: 4-Bromofluorobenzene	429 MI	%	48-156	25	*	05/25/01 22:42	FB	685974
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	6000		100	10		05/23/01 11:00	G_T	681218

Prep Method	Prep Date	Prep Initials
	05/23/2001 9:00	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

Quality Control Documentation

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Quality Control Report

Highlander Environmental Corp

POGO/McMillan 24 State #1 1650

Analysis: Total Petroleum Hydrocarbons
Method: E418.1
WorkOrder: 01050601
Lab Batch ID: R35715

Method Blank

RunID: EX_010522C-680100 Units: mg/Kg
Analysis Date: 05/22/2001 14:30 Analyst: HH
Preparation Date: 05/22/2001 9:00 Prep By: Method

Analyte	Result	Rep Limit
Petroleum Hydrocarbons,TR	ND	10

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01050601-01A	T-1 Stockpile #1
01050601-02A	T-1 Stockpile #2
01050601-03A	T-1 Stockpile #3
01050601-04A	T-1 Stockpile #4
01050601-05A	T-1 Stockpile #5
01050601-06A	T-1 Stockpile #6
01050601-07A	T-1 Stockpile #7
01050601-08A	T-1 Stockpile #8
01050601-09A	T-2 Stockpile #1
01050601-10A	T-2 Stockpile #2
01050601-11A	T-2 Stockpile #3
01050601-12A	T-2 Stockpile #4
01050601-13A	T-2 Stockpile #5
01050601-14A	T-2 Stockpile #6
01050601-15A	T-2 Stockpile #7
01050601-16A	T-2 Stockpile #8
01050601-17A	T-2 Stockpile #9
01050601-18A	T-2 Stockpile #10
01050601-19A	T-2 Stockpile #11
01050601-20A	T-2 Stockpile #12

Laboratory Control Sample (LCS)

RunID: EX_010522C-680101 Units: mg/Kg
Analysis Date: 05/22/2001 14:30 Analyst: HH
Preparation Date: 05/22/2001 9:00 Prep By: Method

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Petroleum Hydrocarbons,TR	200	180	92	86	117

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01050601-01
RunID: EX_010522C-680124 Units: mg/Kg
Analysis Date: 05/22/2001 14:30 Analyst: HH
Preparation Date: 05/22/2001 9:00 Prep By: Method

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rour ding, the reported RPD may differ from the displayed RPD values but is correct as reported.

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Quality Control Report

Highlander Environmental Corp

POGO/McMillan 24 State #1 1650

Analysis: Total Petroleum Hydrocarbons **WorkOrder:** 01050601
Method: E418.1 **Lab Batch ID:** R35715

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01050601-01
RunID: EX_010522C-680124 Units: mg/Kg
Analysis Date: 05/22/2001 14:30 Analyst: HH
Preparation Date: 05/22/2001 9:00 Prep By: Method

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Petroleum Hydrocarbons,TR	760	200	940	88.6	200	950	91.1	2.73	20	72	119

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

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Quality Control Report

Highlander Environmental Corp

POGO/McMillan 24 State #1 1650

Analysis: Total Petroleum Hydrocarbons
Method: E418.1
WorkOrder: 01050601
Lab Batch ID: R35759

Method Blank

Run ID: EX_010523A-681202 Units: mg/Kg
Analysis Date: 05/23/2001 11:00 Analyst: G_T
Preparation Date: 05/23/2001 9:00 Prep By: Method

Analyte	Result	Rep Limit
Petroleum Hydrocarbons,TR	ND	10

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01050601-21A	T-2 Stockpile #13
01050601-22A	Trench #2-bottom Area 1
01050601-23A	Trench #2-bottom Area 2
01050601-24A	Trench #3-bottom Area 1
01050601-25A	Trench #3-bottom Area 2
01050601-26A	Trench #3-bottom Area 3
01050601-27A	Trench #3-bottom Area 4
01050601-28A	Flare Pit Bottom (5-6')
01050601-29A	Flare Pit (West Wall Stockpil
01050601-30A	Flare Pit (West Wall Stockpil

Laboratory Control Sample (LCS)

RunID: EX_010523A-681203 Units: mg/Kg
Analysis Date: 05/23/2001 11:00 Analyst: G_T
Preparation Date: 05/23/2001 9:00 Prep By: Method

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Petroleum Hydrocarbons,TR	200	190	95	86	117

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01050528-03
RunID: EX_010523A-681226 Units: mg/Kg
Analysis Date: 05/23/2001 11:00 Analyst: G_T
Preparation Date: 05/23/2001 9:00 Prep By: Method

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Petroleum Hydrocarbons,TR	10	200	190	90.0	200	200	92.5	2.74	20	72	119

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

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Quality Control Report

Highlander Environmental Corp

POGO/McMillan 24 State #1 1650

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 01050601
Lab Batch ID: R35571

Method Blank

Run ID: HP_O_010521A-677713 Units: ug/Kg
Analysis Date: 05/21/2001 12:30 Analyst: TM

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01050601-28A	Flare Pit Bottom (5-6')

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	97.9	59-127
Surr: 4-Bromofluorobenzene	105.1	48-156

Laboratory Control Sample (LCS)

RunID: HP_O_010521A-677711 Units: ug/Kg
Analysis Date: 05/21/2001 11:53 Analyst: TM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	43	87	60	120
Ethylbenzene	50	45	90	68	127
Toluene	50	44	89	64	122
Xylenes,Total	150	137	91	68	129

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01050632-01
RunID: HP_O_010521A-678296 Units: ug/Kg
Analysis Date: 05/21/2001 23:14 Analyst: TM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	21	107	20	22	111	3.68	34	35	139
Ethylbenzene	ND	20	20	102	20	22	111	8.59	35	31	137
Toluene	ND	20	21	104	20	26	127	20.4	28	31	137
Xylenes,Total	ND	60	61	102	60	72	120	16.5	38	19	144

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

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Quality Control Report

Highlander Environmental Corp

POGO/McMillan 24 State #1 1650

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 01050601
Lab Batch ID: R35986

Method Blank

RunID: HP_O_010525A-685953 Units: ug/Kg
Analysis Date: 05/25/2001 9:01 Analyst: FB

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	96.4	59-127
Surr: 4-Bromofluorobenzene	101.3	48-156

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01050601-03A	T-1 Stockpile #3
01050601-04A	T-1 Stockpile #4
01050601-05A	T-1 Stockpile #5
01050601-10A	T-2 Stockpile #2
01050601-12A	T-2 Stockpile #4
01050601-15A	T-2 Stockpile #7
01050601-20A	T-2 Stockpile #12
01050601-22A	Trench #2-bottom Area 1
01050601-25A	Trench #3-bottom Area 2
01050601-30A	Flare Pit (West Wall Stockpil

Laboratory Control Sample (LCS)

RunID: HP_O_010525A-685950 Units: ug/Kg
Analysis Date: 05/25/2001 7:28 Analyst: FB

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	49	97	60	120
Ethylbenzene	50	48	96	68	127
Toluene	50	49	97	64	122
Xylenes,Total	150	147	98	68	129

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01050741-04
RunID: HP_O_010525A-685951 Units: ug/Kg
Analysis Date: 05/25/2001 7:59 Analyst: FB

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	24	118	20	23	115	2.23	34	35	139
Ethylbenzene	ND	20	23	116	20	23	113	2.97	35	31	137
Toluene	ND	20	24	118	20	23	114	3.90	28	31	137
Xylenes,Total	ND	60	70	117	60	68	113	2.90	38	19	144

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

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Quality Control Report

Highlander Environmental Corp

POGO/McMillan 24 State #1 1650

Analysis: Chloride, Total
Method: E325.3
WorkOrder: 01050601
Lab Batch ID: R35816

Method Blank

Run ID: WET_010523B-682195 Units: mg/Kg
Analysis Date: 05/23/2001 14:30 Analyst: CV

Analyte	Result	Rep Limit
Chloride	ND	10

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01050601-01A	T-1 Stockpile #1
01050601-03A	T-1 Stockpile #3
01050601-05A	T-1 Stockpile #5
01050601-07A	T-1 Stockpile #7
01050601-09A	T-2 Stockpile #1
01050601-11A	T-2 Stockpile #3
01050601-13A	T-2 Stockpile #5
01050601-15A	T-2 Stockpile #7
01050601-17A	T-2 Stockpile #9
01050601-19A	T-2 Stockpile #11

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01050601-01
RunID: WET_010523B-682198 Units: mg/Kg
Analysis Date: 05/23/2001 14:30 Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	320	500	830	102	500	830	102	0	20	91.8	115

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

5/30/01 5:19:56 PM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

Highlander Environmental Corp

POGO/McMillan 24 State #1 1650

Analysis: Chloride, Total
Method: E325.3
WorkOrder: 01050601
Lab Batch ID: R35816A

Method Blank

Run ID: WET_010523B-682195 Units: mg/Kg
Analysis Date: 05/23/2001 14:30 Analyst: CV

Analyte	Result	Rep Limit
Chloride	ND	10

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01050601-21A	T-2 Stockpile #13
01050601-22A	Trench #2-bottom Area 1
01050601-23A	Trench #2-bottom Area 2
01050601-25A	Trench #3-bottom Area 2
01050601-26A	Trench #3-bottom Area 3
01050601-27A	Trench #3-bottom Area 4
01050601-28A	Flare Pit Bottom (5-6')
01050601-29A	Flare Pit (West Wall Stockpil
01050601-30A	Flare Pit (West Wall Stockpil

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01050601-21
RunID: WET_010523B-682211 Units: mg/Kg
Analysis Date: 05/23/2001 14:30 Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	93	500	593	100	500	593	100	0	20	91.8	115

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

Sample Receipt Checklist

And

Chain of Custody

5/30/01 5:20:17 PM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	01050601	Received By:	DS
Date and Time Received:	5/18/01 10:00:00 AM	Carrier name:	FedEx
Temperature:	4	Chilled by:	Water Ice

1.	**Shipping container/cooler in good condition?**	Yes ☑	No ☐	Not Present	☐
2.	**Custody seals intact on shippping container/cooler?**	Yes ☐	No ☐	Not Present	☑
3.	**Custody seals intact on sample bottles?**	Yes ☐	No ☐	Not Present	☑
4.	**Chain of custody present?**	Yes ☑	No ☐		
5.	**Chain of custody signed when relinquished and received?**	Yes ☑	No ☐		
6.	**Chain of custody agrees with sample labels?**	Yes ☑	No ☐		
7.	**Samples in proper container/bottle?**	Yes ☑	No ☐		
8.	**Sample containers intact?**	Yes ☑	No ☐		
9.	**Sufficient sample volume for indicated test?**	Yes ☑	No ☐		
10.	**All samples received within holding time?**	Yes ☑	No ☐		
11.	**Container/Temp Blank temperature in compliance?**	Yes ☑	No ☐		
12.	**Water - VOA vials have zero headspace?**	Yes ☐	No ☐	Not Applicable	☑
13.	**Water - pH acceptable upon receipt?**	Yes ☐	No ☐	Not Applicable	☑

SPL Representative: _____ **Contact Date & Time:** _____

Client Name Contacted: _____

Non Conformance Issues: _____

Client Instructions: _____

01050601

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

PAGE: 1 OF: 3

CLIENT NAME: Pogo Producing | SITE MANAGER: IKE Tavarez

PROJECT NO.: 1650 | PROJECT NAME: Pogo / McMillan 24 State #1 Eddy County, NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 8015 MOD. TX1005 (418.1)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Attached
	5/16/01		S	Y		T-1 Stockpile - #1	1				✓				X														X
			S	Y		T-1 Stockpile - #2	1				✓				X														
			S	Y		T-1 Stockpile - #3	1				✓				X														X
			S	Y		T-1 Stockpile - #4	1				✓				X														
			S	Y		T-1 Stockpile - #5	1				✓				X														X
			S	Y		T-1 Stockpile #6	1				✓				X														
			S	Y		T-1 Stockpile #7	1				✓				X														X
			S	Y		T-1 Stockpile #8	1				✓				X														
			S	Y		T-2 Stockpile #1	1				✓				X														X
			S	Y		T-2 Stockpile #2	1				✓				X								40						

RELINQUISHED BY: (Signature) — Date: 5/17/01 Time: — RECEIVED BY: (Signature) — Date: — Time:

RELINQUISHED BY: (Signature) — Date: — Time: — RECEIVED BY: (Signature) — Date: — Time:

RELINQUISHED BY: (Signature) — Date: — Time: — RECEIVED BY: (Signature) — Date: — Time:

SAMPLED BY: (Print & Sign) IKE Tavarez — Date: — Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL # HAND DELIVERED UPS OTHER:

RECEIVING LABORATORY: SPL — RECEIVED BY: (Signature) Brenda Dolly

ADDRESS: — CITY: — STATE: — ZIP: — CONTACT: — PHONE: — DATE: 5/18/01 TIME: 1000

HIGHLANDER CONTACT PERSON: IKE Tavarez — Results by: — RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS: Run BTEX on (3) highest TPH for T-1 stockpiles (3 BTEX)

GD

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

01050601

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Pogo Producing | SITE MANAGER: IKE Tavarez

PROJECT NO.: 1650 | PROJECT NAME: Pogo McMillan 24 State #1 Eddy County, NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	ANALYSIS REQUEST (Circle or Specify Method No.): BTEX 8020/602	MTBE 8020/602	TPH (418.1) 8015 MOD. TX1005 (TPH)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 608/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Other
	5/16/01		S	1		T-2 Stockpile #3	1				/				X							4								X
			S	1		T-2 Stockpile #4	1				/				X															
			S	1		T-2 Stockpile #5	1				/				X															X
			S	1		T-2 Stockpile #6	1				/				X															
			S	1		T-2 Stockpile #7	1				/				X															X
			S	1		T-2 Stockpile #8	1				/				X															
			S	1		T-2 Stockpile #9	1				/				X															X
			S	1		T-2 Stockpile #10	1				/				X															
			S	1		T-2 Stockpile #11	1				/				X															X
			S			T-2 Stockpile #12	1								X							4								

RELINQUISHED BY: (Signature) Date: 5/17/01 Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLED BY: (Print & Sign) IKE Tavarez Date: Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL # HAND DELIVERED UPS OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: SPL
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature) Richard Wells
DATE: 5/18/01 TIME: 1000

HIGHLANDER CONTACT PERSON: IKE Tavarez
Results by:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS: RUN BTEX ON highest (*) TPH for stockpile T-2 4(BTEX-Total)

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy

010501001

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.
1910 N. Big Spring St.
Midland, Texas 79705
(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Pogo Producing | SITE MANAGER: Ike Tavarez

PROJECT NO.: 1650 | PROJECT NAME: Pogo McMillan 24 State #1 Eddy Co. NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 418.1 / 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 608/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Algodo
	5/16/01			✓		T-2 Stockpile #13	1				✓				X														X
				✓		Trench #2 - bottom, Area 1	1				✓				X														X
				✓		Trench #2 - bottom, Area 2	1				✓				X														X
				✓		Trench #3, bottom, Area 1	1				✓				X														X
				✓		Trench #3, bottom, Area 2	1				✓				X														X
				✓		Trench #3, bottom, Area 3	1				✓				X														X
				✓		Trench #3, bottom, Area 4	1				✓				X														X
				✓		Flare Pit bottom (5-6')	1				✓		X		X														X
				✓		Flare Pit (west wall, stockpile #1)	1				✓				X														X
				✓		Flare Pit (west wall, stockpile #2)	1				✓				X													4			

PAGE: 3 OF: 3

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) Ike Tavarez Date: 5/17/01 Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL # HAND DELIVERED UPS OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
HIGHLANDER CONTACT PERSON: Ike Tavarez
Results by:

RECEIVING LABORATORY: SPL
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature) Jerome Ortiz
DATE: 5/18/01 TIME: 1000
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS: (1) Run BTEX on highest TPH on Trench #2 (1 BTEX)
(2) " " " " " on Trench #3 (1 BTEX)
(3) Run BTEX on highest TPH on Flare Pit (west wall)

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Highlander Environmental Corp

Certificate of Analysis Number:

01060189

Report To:		Project Name:	POGO Producing 1650
Highlander Environmental Corp		Site:	McMillan 24 State #1 Eddy Co, NM
Ike Tavarez		Site Address:	
1910 N. Big Spring Street			
Midland		PO Number:	
Texas		State:	Texas
79705-		State Cert. No.:	
ph: (915) 682-4559	fax: (915) 682-3946	Date Reported:	6/13/01

This Report Contains A Total Of 26 Pages

Excluding This Page

And

Chain Of Custody

6/13/01

Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Case Narrative for:

Highlander Environmental Corp

Certificate of Analysis Number:

01060189

Report To:		Project Name:	POGO Producing 1650
Highlander Environmental Corp		Site:	McMillan 24 State #1 Eddy Co, NM
Ike Tavarez		Site Address:	
1910 N. Big Spring Street			
Midland		PO Number:	
Texas		State:	Texas
79705-		State Cert. No.:	
ph: (915) 682-4559	fax: (915) 682-3946	Date Reported:	6/13/01

Your sample ID "T-3 Area 4 4.0"" was received broken for the Chloride analysis by method 325.3. You were notified on June 6, 2001 and per our conversation no additional sample would be supplied. The sample was removed from the project.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

6/13/01

Paul Neschich
Senior Project Manager

Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Highlander Environmental Corp

Certificate of Analysis Number:

01060189

Report To: Highlander Environmental Corp
Ike Tavarez
1910 N. Big Spring Street

Midland
Texas
79705-
ph: (915) 682-4559 fax: (915) 682-3946

Fax To: Highlander Environmental Corp
Ike Tavarez fax : (915) 682-3946

Project Name: POGO Producing 1650
Site: McMillan 24 State #1 Eddy Co, NM
Site Address:

PO Number:
State: Texas
State Cert. No.:
Date Reported: 6/13/01

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
T-3 Area 1 3.0'	01060189-01	Soil	6/4/01	6/6/01 10:00:00 AM		☐
T-3 Area 1 6.0'	01060189-02	Soil	6/1/01	6/6/01 10:00:00 AM		☐
T-3 Area 1 8.0'	01060189-03	Soil	6/1/01	6/6/01 10:00:00 AM		☐
T-3 Area 2 2.0'	01060189-04	Soil	6/1/01	6/6/01 10:00:00 AM		☐
T-3 Area 3 3.0'	01060189-05	Soil	6/1/01	6/6/01 10:00:00 AM		☐
T-3 Area 3 6.0'	01060189-06	Soil	6/1/01	6/6/01 10:00:00 AM		☐
T-3 Area 4 2.0'	01060189-07	Soil	6/1/01	6/6/01 10:00:00 AM		☐
T-3 Area 4 4.0'	01060189-08	Soil	6/1/01	6/6/01 10:00:00 AM		☐
T-3 Area 4 6.0'	01060189-09	Soil	6/1/01	6/6/01 10:00:00 AM		☐
Dry Wash, Area 1	01060189-10	Soil	6/1/01	6/6/01 10:00:00 AM		☐
Dry Wash, Area 2	01060189-11	Soil	6/1/01	6/6/01 10:00:00 AM		☐
Dry Wash, Area 3	01060189-12	Soil	6/1/01	6/6/01 10:00:00 AM		☐
Dry Wash, Area 4	01060189-13	Soil	6/1/01	6/6/01 10:00:00 AM		☐
Dry Wash, Area 5	01060189-14	Soil	6/1/01	6/6/01 10:00:00 AM		☐
Flare Pit Stockpile	01060189-15	Soil	6/1/01	6/6/01 10:00:00 AM		☐
Flare Pit Stockpile #2	01060189-16	Soil	6/1/01	6/6/01 10:00:00 AM		☐
Flare Pit Stockpile #3	01060189-17	Soil	6/1/01	6/6/01 10:00:00 AM		☐

6/13/01

Paul Neschich
Senior Project Manager

Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

6/13/01 4:10:15 PM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID T-3 Area 1 3.0' **Collected:** 6/4/01 **SPL Sample ID:** 01060189-01

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	9740	250		25		06/08/01 10:00	CV	701434

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID T-3 Area 1 6.0' **Collected:** 6/1/01 **SPL Sample ID:** 01060189-02

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	6780	100	10		06/08/01 10:00	CV	701437

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID T-3 Area 1 8.0' **Collected:** 6/1/01 **SPL Sample ID:** 01060189-03

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	1660	20	2		06/08/01 10:00	CV	701438

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID T-3 Area 2 2.0' **Collected:** 6/1/01 **SPL Sample ID:** 01060189-04

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	7460	100	10		06/08/01 10:00	CV	701439

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID T-3 Area 3 3.0' **Collected:** 6/1/01 **SPL Sample ID:** 01060189-05

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	10000	100	10		06/08/01 10:00	CV	701441

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID T-3 Area 3 6.0' **Collected:** 6/1/01 **SPL Sample ID:** 01060189-06

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	271	10		1		06/08/01 10:00	CV	701442

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID T-3 Area 4 2.0' **Collected:** 6/1/01 **SPL Sample ID:** 01060189-07

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	7790	100	10		06/08/01 10:00	CV	701443

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID T-3 Area 4 6.0' **Collected:** 6/1/01 **SPL Sample ID:** 01060189-09

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	966	10		1		06/08/01 10:00	CV	701445

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Dry Wash, Area 1 **Collected:** 6/1/01 **SPL Sample ID:** 01060189-10

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	1050		20		2		06/08/01 10:00	CV	701446
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		5		5		06/12/01 18:12	TM	702836
Ethylbenzene	22		5		5		06/12/01 18:12	TM	702836
Toluene	16		5		5		06/12/01 18:12	TM	702836
Xylenes,Total	140		5		5		06/12/01 18:12	TM	702836
Surr: 1,4-Difluorobenzene	105	%	59-127		5		06/12/01 18:12	TM	702836
Surr: 4-Bromofluorobenzene	327 MI	%	48-156		5	*	06/12/01 18:12	TM	702836
TOTAL PETROLEUM HYDROCARBONS				**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	4800		100		10		06/07/01 14:00	HH	697218

Prep Method	Prep Date	Prep Initials
	06/07/2001 12:15	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Dry Wash, Area 2 **Collected:** 6/1/01 **SPL Sample ID:** 01060189-11

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	2370	50		5		06/08/01 10:00	CV	701447
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	1200	50		5		06/07/01 14:00	HH	697219

Prep Method	Prep Date	Prep Initials
	06/07/2001 12:15	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Dry Wash, Area 3 **Collected:** 6/1/01 **SPL Sample ID:** 01060189-12

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**	**Units: mg/Kg**		
Chloride	2030	50	5		06/08/01 10:00	CV	701448
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**	**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	400	10	1		06/07/01 14:00	HH	697220

Prep Method	Prep Date	Prep Initials
	06/07/2001 12:15	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Dry Wash, Area 4 **Collected:** 6/1/01 **SPL Sample ID:** 01060189-13

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	2030		50	5		06/08/01 10:00	CV	701449
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		1	1		06/12/01 17:42	TM	702835
Ethylbenzene	ND		1	1		06/12/01 17:42	TM	702835
Toluene	ND		1	1		06/12/01 17:42	TM	702835
Xylenes,Total	7.5		1	1		06/12/01 17:42	TM	702835
Surr: 1,4-Difluorobenzene	118	%	59-127	1		06/12/01 17:42	TM	702835
Surr: 4-Bromofluorobenzene	114	%	48-156	1		06/12/01 17:42	TM	702835
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	3900		100	10		06/07/01 14:00	HH	697221

Prep Method	Prep Date	Prep Initials
	06/07/2001 12:15	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Dry Wash, Area 5 **Collected:** 6/1/01 **SPL Sample ID:** 01060189-14

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	1150	20		2		06/08/01 10:00	CV	701450
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	2800	50		5		06/07/01 14:00	HH	697222

Prep Method	Prep Date	Prep Initials
	06/07/2001 12:15	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
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Client Sample ID Flare Pit Stockpile | **Collected:** 6/1/01 | **SPL Sample ID:** 01060189-15

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				**MCL**	**E325.3**		**Units: mg/Kg**		
Chloride	847		20		2		06/08/01 10:00	CV	701451
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		1		1		06/07/01 17:59	TM	697664
Ethylbenzene	7.7		1		1		06/07/01 17:59	TM	697664
Toluene	ND		1		1		06/07/01 17:59	TM	697664
Xylenes,Total	49		1		1		06/07/01 17:59	TM	697664
Surr: 1,4-Difluorobenzene	105	%	59-127		1		06/07/01 17:59	TM	697664
Surr: 4-Bromofluorobenzene	353 MI	%	48-156		1	*	06/07/01 17:59	TM	697664
TOTAL PETROLEUM HYDROCARBONS				**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	490		10		1		06/07/01 14:00	HH	697223

Prep Method	Prep Date	Prep Initials
	06/07/2001 12:15	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Flare Pit Stockpile #2 **Collected:** 6/1/01 **SPL Sample ID:** 01060189-16

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result		Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS			**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		1	1		06/07/01 18:29	TM	697665
Ethylbenzene	ND		1	1		06/07/01 18:29	TM	697665
Toluene	ND		1	1		06/07/01 18:29	TM	697665
Xylenes,Total	9.8		1	1		06/07/01 18:29	TM	697665
Surr: 1,4-Difluorobenzene	108	%	59-127	1		06/07/01 18:29	TM	697665
Surr: 4-Bromofluorobenzene	124	%	48-156	1		06/07/01 18:29	TM	697665
TOTAL PETROLEUM HYDROCARBONS			**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	840		10	1		06/07/01 14:00	HH	697224

Prep Method	Prep Date	Prep Initials
	06/07/2001 12:15	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID Flare Pit Stockpile #3 **Collected:** 6/1/01 **SPL Sample ID:** 01060189-17

Site: McMillan 24 State #1 Eddy Co, NM

Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS				**MCL**	**SW8021B**		**Units: ug/Kg**		
Benzene	ND		1		1		06/07/01 19:00	TM	697666
Ethylbenzene	5.4		1		1		06/07/01 19:00	TM	697666
Toluene	ND		1		1		06/07/01 19:00	TM	697666
Xylenes,Total	30.6		1		1		06/07/01 19:00	TM	697666
Surr: 1,4-Difluorobenzene	102	%	59-127		1		06/07/01 19:00	TM	697666
Surr: 4-Bromofluorobenzene	245 MI	%	48-156		1	*	06/07/01 19:00	TM	697666
TOTAL PETROLEUM HYDROCARBONS				**MCL**	**E418.1**		**Units: mg/Kg**		
Petroleum Hydrocarbons,TR	830		10		1		06/07/01 14:00	HH	697225

Prep Method	Prep Date	Prep Initials
	06/07/2001 12:15	

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

Quality Control Documentation

6/13/01 4:10:23 PM

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Quality Control Report

Highlander Environmental Corp

POGO Producing 1650

Analysis: Total Petroleum Hydrocarbons
Method: E418.1
WorkOrder: 01060189
Lab Batch ID: R36666

Method Blank

RunID: EX_010607B-697207 Units: mg/Kg
Analysis Date: 06/07/2001 14:00 Analyst: HH
Preparation Date: 06/07/2001 12:15 Prep By: Method

Analyte	Result	Rep Limit
Petroleum Hydrocarbons,TR	ND	10

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01060189-10A	Dry Wash, Area 1
01060189-11A	Dry Wash, Area 2
01060189-12A	Dry Wash, Area 3
01060189-13A	Dry Wash, Area 4
01060189-14A	Dry Wash, Area 5
01060189-15A	Flare Pit Stockpile
01060189-16A	Flare Pit Stockpile #2
01060189-17A	Flare Pit Stockpile #3

Laboratory Control Sample (LCS)

RunID: EX_010607B-697208 Units: mg/Kg
Analysis Date: 06/07/2001 14:00 Analyst: HH
Preparation Date: 06/07/2001 12:15 Prep By: Method

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Petroleum Hydrocarbons,TR	200	180	90	86	117

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01060189-17
RunID: EX_010607B-697227 Units: mg/Kg
Analysis Date: 06/07/2001 14:00 Analyst: HH
Preparation Date: 06/07/2001 12:15 Prep By: Method

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Petroleum Hydrocarbons,TR	830	200	1000	90.8	200	1000	88.3	2.79	20	72	119

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

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Quality Control Report

Highlander Environmental Corp

POGO Producing 1650

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 01060189
Lab Batch ID: R36652

Method Blank

RunID: HP_O_010607A-697007 Units: ug/Kg
Analysis Date: 06/07/2001 10:57 Analyst: TM

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01060189-15A	Flare Pit Stockpile
01060189-16A	Flare Pit Stockpile #2
01060189-17A	Flare Pit Stockpile #3

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	98.6	59-127
Surr: 4-Bromofluorobenzene	96.8	48-156

Laboratory Control Sample (LCS)

RunID: HP_O_010607A-697006 Units: ug/Kg
Analysis Date: 06/07/2001 9:37 Analyst: TM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	53	106	60	120
Ethylbenzene	50	54	109	68	127
Toluene	50	54	107	64	122
Xylenes,Total	150	165	110	68	129

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01060204-03
RunID: HP_O_010607A-697659 Units: ug/Kg
Analysis Date: 06/07/2001 14:53 Analyst: TM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	22	109	20	24	121	10.3	34	35	139
Ethylbenzene	ND	20	22	108	20	24	122	12.6	35	31	137
Toluene	ND	20	22	109	20	24	121	10.2	28	31	137
Xylenes,Total	ND	60	65	108	60	74	123	12.9	38	19	144

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

6/13/01 4:10:26 PM

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Quality Control Report

Highlander Environmental Corp

POGO Producing 1650

Analysis: Purgeable Aromatics **WorkOrder:** 01060189
Method: SW8021B **Lab Batch ID:** R36927

Method Blank

RunID: HP_O_010612A-702823 Units: ug/Kg
Analysis Date: 06/12/2001 13:04 Analyst: TM

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01060189-10A	Dry Wash, Area 1
01060189-13A	Dry Wash, Area 4

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	98.2	59-127
Surr: 4-Bromofluorobenzene	95.4	48-156

Laboratory Control Sample (LCS)

RunID: HP_O_010612A-702820 Units: ug/Kg
Analysis Date: 06/12/2001 10:56 Analyst: TM

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	46	91	60	120
Ethylbenzene	50	46	93	68	127
Toluene	50	46	91	64	122
Xylenes,Total	150	139	93	68	129

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01060305-12
RunID: HP_O_010612A-702821 Units: ug/Kg
Analysis Date: 06/12/2001 11:31 Analyst: TM

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	18	90.3	20	17	87.1	3.64	34	35	139
Ethylbenzene	ND	20	18	89.8	20	17	85.3	5.17	35	31	137
Toluene	ND	20	18	90.6	20	17	86.3	4.80	28	31	137
Xylenes,Total	ND	60	55	91.7	60	52	86.7	5.61	38	19	144

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

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Quality Control Report

Highlander Environmental Corp

POGO Producing 1650

Analysis: Chloride, Total
Method: E325.3

WorkOrder: 01060189
Lab Batch ID: R36859

Method Blank

RunID: WET_010608R-701432 Units: mg/Kg
Analysis Date: 06/08/2001 10:00 Analyst: CV

Analyte	Result	Rep Limit
Chloride	ND	10

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01060189-01A	T-3 Area 1 3.0'
01060189-02A	T-3 Area 1 6.0'
01060189-03A	T-3 Area 1 8.0'
01060189-04A	T-3 Area 2 2.0'
01060189-05A	T-3 Area 3 3.0'
01060189-06A	T-3 Area 3 6.0'
01060189-07A	T-3 Area 4 2.0'
01060189-09A	T-3 Area 4 6.0'
01060189-10A	Dry Wash, Area 1
01060189-11A	Dry Wash, Area 2

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01060189-01
RunID: WET_010608R-701435 Units: mg/Kg
Analysis Date: 06/08/2001 10:00 Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	9700	12500	22500	102	12500	22500	102	0	20	91.8	115

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

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HOUSTON, TEXAS 77054
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Quality Control Report

Highlander Environmental Corp

POGO Producing 1650

Analysis: Chloride, Total
Method: E325.3
WorkOrder: 01060189
Lab Batch ID: R36859A

Method Blank

RunID: WET_010608R-701432 Units: mg/Kg
Analysis Date: 06/08/2001 10:00 Analyst: CV

Analyte	Result	Rep Limit
Chloride	ND	10

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
01060189-12A	Dry Wash, Area 3
01060189-13A	Dry Wash, Area 4
01060189-14A	Dry Wash, Area 5
01060189-15A	Flare Pit Stockpile

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 01060189-15
RunID: WET_010608R-701452 Units: mg/Kg
Analysis Date: 06/08/2001 10:00 Analyst: CV

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	850	1000	1830	98.3	1000	1860	102	3.39	20	91.8	115

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

6/13/01 4:10:27 PM

Sample Receipt Checklist

And

Chain of Custody

6/13/01 4:10:28 PM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	01060189	Received By:	DS
Date and Time Received:	6/6/01 10:00:00 AM	Carrier name:	FedEx
Temperature:	4	Chilled by:	Water Ice

		Yes	No	Not Present
1.	Shipping container/cooler in good condition?	☑	☐	☐
2.	Custody seals intact on shippping container/cooler?	☐	☐	☑
3.	Custody seals intact on sample bottles?	☐	☐	☑
4.	Chain of custody present?	☑	☐	
5.	Chain of custody signed when relinquished and received?	☑	☐	
6.	Chain of custody agrees with sample labels?	☑	☐	
7.	Samples in proper container/bottle?	☑	☐	
8.	Sample containers intact? 1.Sample ID-T-3 Area 4 4.0' was received broken	☐	☑	
9.	Sufficient sample volume for indicated test?	☑	☐	
10.	All samples received within holding time?	☑	☐	
11.	Container/Temp Blank temperature in compliance?	☑	☐	
12.	Water - VOA vials have zero headspace?	☐	☐	☑ Not Applicable
13.	Water - pH acceptable upon receipt?	☐	☐	☑ Not Applicable

SPL Representative: Brown, Electa **Contact Date & Time:** 6/6/01 3:28:00 PM

Client Name Contacted: Ike Tavarez

Non Conformance Issues: 1.Logged in on hold

Client Instructions: Per Ike disregard that sample T-3 Area 4 4.0'. He has additional sample points to cover the broken sample(T-3 Area 4 4.0').

UT060189

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.
1910 N. Big Spring St.
Midland, Texas 79705
(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Pogo Producing Co.
SITE MANAGER: Ike Tavarez
PROJECT NO.: 1650
PROJECT NAME: Pogo/McMillan 24 State #1 Eddy Co. NM.

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 418.1 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Chloride
	6/1/01		S			T-3, Area 1 (3.0')	1				✓																			X
	6/1/01		S			T-3, Area 1 (6.0')	1				✓																			X
	6/1/01		S			T-3, Area 1 (8.0')	1				✓																			X
	6/1/01		S			T-3, Area 2 (2.0')	1				✓																			X
	6/1/01		S			T-3, Area 3 (3.0')	1				✓																			X
	6/1/01		S			T-3, Area 3 (6.0')	1				✓																			X
	6/1/01		S			T-3, Area 4 (2.0')	1				✓																			X
	6/1/01		S			T-3, Area 4 (4.0')	1				✓																			X
	6/1/01		S			T-3 Area 4 (6.0')	1				✓															4c				X

RELINQUISHED BY: (Signature) [signature] Date: 6/5/01 Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL # HAND DELIVERED UPS OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: SPC
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature) [signature]
DATE: 6/6/01 TIME: 1000

HIGHLANDER CONTACT PERSON: Ike Tavarez
Results by:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:
MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other
REMARKS: [initials]

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Enviromental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

D101/2189

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

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Midland, Texas 79705

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PAGE: 2 OF: 2

CLIENT NAME: Pogo Producing Co. SITE MANAGER: Ike Tavarez

PROJECT NO.: 1650 PROJECT NAME: Pogo / McMillan 34 State #1 Eddy Co. NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 8015 MOD. TX1005 (418.1)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	ECI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Archive
	6/1/01		S	X		Drywash, Area 1	1				1				X														X
	6/1/01		S	X		Drywash, Area 2	1				1				X														X
	6/1/01		S	X		Drywash, Area 3	1				1				X														X
	6/1/01		S	X		Drywash, Area 4	1				1				X														X
	6/1/01		S	X		Drywash, Area 5	1								X														X
	6/1/01		S	X		Flare pit stockpile.	1				1		X		X														X
	6/1/01		S	X		Flare West wall stockpile #2	1				1		X		X												4C			
	6/1/01		S	X		Flare West wall stockpile #3	1				1		X		X															

RELINQUISHED BY: (Signature) Ike Tavarez Date: 6/5/01 Time:

RECEIVED BY: (Signature) Date: Time:

SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL #

HAND DELIVERED UPS OTHER:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: SPL

ADDRESS:

CITY: STATE: ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature) Kenny Baker Jr.

DATE: 6/6/01 TIME: 1055

HIGHLANDER CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS: Run BTEX on (2) highest TPH Drywash Areas

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