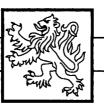
# 2R - <u>3</u>

# 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 I.

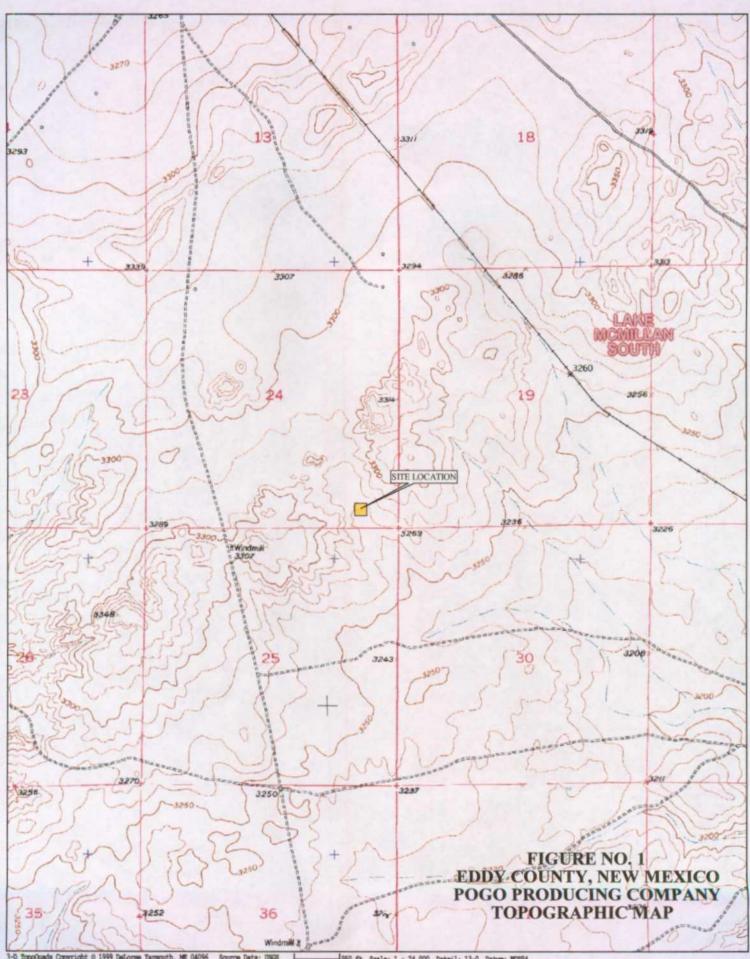


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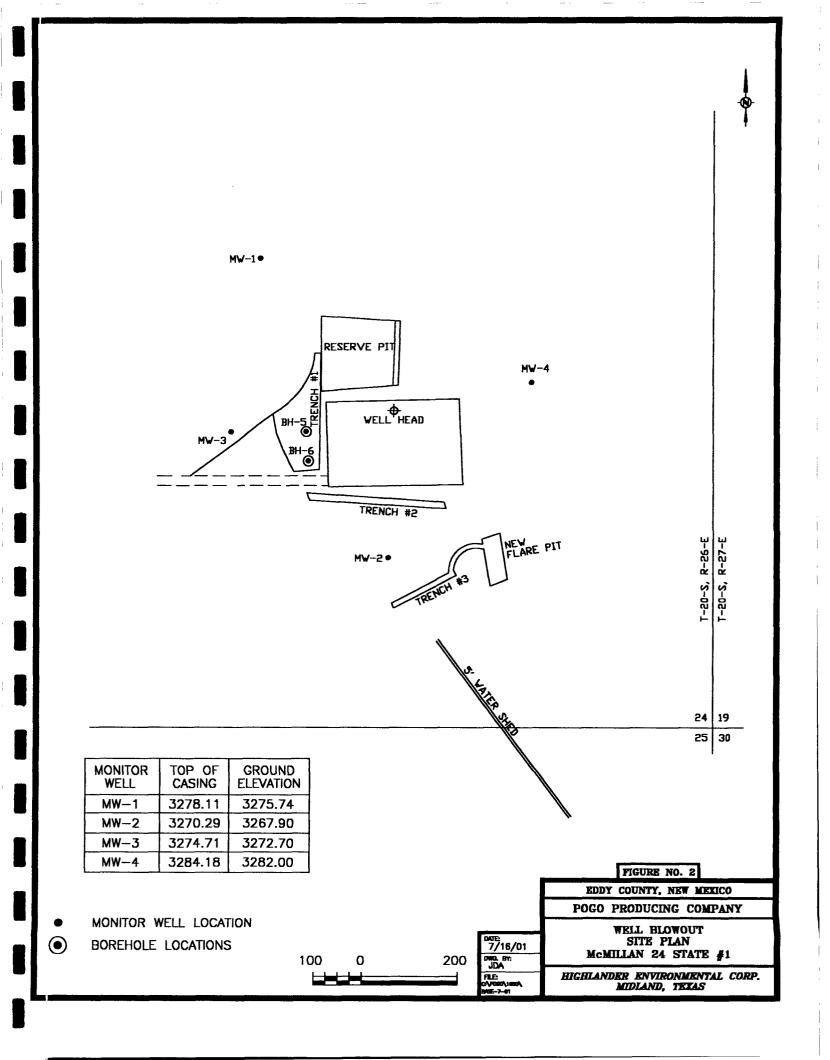
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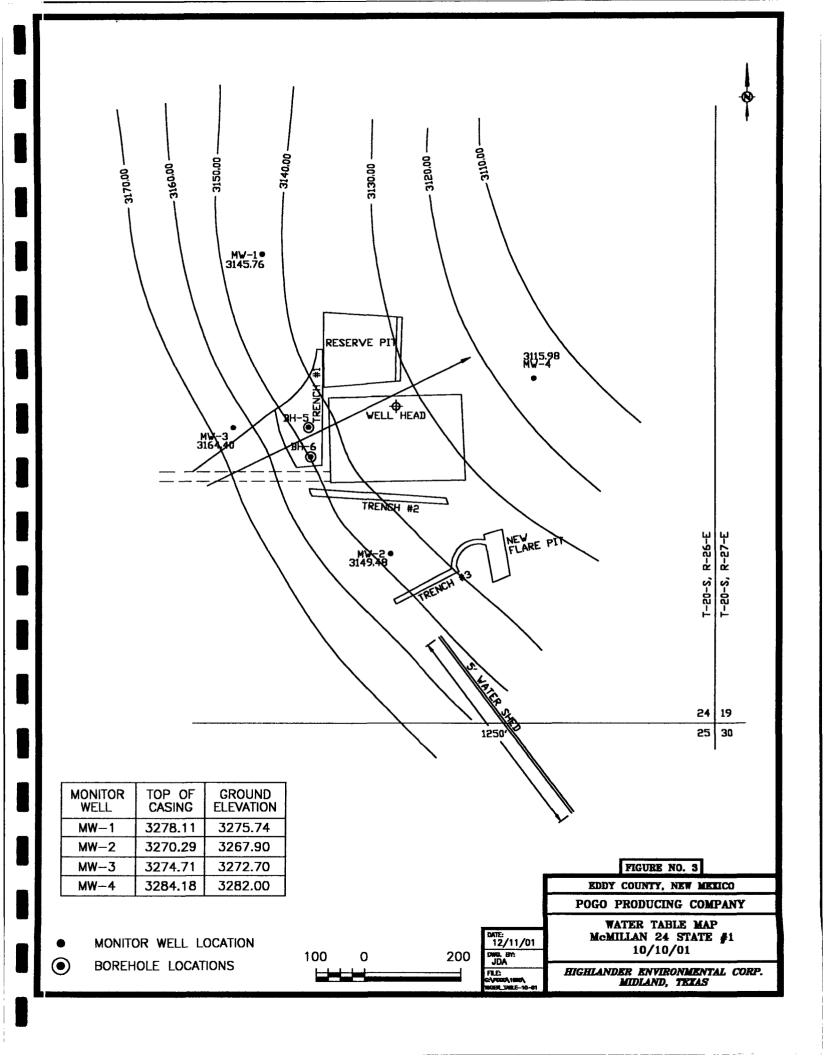
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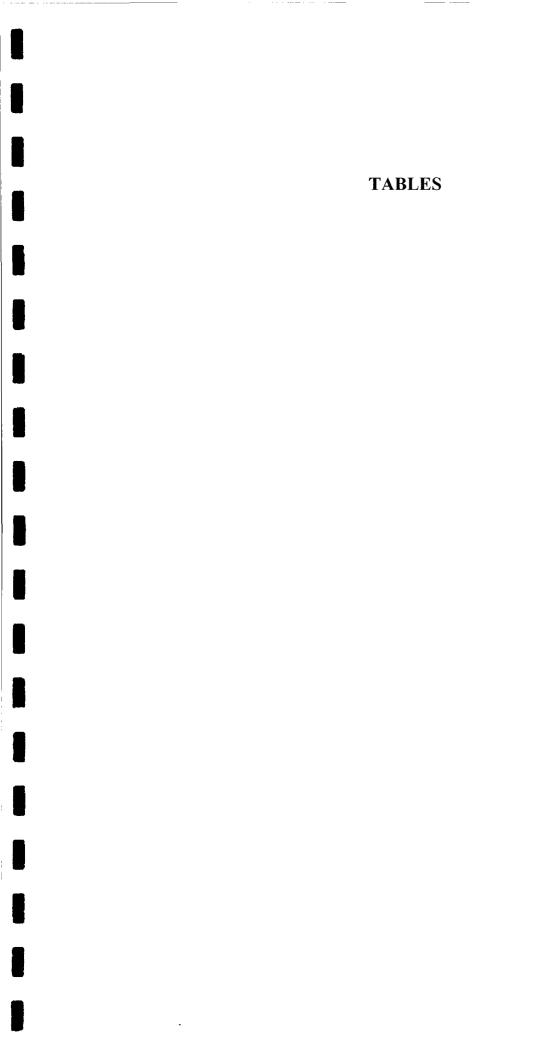
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3-D TopoQuads Copyright 0 1999 DeLorme Tarmouth, ME 04096 Source Data: UNGS 950 ft Scale: 1 : 24,000 Datail: 13-0 Datum: WES84







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#### 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	Depth to	Water	Chloride		BTEX	(mg/l)	
Number	water ft.	Elevation (ft)	mg/l	В	Т	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:		ling performed, co	ollected wate	er levels from	m each wel		
Monitoring							
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 suffi	cient amour	nt of ground	water in the	well	
Monitoring I	Date: Octobe	r 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



#### Case Narrative for: Pogo Producing Company

Certificate of Analysis Number:

#### 01100575 Report To: **Project Name:** Pogo/McMillan 24 State#1/1650 Site: Eddy CO,NM **Highlander Environmental Corp** Ike Tavarez Site Address: 1910 N. Big Spring Street PO Number: Midland State: **New Mexico** Texas 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 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.

2-2

Paul Neschich Senior Project Manager

11/6/01



### Pogo Producing Company

Certificate	of Analysis Number:

### <u>01100575</u>

Report To:	Highlander Environment Ike Tavarez 1910 N. Big Spring Stree		<u>Project Name:</u> <u>Site:</u> <u>Site Address:</u>	Pogo/McMillan 24 State#1/1650 Eddy CO,NM
	Midland Texas 79705- 	form (015) 500 0040	<u>PO Number:</u> <u>State:</u>	New Mexico
<u>Fex To:</u>	ph: (915) 682-4559 Highlander Environmental Ike Tavarez	fax: (915) 682-3946 Corp fax: (915) 682-3946	<u>State Cert. No.:</u> Date Reported:	10/24/01

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

l. Qie Paul Neschich

Senior Project Manager

11/6/01

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



#### HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

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Client Sample ID MW-1			Col	lected:	10/10/01 2:10:00	SPL Sample I	<b>D:</b> 01	100575-01
			Site	e: Ed	dy CO,NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analys	st Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: m	g/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	DR	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

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#### 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:

ample ID: 01100575-02

			Site	e: Ed	dy CO,NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: m	g/L	
Chloride	54.3		1		1	10/22/01 14:00	CV	873304
PURGEABLE AROMATICS				MCL	SW8021B	Units: ug	ı/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			Co	llected:	10/10/01 1	:05:00	SPL Sample I	<b>D:</b> 0 <sup>-</sup>	100575-03
			Site	e: Ed	dy CO,NM				
Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analy	st Seq. #
CHLORIDE, TOTAL				MCL	E	325.3	Units: m	g/L	· · · · · · · · · · · · · · · · · · ·
Chloride	72.7		1		1		10/22/01 14:00	CV	873305
PURGEABLE AROMATICS				MCL	SW8	021B	Units: ug	<u></u> ≱∕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

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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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#### HOUSTON LABORATORY

8880 INTERCHANGE DRIVE HOUSTON, TX 77054

(713) 660-0901

01100575-04

**Client Sample ID MW-4** 

Collected: 10/10/01 4:45:00 SPL Sample ID:

			Site	e: Ed	dy 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		11	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

10/24/01 12:26:59 PM

I.



**Pogo Producing Company** 

				P	ogo/McMill	an 24	State#1/1	650							
Analysis: Me∵hod:	Purgeable A SW8021B	romatics			- <b>J</b>						kOrder: Batch ID:		100575 5826		
	· · · · · · · · · · · · · · · · · · ·	Method	l Blank				Sam	ples in	Analytic	al Batc	h:				
RunID:	HP_U_011019E	B-870571	Units:	ug/L			Lab	Sample	ID		Client Sa	nple II	C		
Analysis Date	e: 10/19/2001 1	1:29	Analyst:	D_R			0110	0575-01	A		MW-1				
	Ana	llyte		Result	Rep Limit										
	Benzene			ND											
	Ethylbenzene Toluene			ND ND	1.0										
	Xylenes,Total			ND	1.0										
	Surr: 1,4-Difluoroben			94.2	72-137										
	Surr: 4-Bromofluorob	benzene	1	79.0	48-156										
				La	boratory Co	ontrol	Sample (	LCS)							
		RunID:		HP U 01 <sup>.</sup>	1019B-870570	) U	nits: u	ug/L							
		Analysis [			01 10:38			)_R							
			- 41.01												
	Г		Analyte	)	( s	pike	Result	Perce	ent L	ower	Upper				
		<del>.</del>	Analyte	9		pike dded	Result	Perce Recov	1	ower Limit	Upper Limit				
	B	enzene	Analyte	)				Recov	1						
		enzene thylbenzen		)		dded	53	Recov	very l	Limit	Limit				
	E			)		dded 50	53		very I 106	Limit 70	Limit 130				
	E1 Tc	thylbenzen	e	)		dded 50 50	) 53 ) 53 ) 55	Recov	very I 106 106	Limit 70 70	Limit 130 130				
	E1 Tc	thylbenzen oluene	e	3		dded 50 50 50	) 53 ) 53 ) 55	Recov	very   1 106 106 109	Limit 70 70 70	Limit 130 130 130				
	E1 Tc	thylbenzen oluene	e			dded 50 50 50 150	53 53 55 163	Recov	very   1 106 106 109	Limit 70 70 70	Limit 130 130 130				
	E1 Tc	thylbenzen oluene ylenes,Tota	e al <u>Matrix S</u>	Spike (M	S) / Matrix S	dded 50 50 50 150	53 53 55 163	Recov	very   1 106 106 109	Limit 70 70 70	Limit 130 130 130				
	E1 Tc	thylbenzen oluene ylenes,Tota Sample	e al <u>Matrix S</u>	Spike (M 011007	S) / Matrix 5	dded 50 50 150 Spike	0 53 55 163 Duplicate	Recov	very   1 106 106 109	Limit 70 70 70	Limit 130 130 130				
	E1 Tc	thylbenzen oluene ylenes,Tota Sample RunID:	e al <u>Matrix S</u> Spiked:	Spike (M 011007 HP_U_0	S) / Matrix 5 01-01 11019B-8705	dded 50 50 150 Spike 1	0 53 55 55 163 Duplicate	Recov 3 5 5 6 (MSD) ug/L	very   1 106 106 109	Limit 70 70 70	Limit 130 130 130				
	E1 Tc	thylbenzen oluene ylenes,Tota Sample	e al <u>Matrix S</u> Spiked:	Spike (M 011007 HP_U_0	S) / Matrix 5	dded 50 50 150 Spike 1	0 53 55 163 Duplicate	Recov	very   1 106 106 109	Limit 70 70 70	Limit 130 130 130				
		thylbenzen oluene ylenes,Tota Sample RunID: Analysis	e al <u>Matrix S</u> Spiked: : Date:	Spike (M 011007 HP_U_0 10/19/2	S) / Matrix 5 01-01 11019B-87055 001 18:46	dded 50 50 150 Spike 1 56	0 53 55 163 Duplicate Units: Analyst:	Recov (MSD) ug/L D_R	very   1 106 109 109 109	Limit 70 70 70 70	Limit 130 130 130	BPO	BPD		Hich
	E1 Tc	thylbenzen oluene ylenes,Tota Sample RunID: Analysis	e al <u>Matrix S</u> Spiked:	Spike (M 011007 HP_U_0	S) / Matrix 5 01-01 11019B-8705	dded 50 50 150 Spike   56	0 53 55 55 163 Duplicate	Recov 3 5 5 6 (MSD) ug/L	very   1 106 106 109	Limit 70 70 70 70	Limit 130 130 130	RPD	RPD Limit		High Limit
Berizene		thylbenzen oluene ylenes,Tota Sample RunID: Analysis	e al <u>Matrix S</u> Spiked: Date: Sample	011007 HP_U_0 10/19/2 MS Spike Added	S) / Matrix S 01-01 11019B-87059 0001 18:46 MS Resu	dded 50 50 150 Spike   56	0 53 55 163 Duplicate Units: Analyst: MS %	Recov (MSD) ug/L D_R MSD Spike	very   1 106 109 109 109	Limit 70 70 70 70	Limit 130 130 130 130	RPD 17.0			
Berizene Ethylbenzene	Et Tc Xy Analyte	thylbenzen oluene ylenes,Tota Sample RunID: Analysis	e al <u>Matrix S</u> Spiked: s Date: Sample Result	011007 HP_U_0 10/19/2 MS Spike Added	S) / Matrix S 01-01 11019B-87059 0001 18:46 MS Resu	dded 50 50 150 Spike   56	Duplicate Units: Analyst: MS % Recovery	Recov (MSD) ug/L D_R MSD Spike Added	very   1 106 109 109 109	Limit 70 70 70 70	Limit 130 130 130 130 130 MSD % Recovery		Limit	Limit	Limit

Qualifiers:

Xylenes,Total

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

130

B - Analyte detected in the associated Method Blank D - Recovery U

78

J - Estimated value between MDL and PQL

D - Recovery Unreportable due to Dilution \* - Recovery Outside Advisable QC Limits

60

74

123 5.26

18

53

144

veen MDL and PQL \* - Reco

60

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.

ND

10/24/01 12:27:04 PM



#### **Pogo Producing Company**

Pogo/McMillan 24 State#1/1650

Analysis: Method:	Purgeable SW8021B		S							orkOrder: Batch ID:		100575 5833		
		Meth	od Blank				Sam	ples in /	Analytical Ba	tch:				
RunID:	HP_U_0110	20A-870714	Units:	ug/L			Lab	Sample	ID	Client Sar	nple I[	C		
Analysis Da	te: 10/20/2001	1 1:07	Analyst:	D_R				0575-02		MW-2		-		
			-				0110	0575-03	A	MW-3				
							0110	0575-04	A	MW-4				
	Δ	nalyte		Result	Rep Limit									
	Benzene	andryto		ND	1.0									
	Ethylbenzene			ND	1.0									
	Toluene			ND	1.0									
	Xylenes,Total			ND	1.0									
	Surr: 1,4-Difluorot			<u>95.3</u> 101.8	72-137 48-156									
	Surr. 4-bromoliuo	NUDENZENE		101.0	40-130									
				La	poratory Co	ntrol S	Sample (I	LCS)						
		RunID:			1020A-870713	3 11-	nits: ı	Jg/L						
								-						
		Analys	is Date:	10/20/20	01 0:41	Ar	nalyst: (	D_R						
		[	Analyt	e	S	pike	Result	Perce	nt Lower	Upper				
			Analyt	e		pike dded	Result	Perce Recov		Upper Limit				
		Benzene	Analyt	e				Recov		Limit				
		Benzene Ethylbenz		e		dded	52	Recov	ery Limit	Limit				
				e		dded 50	52 52	Recov	very Limit	Limit 0 130 0 130				
		Ethylbenz	ene	e		dded 50 50	52 52 53	Recov	very Limit 103 70 103 70	Limit 0 130 0 130 0 130 0 130				
		Ethylbenz Toluene	ene	e		dded 50 50 50	52 52 53	Recov	very Limit 103 70 103 70 105 70	Limit 0 130 0 130 0 130				
		Ethylbenz Toluene	ene	9		dded 50 50 50	52 52 53	Recov	very Limit 103 70 103 70 105 70	Limit 0 130 0 130 0 130				
		Ethylbenz Toluene	otal			dded 50 50 150	52 52 53 152	Recov	very Limit 103 70 103 70 105 70	Limit 0 130 0 130 0 130				
		Ethylbenz Toluene Xylenes,T	otal <u>Matrix</u>	Spike (M	A S) / Matrix S	dded 50 50 150	52 52 53 152	Recov	very Limit 103 70 103 70 105 70	Limit 0 130 0 130 0 130				
		Ethylbenz Toluene Xylenes,T Samp	otal <u>Matrix</u>	Spike (M 011006	<u>A</u> <u>S) / Matrix (</u> 98-01	dded 50 50 150 Spike I	52 52 53 152 Duplicate	(MSD)	very Limit 103 70 103 70 105 70	Limit 0 130 0 130 0 130				
		Ethylbenz Toluene Xylenes,T Samp Runit	otal <u>Matrix</u> ole Spiked: D:	<mark>Spike (М</mark> 011006 HP_U_0	A 5) / Matrix ( 98-01 11020A-8707)	dded 50 50 150 Spike I	52 52 53 152 Duplicate	Recov	very Limit 103 70 103 70 105 70	Limit 0 130 0 130 0 130				
		Ethylbenz Toluene Xylenes,T Samp Runit	otal <u>Matrix</u>	<mark>Spike (М</mark> 011006 HP_U_0	<u>A</u> <u>S) / Matrix (</u> 98-01	dded 50 50 150 Spike I	52 52 53 152 Duplicate	(MSD)	very Limit 103 70 103 70 105 70	Limit 0 130 0 130 0 130				
		Ethylbenz Toluene Xylenes,T Samp Runit	tene otal <u>Matrix</u> ole Spiked: D:	<mark>Spike (М</mark> 011006 HP_U_0	A 5) / Matrix ( 98-01 11020A-8707)	dded 50 50 150 Spike I	52 52 53 152 Duplicate	Recov	very Limit 103 70 103 70 105 70	Limit 0 130 0 130 0 130				
		Ethylbenz Toluene Xylenes,T Samp Runit	tene otal <u>Matrix</u> ole Spiked: D:	<mark>Spike (М</mark> 011006 HP_U_0	A 5) / Matrix ( 98-01 11020A-8707)	dded 50 50 150 Spike I	52 52 53 152 Duplicate	Recov	very Limit 103 70 103 70 105 70	Limit 0 130 0 130 0 130				
	Analyte	Ethylbenz Toluene Xylenes,T Samp Runit	otal <u>Matrix</u> De Spiked: D: sis Date: Sample	Spike (M 011006 HP_U_0 10/20/2 MS	A 5) / Matrix ( 98-01 11020A-8707)	dded 50 50 50 150 Spike I 21 t	52 52 53 152 Duplicate Units: Analyst: MS %	Recov 2 3 4 (MSD) ug/L D_R MSD	very Limit 103 70 103 70 105 70	Limit 0 130 0 130 0 130 0 130 0 130 0 130	RPD			High
	Analyte	Ethylbenz Toluene Xylenes,T Samp Runit	rene Total <u>Matrix</u> ole Spiked: D: rsis Date:	Spike (M 011006 HP_U_0 10/20/2 MS Spike	S) / Matrix S 98-01 11020A-8707 001 18:53	dded 50 50 50 150 Spike I 21 t	52 52 53 152 Duplicate Units: Analyst: MS %	Recov	Very Limit 103 74 103 74 105 74 105 74 101 74	Limit 0 130 0 130 0 130 0 130 0 130	RPD		Low Limit	
	Analyte	Ethylbenz Toluene Xylenes,T Samp Runit	otal <u>Matrix</u> De Spiked: D: sis Date: Sample	Spike (M 011006 HP_U_0 10/20/2 MS	S) / Matrix S 98-01 11020A-8707 001 18:53	dded 50 50 50 150 Spike I 21 t	52 52 53 152 Duplicate Units: Analyst: MS %	Recov 2 3 4 (MSD) ug/L D_R MSD	Very Limit 103 74 103 74 105 74 105 74 101 74	Limit 0 130 0 130 0 130 0 130 0 130 0 130	RPD			
Benzene	Analyte	Ethylbenz Toluene Xylenes,T Samp Runit	otal <u>Matrix</u> De Spiked: D: sis Date: Sample	Spike (M 011006 HP_U_0 10/20/2 MS Spike Added	S) / Matrix S 98-01 11020A-8707 001 18:53	dded 50 50 50 150 Spike I 21 t	52 52 53 152 Duplicate Units: Analyst: MS %	Recov	Very Limit 103 74 103 74 105 74 105 74 101 74	Limit 0 130 0 130 0 130 0 130 0 130 0 130 MSD % Recovery		Limit		Limit
		Ethylbenz Toluene Xylenes,T Samp Runit	otal <u>Matrix</u> ole Spiked: D: sis Date: Sample Result	Spike (M 011006 HP_U_0 10/20/2 MS Spike Added 20	S) / Matrix S 98-01 11020A-8707 001 18:53	dded 50 50 150 21 t 1 21 t 7	52 52 53 152 Duplicate Units: Analyst: MS % Recovery	Recov	Very Limit 103 74 103 74 105 74 105 74 101 74 MSD Result	Limit D 130 D 130 D 130 D 130 D 130 D 130 MSD % Recovery I 102	7.33	Limit	Limit	Limit
Benzene Ethylbenzen Tol Jene		Ethylbenz Toluene Xylenes,T Samp Runit	tene Total <u>Matrix</u> ble Spiked: D: rsis Date: Sample Result 1.1	Spike (M 011006 HP_U_0 10/20/2 MS Spike Added 20 20	S) / Matrix S 98-01 11020A-8707 001 18:53	dded 50 50 150 21 t 21 t 7 20	52 52 53 152 Duplicate Units: Analyst: MS % Recovery 94.4	Recov	rery Limit 103 74 103 74 105 74 105 74 101 74 MSD Result	Limit D 130 D 130 D 130 D 130 D 130 D 130 D 130 MSD % Recovery I 102 D 98.0	7.33 6.50	Limit 21 19	Limit 32	Limit 164

Qualifiers:

- ND/U Not Detected at the Reporting Limit
- MI Matrix Interference
- D Recovery Unreportable due to Dilution
- J Estimated value between MDL and PQL

B - Analyte detected in the associated Method Blank

\* - 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 12:27:06 PM



#### **Pogo Producing Company**

Pogo/McMillan 24 State#1/1650

			Po	ogo/McMillan	24 State#	1/1650							
Analysis: Method:	Chloride, Total E325.3								(Order: Batch ID:		00575 5965 <b>A</b>		
·····	Meti	nod Blank			s	amples in	Analytica	al Batc	h:				
Rur ID:	WET_011022H-873286	Units:	mg/L		L	ab Sample	D		Client Sa	mple IC	)		
Analysis Date:	10/22/2001 14:00	Analyst:	CV			100575-0			MW-1		-		
,					0.	100575-02	2B		MW-2				
					0	100575-0	3B		MW-3				
	Analyte		Result	Rep Limit	0.	100575-04	4B		MW-4				
Chlo	onde		ND	1.0									
	· ·····		Lat	poratory Cont	rol Sampl	e (LCS)							
	BuniD		WET 0110	022H-873288	Units:	mg/L							
		-	10/22/200		Analyst:	CV							
		Analyt	Э	Spil Add		III Perc Reco		wer imit	Upper Limit				
	Chloride				76.2 7	7.1	101	90	110				
		<u>Matrix</u>	Spike (MS	S) / Matrix Sp	ike Duplic	ate (MSD)							
	Sam	ole Spiked:	011005	75-01									
	Runi	D:	WET_01	1022H-873302	Units:	mg/L							
	Anal	/sis Date:	10/22/2	001 14:00	Analys	: CV							
A	nalyte	Sample Result	MS Spike Added	MS Result	MS % Recover	y Spike Added	MSD R	esult	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride		9.6	50	59.	5 99	0.8 50		59.5	99.8	o	20	85	115
							1	55.5	00.0	, V	20		

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

B - Analyte detected in the associated Method Blank

\* - 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

10/24/01 12:27:07 PM



#### Sample Receipt Checklist

Workorder: 01100575		Received By:	NB
Date and Time Received: 10/13/01 11:30:00	0 AM	Carrier name:	FedEx
Temperature: 4		Chilled by:	Water Ice
1. Shipping container/cooler in good conc	dition? Yes 🗹	No 🗌 Not P	resent
2. Custody seals intact on shippping cont	rainer/cooler? Yes	No 🗌 Not P	resent 🗹
3. Custody seals intact on sample bottles'	? Yes 🗌	No 🗌 Not P	resent 🗹
4. Chain of custody present?	Yes 🔽	No 🗌	
5. Chain of custody signed when relinquis	shed and received? Yes 🗹	No 🗌	
6. Chain of custody agrees with sample la	bels? 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 tim	e? Yes 🗹	No 🗌	
11. Container/Temp Blank temperature in c	ompliance? Yes 🔽	No 🗌	
12. Water - VOA vials have zero headspace	? Yes 🗹	No 🗌 Not Ap	oplicable
13. Water - pH acceptable upon receipt?	Yes 🗹	No 🗌 Not Aj	pplicable 🗍
SPL Representative:	Contact D	ate & Time:	
SPL Representative:	Contact D	ate & Time:	

Issues: **Client Instructions:** 

Non Conformance

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Ana	Analysis Request and Chain of Custody Record												PAGE: OF: ANALYSIS REQUEST (Circle or Specify Method No.)																						
HIGHLANDER ENVIRONMENTAL CORP. 1910 N. Big Spring St. Midland, Texas 79705 (915) 682-4559 Fax (915) 682-3946															17005		1	1	or						<u>)</u>										
CLIENT NAME: SITE MANAGER: POGOProducing FKE TAVAREZ									PRESERVATIVE METHOD								B015 MOD.		3 8 8				29/04			Chloride									
Project No.: ILSO PROJECT NAME: PROJECT NAME: POGO/MCMillan24 Sta								ate	#/	Eda	14 C	O,NN	CONTAINERS	CUNTALIN	(1)			1808		11 801			100	Volatiles		L Vol. 82	/808	808	p.H. 170S.	(atr)	rtos)	de			
LAB I.D. NUMBER	DA:	TE	TIME	MATRIX	GRAB		SAMPLE IDE				ON			NUMBER OF	FILTERED (Y/N)	HCL	<b>FINO3</b>	ICE	NONE	BTEX 8020/602		TPH 418.1	PAH 8270	TCIP Metal	TCLP Volati	TCLP Semi Volatiles	RCI	GCMS Semt. Vol. 8270/62	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS,	Gamma Spec. Alpha Beta (Air)	PLM (Asbestos)	Clloride	
	10/10/	loi	ZIDAN				nw-1							3				/		X														X	
			3:35p.m	W			1-2							3				1		X														X	
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RELINQUISHED BY: (Signature) Date: RECEIVED BY: (Signature) Time:						2	Date:						HAND DELIVERED UPS OTHER:																						
RECEIVING LABORATORY:         State:         ZIP:         RECEIVED BY: (Signature)         State:         State: <ths< td=""><td>A TIME:</td><td colspan="6">Jshiti ME: 1150</td><td colspan="10">- IKE TAVAREZ RUSH Charges Authorized:</td><td></td><td></td></ths<>							A TIME:	Jshiti ME: 1150						- IKE TAVAREZ RUSH Charges Authorized:																					
SAMPLE CON					rato	- refeire	MATRIX:	WWa SSa	IJ		Sludge	• •	SD-Solid O-Other Highlan		<b>Х</b> 'л о'		EMAR			Denia	nt 14	lane	//eF	nate	ine -	nínl			Anc	A1175*	ina				

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# 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

RECEIVED nr.t 0 2 2001 Environmental Bureau Oil Conservation Division

#### 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 SW 846-9252. 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.

#### Elare 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 fruly yours,

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Ike Tavarez Project Manager/Geologist

E. Miller

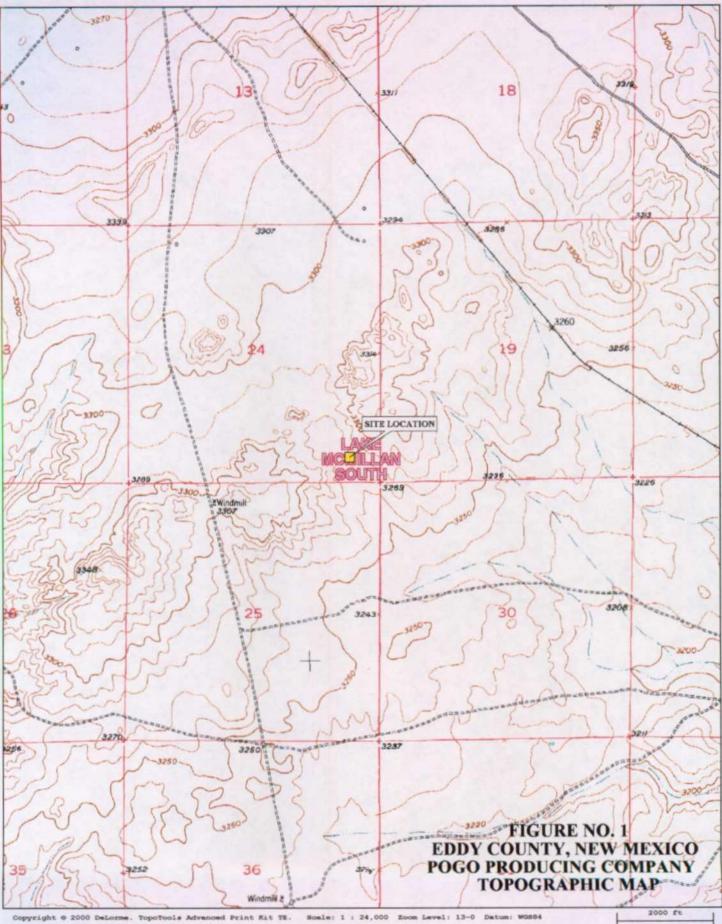
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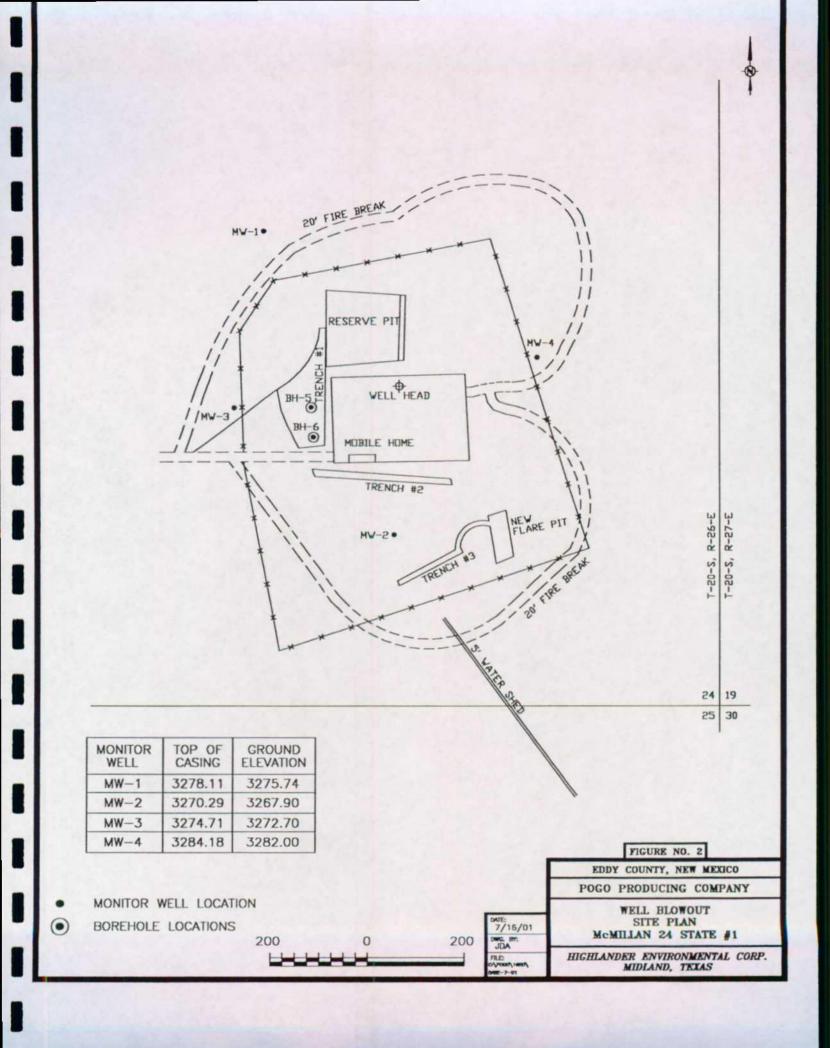
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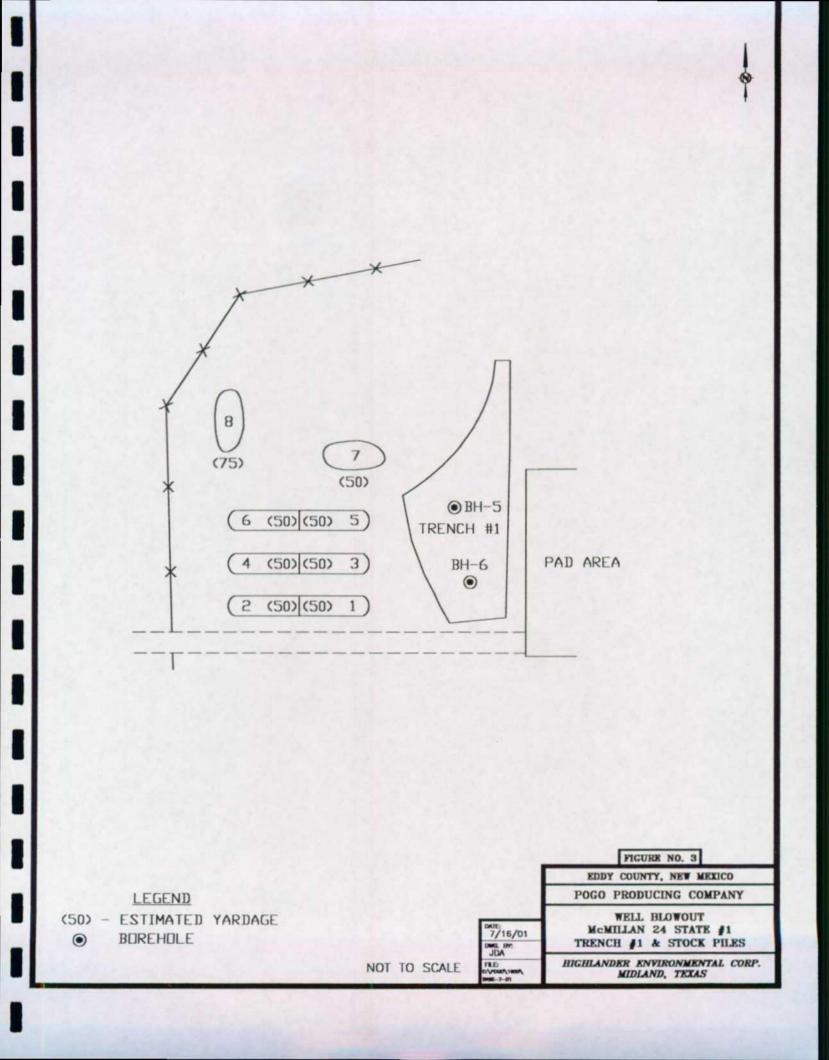
Don Riggs – Pogo Producing Co. Rex Jasper – Pogo Producing Co. Jim Carr - New Mexico State Land Office Roger Anderson – NMOCD, Santa Fe

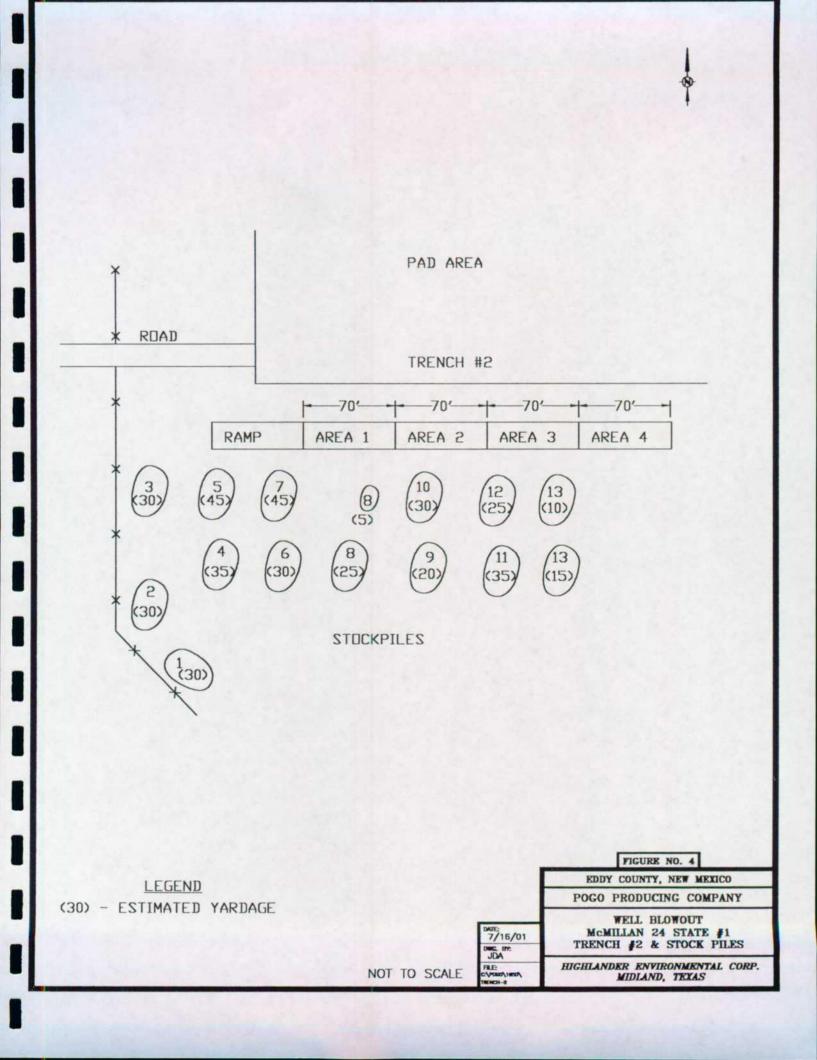


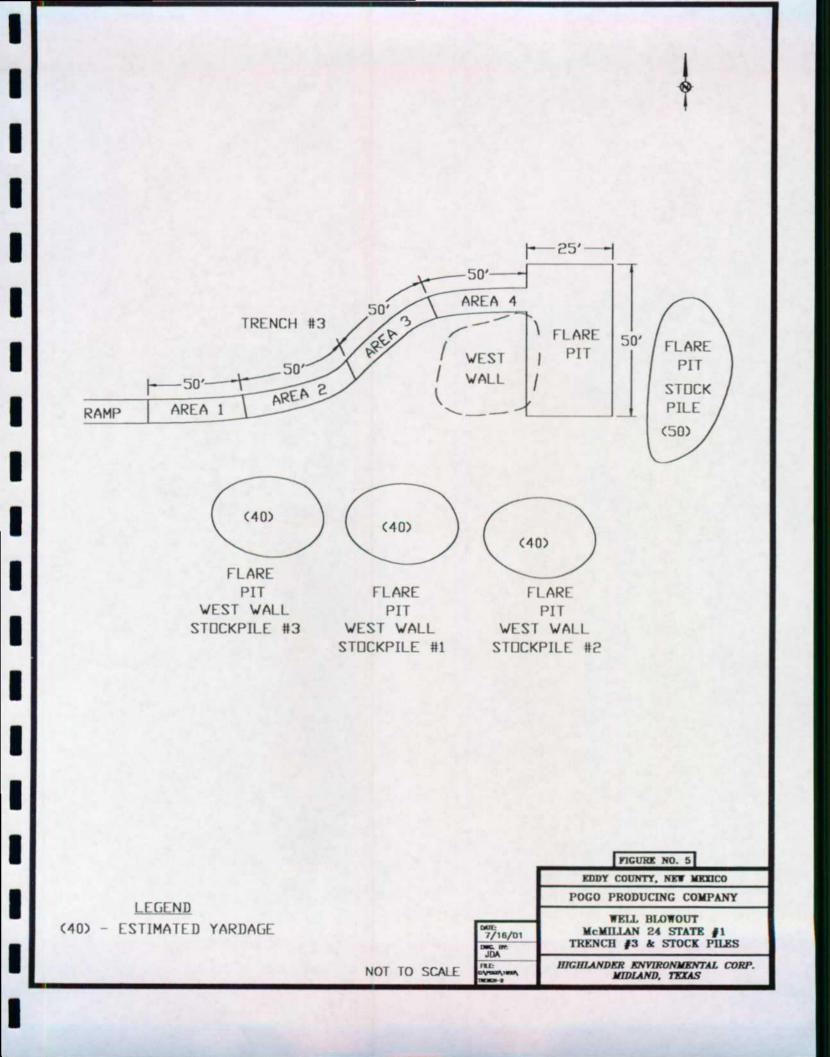
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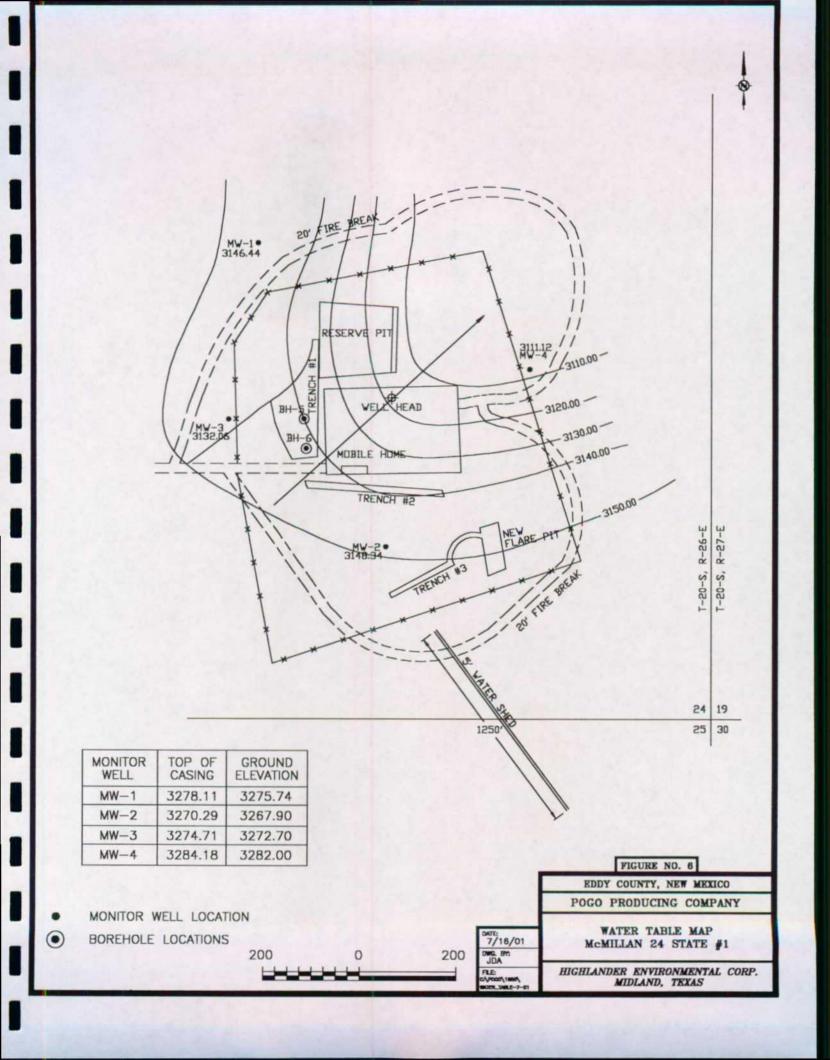




Table 1:

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

Sample 1D	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 (Mon	itor 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		-		-	-	. 2	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 (bore	holes)								
BH-5	5-7	4/26/01	ND	ND	ND	ND	ND	ND	271
BH-5	10-12	4/26/01	-	-	al and	1		10	271
BH-5	15-17	4/26/01	-	-	-	-		50	424
BH-5	20-21	4/26/01	-	-	The second	-		ND	254
BH-5	25-27	4/26/01	-			-		· · ·	288
BH-5	30-32	4/26/01	-	-		-	1.1	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 Stockp	oiles								
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 Stockj	oiles								
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.	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	-	-		1.0	-	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)	1								
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)			TO SET						
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 Tre	ench								
Area 1	3	6/1/01	-	-	-	-			9,740
Area 1	6	6/1/01	-	-		-	-	-	6,780
Area I	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
2 .	Not analyzed

 3. -:
 Not analyzed

 4. ND:
 Not Detected,

- 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 I	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: Wes	twall Stoc	kpiles					<u> </u>		
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

I. 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		101 12 10	-		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

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.

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.

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.

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

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7. Trench #1 - excavated area.



8. Trench #1 - excavated area and stockpiles.

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



9. Trench #1 - stockpiled soil.

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

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



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



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

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



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



14. Trench #2 - soil excavation and remediation.

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



15. Trench #2 - soil excavation and remediation.



16. Trench #2 - stockpiles.

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

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17. Trench #2 - stockpiles.



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

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

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



20. View of Trench #3 - excavation.

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



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21. View of Flare Pit - excavation.



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

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.

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

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25. Dry Wash - soil remediation, after tilling.



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

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

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	OVM	Sample Description					
(ft)	(ppm)						
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					

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 OVM		Sample Description			
(ft)	(ppm)				
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			
	1	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			

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	OVM	Sample Description				
(ft)	(ppm)	Tan, fine grain sand to silty sand, trace of caliche and limestone				
0-5	-					
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				

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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 OV		Sample Description			
(ft)	(ppm)	Tan, fine grain sand to silty sand, trace of caliche and limestone some sandy clay at 5-7'			
0-7	-				
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			

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

Site Location: McMillan 24 State #1

Drilling Date: 4/26/01

Total Depth Borehole: 32'

Sample Depth	OVM	Sample	Sample Description
(ft)	(ppm)	Туре	
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
·····			

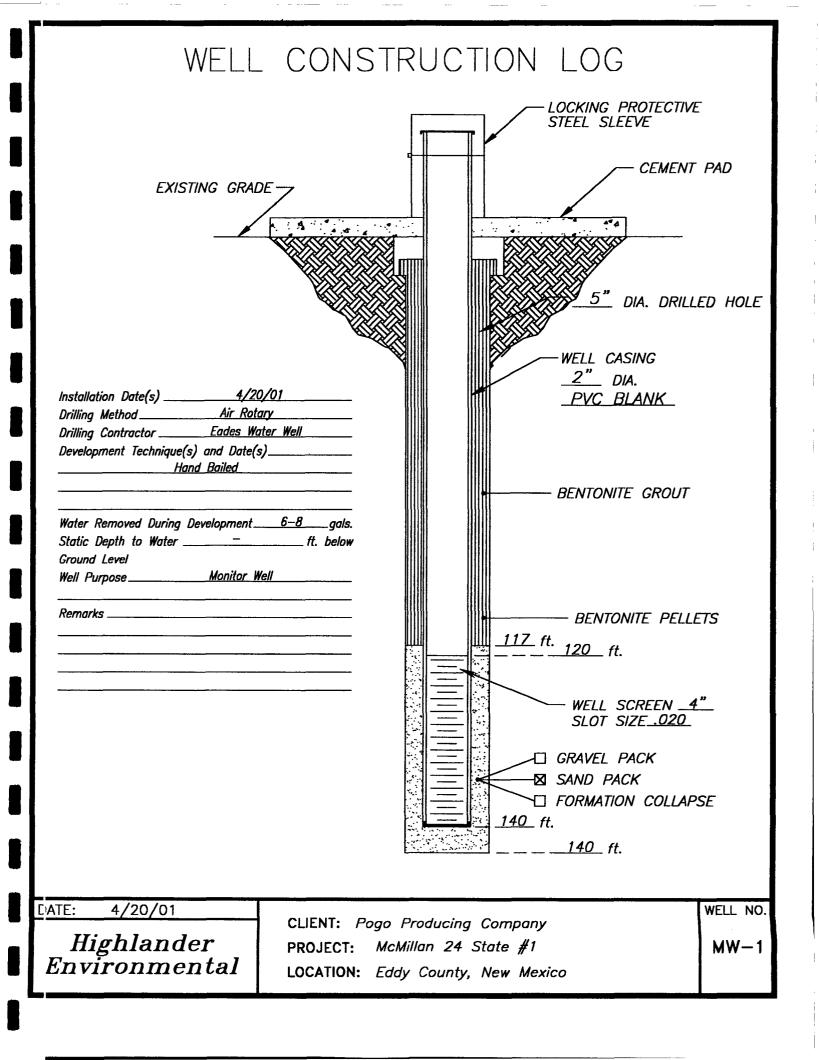
Boring/Well: BH-6 Area: West of well pad (Trench #1) Project /No.: 1650

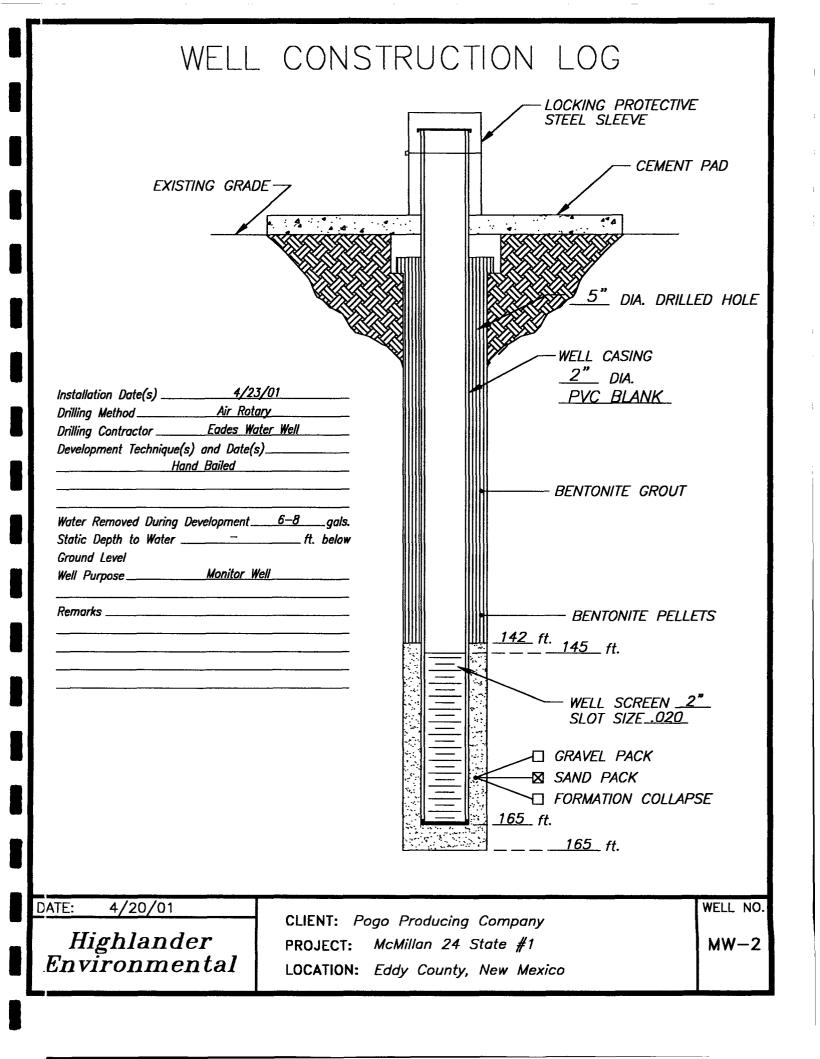
Site Location: McMillan 24 State #1

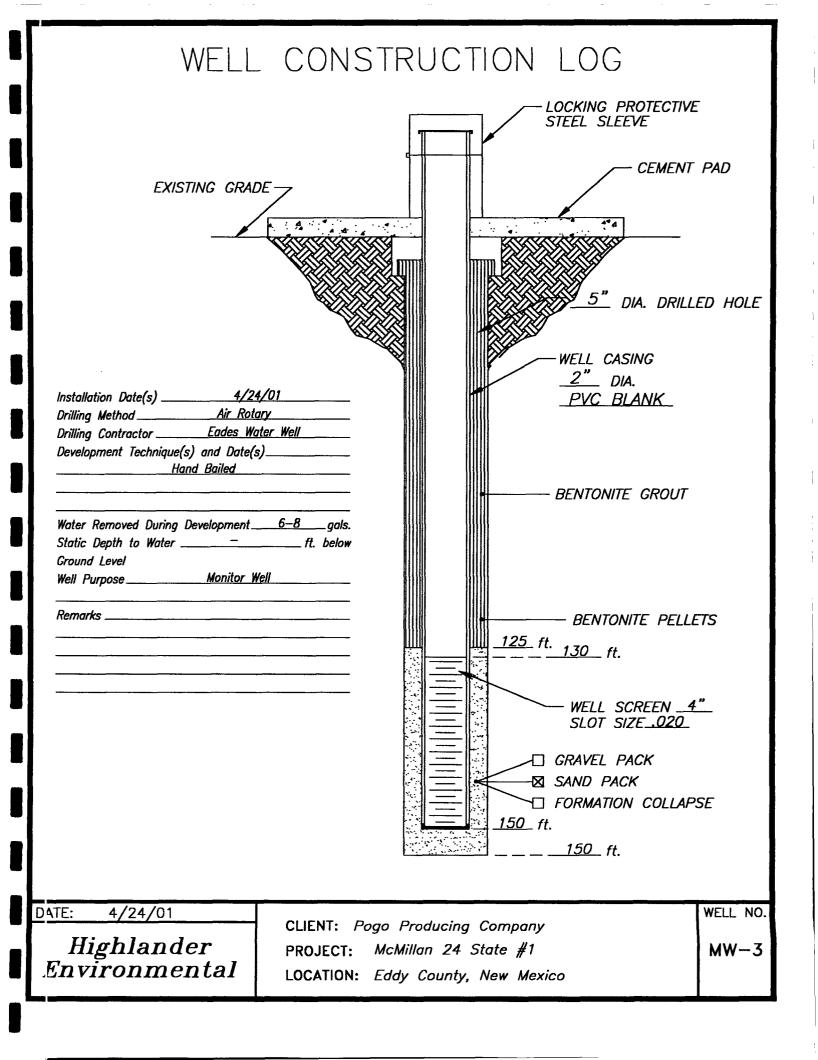
Drilling Date: 4/26/01

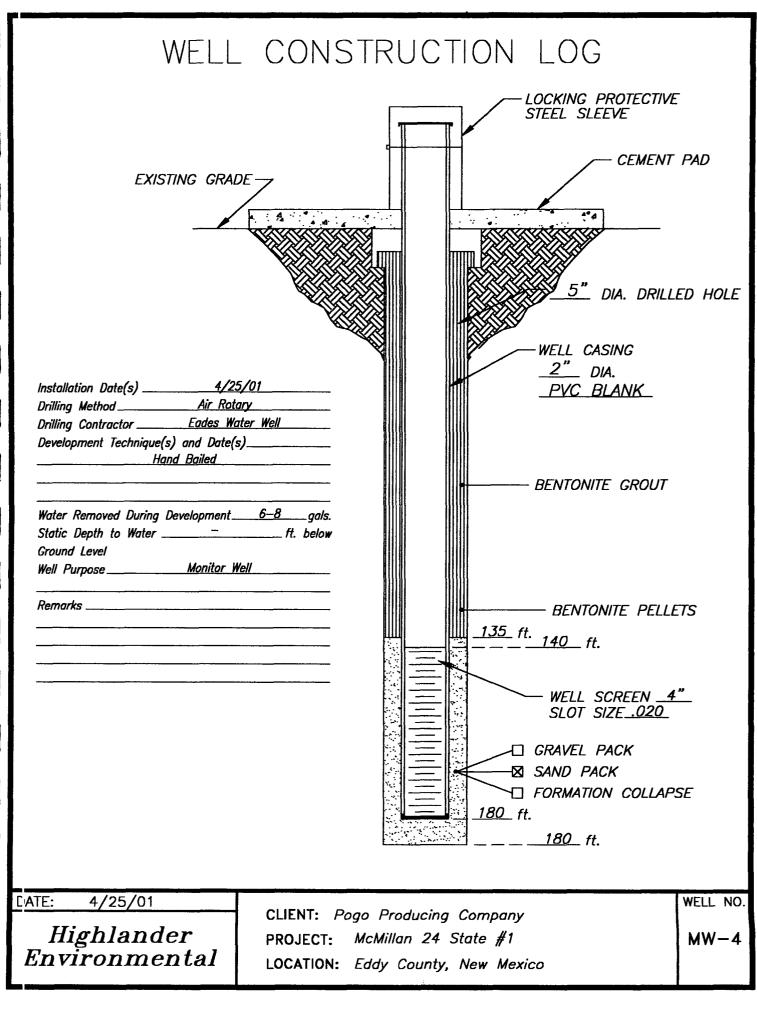
Total Depth Borehole: 32'

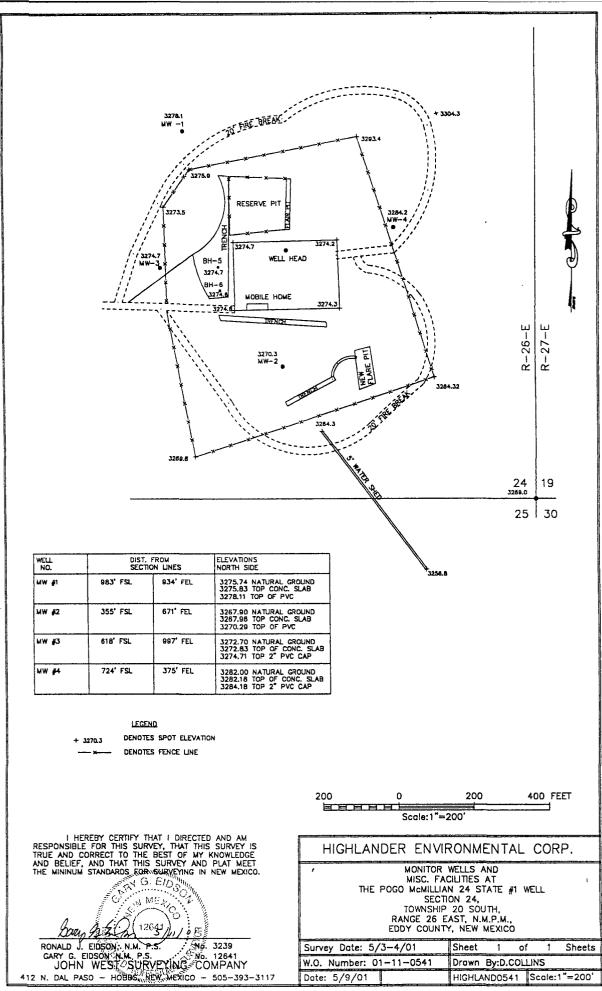
Sample Depth	OVM	Sample	Sample Description
(ft)	(ppm)	Туре	
0-5	-	-	Tan, fine grain sand to silty sand, trace of caliche and limestone
5-7	0	SS	Tan, fine grain sand to silty sand, trace of caliche and limestone at 7'
10-12	2	SS	Gray, limestone, dense, broken layer and silty/clay 50%-80%
15-17	0	SS	Gray, 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











## **APPENDIX B**



### **Pogo Producing Company**

Certificate of Analysis Number: <u>01040874</u>										
Report To:	Project Name:	Pogo/McMillan 24 State#1/1650								
Pogo Producing Company	<u>Site:</u>	Eddy Co. NM								
Don Riggs	Site Address:									
P.O Box 2504										
5 Greenway Plaza, Suite 2700 77042 Houston	PO Number:									
Texas	<u>State:</u>	New Mexico								
77252-2504	State Cert. No .:									
ph: (713) 297-5045 fax: (915) 682-3946	Date Reported:	5/8/01								

# This Report Contains A Total Of 33 Pages

# **Excluding This Page**

And

# Chain Of Custody

5/8/01

Date



### Case Narrative for: Pogo Producing Company

Certificate of Analysis Number: <u>01040874</u>										
Report To:	Project Name: Pogo/McMillan 24 State#1/1650									
Pogo Producing Company	<u>Site:</u> Eddy Co. NM									
Don Riggs	<u>Site Address:</u>									
P.O Box 2504										
5 Greenway Plaza, Suite 2700 77042	PO Number:									
Houston	State: New Mexico									
Texas	State. New mexico									
77252-2504	State Cert. No.:									
ph: (713) 297-5045 fax: (915) 682-394	Date Reported: 5/8/01									

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 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



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## Pogo Producing Company

Report To:	Pogo Producing C Don Riggs	ompany		01040874												
Report To:		ompany	<u>01040874</u>													
	P.O Box 2504 5 Greenway Plaza, Houston		042	5	Project Name: Site: Site Address:	Pogo/McMillar Eddy Co. NM	n 24 State#1/165	i0								
	Texas 77252-2504 ph: (713) 297-5045	fax: (713) 2	97-4952	- <u>-</u>	<u>PO Number:</u> State: State Cert. No.:	New Mexico										
<u>Fax To:</u>	Highlander Environ Ike Tavarez	mental Corp fax : (915)	682-3946	<u> </u>	Date Reported:	5/8/01										
Client	Sample ID	Lab Sample ID	Matrix	Date Collect	ed Date	Received	COC ID	HOLD								
EH-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										
B		01040874-05	Soil	4/21/01	4/30/01	9:00:00 AM										
B +-2(60-62')		01040874-06	Soil	4/21/01	4/30/01	9:00:00 AM										
B +-3(10-12')		01040874-07	Soil	4/23/01	4/30/01	9:00:00 AM										
B 1-3(20-22')	· · · · · · · · · · · · · · · · · · ·	01040874-08	Soil	4/23/01	4/30/01	9:00:00 AM										
BI-3(30-32')		01040874-09	Soil	4/23/01	4/30/01	9:00:00 AM										
BI1-3(40-42')		01040874-10	Soil	4/23/01	4/30/01	9:00:00 AM		1								
BI1-3(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										
BF -5(25-27')		01040874-18	Soil	4/26/01	4/30/01	9:00:00 AM										
BF -5(30-32')		01040874-19	Soil	4/26/01	4/30/01	9:00:00 AM										
BF -6(5-7')		01040874-20	Soil	4/26/01	4/30/01	9:00:00 AM										
BF-6(10-12')		01040874-21	Soil	4/26/01	4/30/01 9	9:00:00 AM										
BH-6(15-17')		01040874-22	Soil	4/26/01	4/30/01 9	9:00:00 AM										
BH-6(20-22')		01040874-23	Soil	4/26/01	4/30/01 9	9:00:00 AM										
BH-6(25-27')		01040874-24	Soil	4/26/01	4/30/01 9	9:00:00 AM										

-2  $\overline{}$ Paul Neschich

Senior Project Manager

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer 5/8/01

Date

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## Pogo Producing Company

Certificate of Analysis Number: 01040874											
<u>Report To:</u>	Pogo Producing ( Don Riggs P.O Box 2504 5 Greenway Plaza		042	<u>Project</u> <u>Site:</u> <u>Site Ad</u>	Eddy Co. NM	Pogo/McMillan 24 State#1/1650 Eddy Co. NM					
	Houston Texas 77252-2504 ph: (713) 297-504		297-4952	<u>PO Nur</u> <u>State:</u> State C	nber: New Mexico ert. No.:						
<u>Fax To:</u>	Highlander Enviro Ike Tavarez	•	) 682-3946		p <u>orted:</u> 5/8/01						
Clier	nt Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD				

Client Sample ID	Lab Sample ID	matrix	Date Collected	Date Received	COCID	HOLD
B	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		

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Paul Neschich Ser ior Project Manager 5/8/01 Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer

5/8/01 3:02:47 PM



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Client Sample ID BH-1(40-42')		Coll	ected:	4/20/01	SPL Sample II	<b>D:</b> 0104	0874-01
		Site					
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	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



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Client Sample ID BH-1(50-52')		Collected: 4/20/01				SPL Sample II	0874-02	
		Site: Eddy Co. NM						
Analyses/Method	Result	Rep.Limit		Dil. Factor Q	UAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	MCL E325.3 Units:		Units: m	g/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



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Client Sample ID BH-2(55-57')		Collected: 4/21/01 SPL Sample ID:						0874-05	
		Site	: Edo	ly Co. NM					
Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #	
CHLORIDE, TOTAL			MCL	E	325.3	.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



Client Sample ID BH-2(60-62')		Col	SPL Sample II	<b>D:</b> 0104	0874-06		
		Site	: Edo	dy Co. NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: mg	g/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



Client Sample ID BH-3(40-42')		Collected: 4/23/01 SPL Sample ID: 0							
Site: Eddy Co. NM									
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #		
CHLORIDE, TOTAL			MCL	E325.3	.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

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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-3(60-62')		Col	SPL Sample I	PL Sample ID: 01040			
		Site	e: Ede	dy Co. NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUA	L Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.	Units: mg/Kg		
Chloride	16.9	10		1	05/03/01 10:45	CV	660260

Qualifiers:

ND/U - Not Detected at the Reporting Limit

 $\ensuremath{\mathsf{B}}$  - 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-4(68-70')		Collected: 4/25/01					SPL Sample ID: 0104		
		Site	: Edo	dy Co. NM					
Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #	
CHLORIDE, TOTAL		MCL E32		25.3	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



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Client Sample ID BH-5(5-7')			Col	lected:	4/26/01	SPL Sample ID:	0104	0874-14
			Site	: Edo	iy Co. NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. i
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/	Kg	
Chloride	271		20		2	05/03/01 10:45 (	2V	660263
PURGEABLE AROMATICS				MCL	SW8021B	Units: ug/l	٢g	
Benzene	ND		1		1		M	659661
Ethylbenzene	ND		1		1	05/02/01 15:42 T	M	659661
Toluene	ND		1		1	05/02/01 15:42 T	M	659661
m,p-Xylene	ND		1		1	05/02/01 15:42 T	M	659661
o-Xylene	ND		1		1	05/02/01 15:42 T	M	659661
Xylenes,Total	ND		1		1	05/02/01 15:42 T	M	659661
Surr: 1,4-Difluorobenzene	99.5	%	59-127		1	05/02/01 15:42 T	M	659661
Surr: 4-Bromofluorobenzene	97.9	%	48-156		1	05/02/01 15:42 T	м	659661
TOTAL PETROLEUM HYDROCA	RBONS			MCL	E418.1	Units: ppm		
Petroleum Hydrocarbons,TR	ND	_	10		1	05/01/01 11:00 E	E	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



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Client Sample ID BH-5(10-12')		Coll	ected:	4/26/01	SPL Sample II	<b>D:</b> 0104	10874-15
		Site	Edd	iy Co. NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: m	g/Kg	
Chloride	271	10		1	05/03/01 10:45	CV	660264
TOTAL PETROLEUM HYDROC	ARBONS		MCL	E418.1	Units: pp	m	
Petroleum Hydrocarbons,TR	10	10		1	05/01/01 11:00	EE	657300
Prep Method Prep Dat	e	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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HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TEXAS 77054 (713) 660-0901

Client Sample ID BH-	5(15-17')		Coll	ected:	4/26/01	SPL Sample I	D: 01	040874-16
			Site	Edo	ly Co. NM			
Analyses/Method		Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analys	t Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: m	g/Kg	
Chloride		424	10		1	05/03/01 10:45	CV	660265
TOTAL PETROLEUM	HYDROCAR	BONS		MCL	E418.1	Units: pp	) m	
Petroleum Hydrocarbons	s,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')		Coll	ected:	4/26/01	SPL Sample ID	<b>):</b> 0104	0874-17
		Site:	Edo	dy Co. NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: mg	j/Kg	
Chloride	254	10		1	05/03/01 10:45	CV	660266
TOTAL PETROLEUM HYDROCA	RBONS		MCL	E418.1	Units: pp	m	
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:** 

- B Analyte detected in the associated Method Blank
- \* Surrogate Recovery Outside Advisable QC Limits

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J - Estimated Value between MDL and PQL

>MCL - Result Over Maximum Contamination Limit(MCL) D - Surrogate Recovery Unreportable due to Dilution MI - Matrix Interference

ND/U - Not Detected at the Reporting Limit



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Client Sample ID BH-5(25-27')		Col	lected:	4/26/01		SPL Sample II	<b>D:</b> 0104	0874-18
		Site	: Edo	dy Co. NM				
Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E	325.3	Units: m	g/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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L.

Client Sample ID BH-5(	30-32')	Coll	ected:	4/26/01	SPL Sample II	<b>D:</b> 010	40874-19
		Site	Edd	ly Co. NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: m	g/Kg	
Chloride	186	10		1	05/03/01 10:45	CV	660270
TOTAL PETROLEUM H	DROCARBONS		MCL	E418.1	Units: pp	m	
Petroleum Hydrocarbons, 7	rr 10	10		1	05/01/01 11:00	EE	657307
	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



Client Sample ID BH-6(5-7')			Col	lected:	4/26/01	SPL Sample ID:	01040874-20
			Site	: Edo	iy Co. NM		
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst Seq.
CHLORIDE, TOTAL				MCL	E325.3	Units: mg/l	Kg
Chloride	186		10		1	05/03/01 10:45 C	V 66027
PURGEABLE AROMATICS				MCL	SW8021B	Units: ug/K	(g
Benzene	1.7		1		1	05/02/01 16:13 T	M 659662
Ethylbenzene	1.1		1		1	05/02/01 16:13 T	M 659662
Toluene	4.8	·	1		1	05/02/01 16:13 T	M 659662
m,p-Xylene	6.6		1		1	05/02/01 16:13 T	M 659662
o-Xylene	13		1		1	05/02/01 16:13 T	M 659662
Xylenes, Total	19.6		1		1	05/02/01 16:13 TI	M 659662
Surr: 1,4-Difluorobenzene	107	%	59-127		1	05/02/01 16:13 TI	M 659662
Surr: 4-Bromofluorobenzene	109	%	48-156		1	05/02/01 16:13 TI	M 659662
TOTAL PETROLEUM HYDROCA	RBONS			MCL	E418.1	Units: ppm	
Petroleum Hydrocarbons,TR	10		10		1 .	05/01/01 11:00 E	E 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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i.

Client Sample ID B	H-6(10-12')		Coll	ected:	4/26/01	SPL Sample II	D: 0104	0874-21
			Site	Ede	dy Co. NM			
Analyses/Method		Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: m	g/Kg	
Chloride		661	10		1	05/03/01 10:45	CV	660272
TOTAL PETROLEUI	M HYDROCARE	BONS		MCL	E418.1	Units: pp	m	
Petroleum Hydrocarb	ons,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



Client Sample ID BH-6(15-17')		Coll	ected:	4/26/01	SPL Sample I	<b>):</b> 0104	0874-22
		Site	Edd	ty Co. NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: mg	j/Kg	
Chloride	237	10		1	05/03/01 10:45	CV	660274
TOTAL PETROLEUM HYDROCA	RBONS		MCL	E418.1	Units: pp	m	
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



I.

Client Sample ID B	H-6(20-22')		Coll	ected:	4/26/01	SPL Sample I	D: 010	10874-23
			Site	Ede	dy Co. NM			
Analyses/Method	<u></u>	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: m	g/Kg	
Chloride		390	10		1	05/03/01 10:45	CV	660275
TOTAL PETROLEUI	M HYDROCARE	BONS		MCL	E418.1	Units: pp	m	
Petroleum Hydrocarb	ons,TR	15	10		1	05/01/01 11:00	EE	657314
Prep Method	Prep Date	· <u> </u>	Prep Initials					
	05/01/2001 11	1:00						

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



Client Sample ID BH-6(25-27')		Col	lected:	4/26/01		SPL Sample II	<b>D:</b> 0104	0874-24
		Site	: Edo	ly Co. NM				
Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E3	25.3	Units: m	g/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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i -

Client Sample ID BH-6	(30-32')	Coll	ected:	4/26/01	SPL Sample ID	): 0104	0874-25
		Site	Edo	dy 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 H	YDROCARBONS		MCL	E418.1	Units: pp	m	
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



Client Sample ID MW-1		Col	lected:	4/26/01	Ş	SPL Sample I	D: 0104	0874-26
		Site	: Edo	ly Co. NM				
Analyses/Method	Result	Rep.Limit		Dil. Factor QU	AL	Date Analyzed Analys		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

5/8/01 3:02:55 PM

i.



Client Sample ID MW-2		Co	lected:	4/26/01	SPL Sample II	D: 0104	0874-27
		Site	e: Edo	dy Co. NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: m	g/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: Method:	Total Peti E418.1	roleum Hyd	rocarbons								kOrder: Batch ID:		040874 4426	4	
		Meth	od Blank				Sar	nples in	Analy	tical Bate	ch:				
RunID:	EX_010501	E-657294	Units:	ppm			Lab	Sample	e ID		Client Sa	imple i	D		
Analysis Date:	05/01/200	1 11:00	Analyst:	EE				40874-1			BH-5(5-7				
Preparation Date	e: 05/01/200	1 11:00	Prep By	:	Method		010	40874-1	5A		BH-5(10-				
·							010	40874-1	6A		BH-5(15-	17')			
					<u> </u>		010	40874-1	7A		BH-5(20-	21')			
Dat		Analyte		Result			010	40874-1	9A		BH-5(30-	32')			
Pet	roleum Hydroca	roons, IR		NC	0 10		010	40874-2	0A		BH-6(5-7	)			
							010	40874-2	1A		BH-6(10-	12')			
							010	40874-2	2A		BH-6(15-	17')			
							010	40874-2	3A		BH-6(20-2	22')			
							010	40874-2	5A		BH-6(30-3	32')			
				La	aboratory C	ontrol	Sample	LCS)				<u> </u>			
		RunID:		EX_0105	01E-657296	U	Inits:	ppm							
		Analysis	Date:	05/01/20	001 11:00	А		EE							
		-	tion Date:	05/01/20	001 11:00		rep By:		ethod						
			Analy	A		Spike	Result	Perc	ent	Lower	Upper				
		) :				Added	1 resur	Reco		Limit	Limit				
		Petroleum	Hydrocarbo	ns,TR		200	19	o l	95	86	117				
			Matrix	Spike (M	IS) / Matrix	Spike	Duplicate	(MSD)				·			
		Sample	e Spiked:	010408	874-15										
		RuniD:		EX_010	501E-657301		Units:	ppm							
		Analys	is Date:	05/01/2	2001 11:00		Analyst:	EE							
		Prepar	ation Date:	05/01/2	2001 11:00		Prep By:	N	/lethod						
Α	nalyte		Sample Result	MS Spike	MS Resi		MS % Recovery	MSD Spike	MSD	Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
		:		Added		ļ		Added		1			1		

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

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.



**Quality Control Report** 

#### **Pogo Producing Company** Pogo/McMillan 24 State#1/1650

Analysis: Method:	Purgeable Aromatics SW8021B				WorkOrder: Lab Batch ID:	01040874 R34503	
<u></u>	Metho	d Blank		Samples in Analytica	I Batch:		
FluniD:	HP_O_010502A-658365	Units:	ug/Kg	Lab Sample ID	Client San	nple ID	:
Analysis Date:	05/02/2001 10:21	Analyst:	тм	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:	ТМ

Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
50	50	101	60	120
50	56	112	68	127
50	53	106	64	122
100	110	113	68	129
50	57	115	68	127
150	167	111	68	129
	Added 50 50 50 100 50	Added           50         50           50         56           50         53           100         110           50         57	Added         Recovery           50         50         101           50         56         112           50         53         106           100         110         113           50         57         115	Added         Recovery         Limit           50         50         101         60           50         56         112         68           50         53         106         64           100         110         113         68           50         57         115         68

#### 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:	ТМ

Ana	lyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit		High Limit
Benzene		NC	20	19	93.6	20	19	92.9	0.827	34	35	139
Ethylbenzene		NC	20	19	92.3	20	18	88.7	3.94	35	31	137
Toluene		NE	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		! NC	20	19	93.4	20	18	88.9	4.94	57	25	139

ND/U - Not Detected at the Reporting Limit Qualifiers:

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

\* - 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.



**Quality Control Report** 

#### Pogo Producing Company

#### Pogo/McMillan 24 State#1/1650

Analysis: Method:	Purgeable SW8021B	Aromatics					WorkOrder: Lab Batch ID:	01040874 R34503	
		Matrix	Spike (N	IS) / Matrix Spik	e Duplicat	e (MSD)			
		Sample Spiked: RunłD: Analysis Date:	HP_O_	24-01A 010502A-659664 2001 18:46	Units: Analyst:	ug/Kg TM			
	Analyte	Sample	MS	MS Result	MS %	MSD	MSD Result   MSD %		High

Analyte	Result	Spike	MS Result	Recovery	Spike	MSD Result	Recovery		Limit Li		Limit
_		Added			Added			:			
X /lenes,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

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

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: Method:	Chloride, <sup>-</sup> E325.3	<b>Total</b>									kOrder: Batch ID:		040874 34547	ł	
		Method	Blank				Sarr	ples in /	Analytic	al Bate	ch:				
RunID:	WET_01050	2E-659019	Units:	mg/L		Lab Sample ID Client Sample ID									
Analysis Date:	05/02/2001	12:00	Analyst:	cν				0874-26			MW-1		_		
							0104	0874-27	A		MW-2				
	A	nalyte		Result	Rep Limit										
Chlo	ride			ND	1.0										
				La	boratory Co	ontrol Sa	ample (i	LCS)							
		RunID:		WET_010	502E-659021	l Uni	its: ı	ng/L							
			2-1-2	05/00/00	01 12:00	Ans	alyst: (	CV VC							
		Analysis [	Jale.	05/02/20	01 12.00		.,								
		Analysis [					Result	Perce	nt L	ower	Upper				
			Analyte		s	Spike Added		Perce Recov		ower Limit	Upper Limit				
		Analysis [ Chloride			s	Spike		Recov			Limit				
			Analyte	e	A	Spike Added 109	Result	Recov	ery l	_imit	Limit				
		Chloride	Analyte Matrix S	e Spike (M	S) / Matrix :	Spike Added 109	Result	Recov	ery l	_imit	Limit				
		Chloride	Analyte Matrix S	e <u>Spike (M</u> 010408	S) / Matrix 5	Spike Added 109 Spike Dr	Result 108 uplicate	(MSD)	ery l	_imit	Limit				
		Chloride Sample RunID:	Analyte <u>Matrix S</u> Spiked:	e Spike (M 010408 WET_01	S) / Matrix 3 5) / Matrix 3 74-26 10502E-65902	Spike Added 109 Spike Du 23 Ur	Result 108 uplicate	(MSD) mg/L	ery l	_imit	Limit				
		Chloride	Analyte <u>Matrix S</u> Spiked:	e Spike (M 010408 WET_01	S) / Matrix 5	Spike Added 109 Spike Du 23 Ur	Result 108 uplicate	(MSD)	ery l	_imit	Limit				
A	nalyte	Chloride Sample RunID: Analysis S	Analyte <u>Matrix S</u> Spiked: Date: ample	e <u>Spike (M</u> 010408 WET_01 05/02/2 MS	S) / Matrix 3 5) / Matrix 3 74-26 10502E-65902	Spike Added 109 Spike Du 23 Ur Ar	Result 108 uplicate nits: nalyst:	(MSD) mg/L CV	ery l	Limit 90	Limit 110 MSD %		RPD		High
Aı		Chloride Sample RunID: Analysis S	Analyte <u>Matrix S</u> Spiked: Date:	e <u>Spike (M</u> 010408 WET_01 05/02/2	S) / Matrix 5 574-26 10502E-65902 1001 12:00	Spike Added 109 Spike Du 23 Ur Ar	Result 108 uplicate nits: nalyst: IS %   covery	(MSD) mg/L CV	ery 1 99	Limit 90	Limit 110		RPD Limit		High Limit

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

- J Estimated value between MDL and PQL

\* - 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



#### **Quality Control Report**

#### Pogo Producing Company Pogo/McMillan 24 State#1/1650

Analysis: Method:	Chloride, Total E325.3				WorkOrder: Lab Batch ID:	01040874 R34612
	Metho	d Blank		Samples in Analytic	al Batch:	
RunID:	WET_010503C-660251	Units:	mg/Kg	Lab Sample ID	Client San	nple ID
Analysis Date:	05/03/2001 10:45	Analyst:	CV	01040874-01A	BH-1(40-4)	2')
				01040874-02A	BH-1(50-5	2')
				01040874-05A	BH-2(55-5	7')
	Analida		Deput Deputies	01040874-06A	BH-2(60-62	2')
Chlo	Analyte		Result Rep Limit	01040874-10A	BH-3(40-4)	?')
		i		01040874-11A	BH-3(60-62	?')
				01040874-13A	BH-4(68-7(	)')
				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:	0
RunID:	v
Analysis Date:	0

1040874-01 VET\_010503C-660254 5/03/2001 10:45

Units: mg/Kg Analyst: cv

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

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

- B Analyte detected in the associated Method Blank
- J Estimated value between MDL and PQL

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



#### **Quality Control Report**

#### **Pogo Producing Company** Pogo/McMillan 24 State#1/1650

Analysis: Method:	Chloride, Total E325.3				WorkOrder: Lab Batch ID:	01040874 R34612A
*	Metho	od Blank		Samples in Analytic	al Batch:	
RunID:	WET_010503C-660251	Units:	mg/Kg	Lab Sample ID	Client Sar	nple ID
Analysis Date:	05/03/2001 10:45	Analyst:	CV	01040874-17A	BH-5(20-2	1')
				01040874-18A	BH-5(25-2	7')
				01040874-19A	BH-5(30-3	2')
	A -1.4	r	Des H Des H with	01040874-20A	BH-6(5-7')	
0.1	Analyte		Result Rep Limit	01040874-21A	BH-6(10-1	2')
Chlor			ND 10	01040874-22A	BH-6(15-1)	7')
				01040874-23A	BH-6(20-22	2')
				01040874-24A	BH-6(25-23	7')
				01040874-25A	BH-6(30-32	2')

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

Sample Spiked:
RunID:
Analysis Date:

01040874-17 WET\_010503C-660267 05/03/2001 10:45

mg/Kg Units: Analyst: CV

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

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

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

5/8/01 3:03:02 PM



#### Sample Receipt Checklist

Workorder:	01040874		Receive	ed By:	NB	
Date and Time Received:	4/30/01 9:00:00 AM		Carrier	name:	FedEx	
Temperature:	17		Chilled	by:	Water Ice	
1. Shipping container/o	cooler in good condition?	Yes 🗹	No 🗌	Not Pres	ent	
2. Custody seals intact	on shippping container/cooler?	Yes 🗌	No 🗌	Not Prese	ent 🗹	
3. Custody seals intact	on sample bottles?	Yes 🗌	No 🗌	Not Prese	ent 🗹	
4. Chain of custody pre	esent?	Yes 🗹	No 🗌			
5. Chain of custody sig	ned when relinquished and received?	Yes 🗹	Νο			
6. Chain of custody ag	rees with sample labels?	Yes 🗹	No 🗌			
7. Samples in proper c	ontainer/bottle?	Yes 🗹	No 🗌			
8. Sample containers ir	ntact?	Yes 🗹	No 🗌			
<b>9.</b> Sufficient sample vo	lume for indicated test?	Yes 🗹	Νο			
10. All samples received	within holding time?	Yes 🗹	No 🗌			
1. Received samples 54qt. With 1-bag of i	ik temperature in compliance? s temp@ 17c. Samples were received in a ce melted. The cooler was sent out on or standard overnight delivery.	Yes 🗌	No 🗹			
12. Water - VOA vials hav	ve zero headspace?	Yes 🗌	Νο	Not Applic	cable 🗹	
13. <sup>Water -</sup> pH acceptabl	e upon receipt?	Yes 🗹	No 🗌	Not Applic	cable 🗍	
SPL Representati		Contact Date 8	& Time: 4/30/0	1 10:40:00 /	4M	
Client Name Contacte	ed: Ike Tavarez					

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

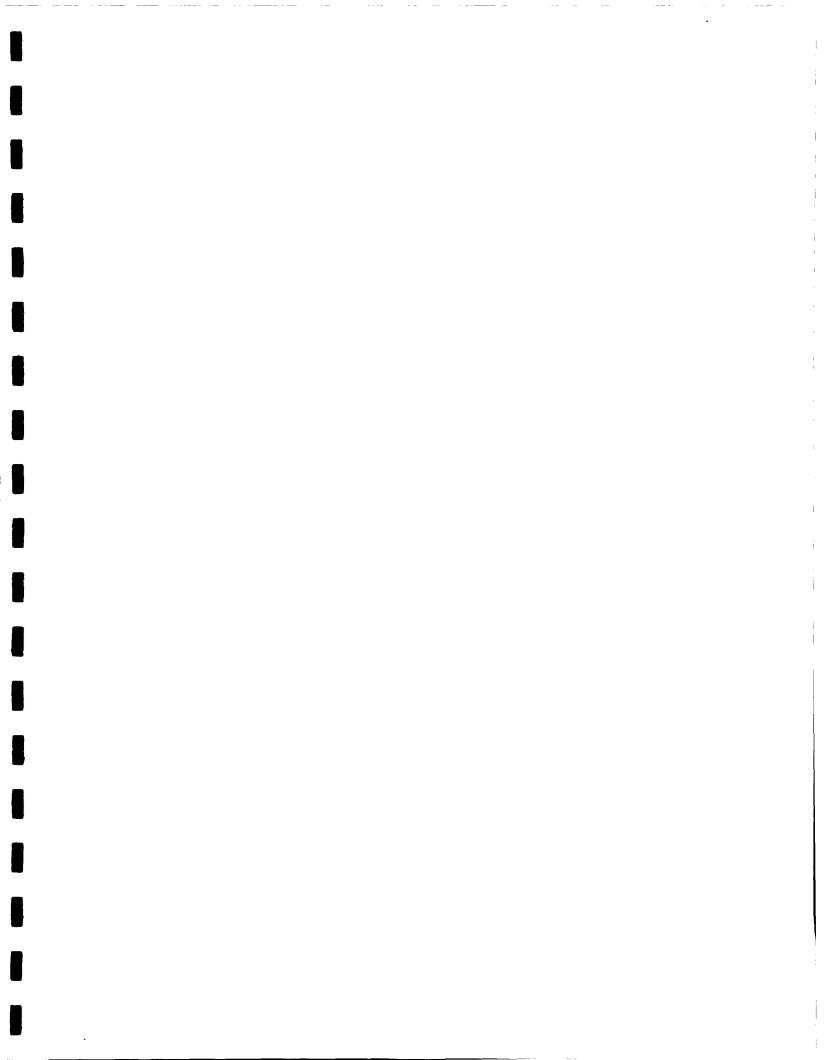
Client Instructions: Per Ike, run samples narrate nonconformance. Sample ID's: BH-3(10-12'), BH-3(20-22') and BH-3(30-32') logged in on ihold per Client.

Analysis Request and Cha	in of Cust	odv	F	Re	co	rd	1						_	PAG	_				OF:	3		
HIGHLANDER ENVIRO	ONMENTAL							┥ ┝╌┰	-1-		ÈT	cle			RE RE			No.	<b>)</b> 	<del></del> -	11	
1910 N. Big Spi Midland, Texas									111005		As Ba Cd Cr Pb Hg Be											
(015) 490 4550	Fa:	<b>x (</b> 91	5)	68;	2-3	394	6				0	5			* 8			90				
HENT NAME: Hogo rodving Co.	R: Waren	INKKS		PI		ERVA STHO	D		ROLE NOD		8	3			9/01/28			, Chloride				
(115) 602-4559 THENT NAME: FOGU Froducing CU. PROJECT NO.: 1650 UCU MCMILLOW 24 Edduce	Stele# 1	OF CONTAINUNSS	(11/1)					808		5	44	4	Volatile		L Vol.	1608	508	1001 1102	(Atr)	( <b>1</b> )	de	
LAB I.D. NUMBER DATE TIME TO SAMPLE IDE	INTIFICATION	NUMBER OF	FILTERED ()		SONH	ICE	NONE	BTEX 8020/	MTBE 8020/008	PAH 8270	RCRA Metals Ag As B	TCLP Motals	TCLP Semi	RCI	GC.MS Vol. 6240/6250/625 GC.MS Semi. Vol. 6270/625	PCB's 8080	Post. 808/608	BOD, TSS, pH. Gamma Spec.	Alpha Beta (Air)	PLM (Arbertor)	Klovi	
4/20/01 5 BH-1 (40-43	う	1	T			1															X	
4/20/01 5 BH-1 (50-5.	2′)	1	Τ			1		Π										T			X	
4/21/01 7 BH-2 (5-7	<i>·</i> )	1				Л						1/	Ϋ́	1	1			T	Π			
4/21/01 8 34-2 (10-1		1				1						1	40	10	<u>/</u>					T	T	
V/21/01 7 BH-2 (55-		1	1			1						1						T			X	
4/21/01 × 184-2 (60		1	T			1												1		1	X	
4/270) > BH-3 (10		T				1						Al	GL	B				T				1
	-22'1	1				1						Ate	e la	b				T				1
4/2301 E BH-3 (30	-32%	1				1						1/1	X	Þ							T	
4/23/01 1 BH-3, (4/0	. 421)	(																			X	
all / and Time:	RECEIVED BY: (Signature)			Da Tin					SA			<del>r. 12</del>	Tint k.	à d	2			Dati Tim				
ELINQUISHED BY: (Signature) Date: Time: ELINQUISHED BY: (Signature) Date:	RECEIVED BY: (Signature) RECEIVED BY: (Signature)		<u></u>	Tin	to:					EDEX				: (Сц	rcie) BUS UPS			IRBIL THER	L # _			
C Time:					te: _ ne: _				-					T PE	RSON				Romulta	i by:		
TTY: STATE: ZIP:	DATE: 4 50 01	<u> </u>	<b>F</b> :	00	ίŬ	$\overline{O}$			,	K	ŗ-	1 ir	NES	í E	2				RUSH Author Yos			
AMPLE CONDITION WHEN RECEIVED: MATRIX: W-We S-So	ter A-Air SD-	Solid		F	EMA	RKS:			-					<del></del>		·· ,					170	

Analysis Request and Chain of Cust HIGHLANDER ENVIRONMENTAL 1910 N. Big Spring St. Midland, Texas 79705 (915) 682-4559					1.0	t i	· ·····														
1910 N. Big Spring St. Midland, Texas 79705	LC	<i>CO</i>					4							ZIZ ,				N7 '	•		
	Fax (9				394	6			2000	Pb He 80	C PA Re Se						lod				
ENT NATE	1	2	1			TTVE	1		B015 MOD.	3	3			1634	8270/6655		Chloride				
(915) 682-4559 ENT NAME: OCLO (FUDUCING CU. ROFECT NO.: ////////////////////////////////////		CONTAINUNS		M	STHC		- 20	806	9016	4 4 B	Ag 44 Ba	8	/olatiles	1340/1936	Vol. 827	808,	08 H TDS 0	10	(ALF)		de
B I.D. DATE TIME E C. BY SAMPLE IDENTIFICATION		NUMBER OF CO	HCL.	EONH	JCE	NONE	BTEX) 8020/602	NTBE 8020/	118) (118)	RCRA Metals	TCIP Metals Ag As Ba	TCLP Volatil	TCLP Semi	GC.MS Vol. 6	GC.MS Semi. Vol. 8270/62	PCB'= 8080/808	Post. 808/608 Rob 735 pH TD5	Gemma Spec.	Alpha Beta (Air)	PLA (ABDOM	CABRI
4/22/01 S BH-3 (60-62)		1				-															X
4/25/01 8 1341-4 (20-22)		1			[7							X	4	10	1.						
S BH.4 (68-70)		1			7																X
424/01 S BH-5 (5-7')		T			-		X		X									T	Π		X
4/26/01 × BH-5 (10.12')		1		T	1				X									T	Π	Τ	X
4/26/01 3 BH 5 (15-17)		1			1		1		X									T			X
4/26/0 5 BH.5 (20-21')		,			1				X	T								T			X
4/24/01 5 BH.5 (25-27')		1		1-	1		-			╈	$\uparrow$			- -				1			X
4/26/01 S BH.5 (30-3.2')		(	+	-	1		+-		X									1			X
				+			1				+-							$\uparrow$	$\uparrow \uparrow$	-	
Trainshind BY: (Signature) Date: 4/27/6/ RECEIVED BY: (Signature) Time:	re)		-	ate: _	·	LL~	l		SAMP	Ľ.	BY:	f <del>Pri</del>	nt 8	Sig CZ	(m)	4A		Date	B:		
INQUISHED BY: (Signature) Date: RECEIVED BY: (Signatur Time: INQUISHED BY: (Signature) Date: RECEIVED BY: (Signatur			T	ate: _ ime: _			······		SAMP	LE S X		×TD		(Circ E			л		L # _		
CEIVING LABORATORY: RECEIVED BY: (Substance, Second States)	ennis	) [}()	r. Life	me:									TACT		SON:			R	RUSH ( Author	Charge	
Y: STATE: ZIP: DATE: [30] U:	π	ME: .	$\frac{0}{-1}$	<u>110</u>					11	4	11	u []	110	2					Yes		No
	D-Solid -Other			REMA	RKS:																17

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Analysis Request and Chain of Custody	<b>y</b> ]	Re	co	rd					(0)			ALY		RE		3 EST Lhos	d N	01	ř:	3	
HIGHLANDER ENVIRONMENTAL ( 1910 N. Big Spring St. Midland, Texas 79705 (915) 682-4559 Fax (9				946			AND INT		Cr Ph Hg Se	Gr Pd Hg Se											
IENTI NAME: ) POGO TUDUCINA CO. ROJECT NO.: // PROJECT NAME	INNES	F	PRESI ME	THOI					As Ba Cd	Ba Cd		8	260/62	8270/0625			I. Chioride				
1630 Poco Michillan 24 Stale -1	NUMBER OF CONTAINERS	CT T	HNO3	ICE	NONE	BTEX 9020/602	MTHE 8020/008	11 8270	RA Metals Ag Au	IP Metals Ag As	IP Volatiles	TP Sent Volatile	CT MY VAL ROAD / ROAD / ROAD	GC MS Samt Vol.	808	Post. 808/608	BOD, TSS, pH, TDS,	Gamma Spec.	PLM (Arbertor)		Chbrid
1/24/01 5 · BH-6 (5-7-)			H		× ×	Ε X	× ()	<u>م الج</u>	N.	2	7		2 2	5 3		4	<b>E</b>	3		┼╌┤	1
\$ BH 6 (10-12')	1	1		オ			Ť,	x				╉	$\uparrow$		+-	+		+			X
F 134-6 (15-17')	1	+-		7				X	+			╉	+	+-	+-	+-		-+			X
S (BH ( JU- 2))	$\overline{1}$		+	7			-;	<	+			╈	+	+-	╎	+		+		††	4
1 1 -BH-6 (25-27')	1	+-	1	7				+-	+			+		+		-				<u>†</u> -†	+
V 1 BH6 (30-32')	1							X													×
4/26/0, W MAN-1	1			-																	X
4/20/0 W Mar 2	1								+			_			+-						X
LINQUISING, BY: (Signature) Date: 4/37/0) RECEIVED BY: (Signature)			ato:					AMPL		BY:			Si					ato:			
Image:		D Ti D	me: nte: me: ate:				S. F	AMPL EDEX AND	<u>//</u> E 51	4 <u></u> HIPF	'ED	10	(Cir	ir C	;				/		
TY:	Uin!	ý. Č	<u>те: _</u>	<u>~</u>				ight. I Kl		_				RSOI	N:			RU Au	sH Ci Lboris	barges	No
MPLE CONDITION WHEN RECEIVED: MATRIX: W-Weter A-Air SD-Solid S-Soli SL-Sludge 0-Other			REMA	rks:																	17



### Pogo Producing Company

Certificate of A	Analysis Number:	
<u>010</u>	050133	
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 Houston	PO Number:	
Texas	State:	Texas
77252-2504	State Cert. No .:	
ph: (713) 297-5045 fax: (915) 682-3946	Date Reported:	5/14/01

# This Report Contains A Total Of 10 Pages

# Excluding This Page

And

# Chain Of Custody

5/14/01

### Case Narrative for: Pogo Producing Company

	nalysis Number: 50133	
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 Houston	PO Number:	
Texas	State:	Texas
77252-2504	State Cert. No .:	
ph: (713) 297-5045 fax: (915) 682-3946	Date Reported:	5/14/01

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.

lette tim Paul Neschich

Senior Project Manager

5/14/01



# Pogo Producing Company

		Cer		Analysis Number: 50133			
Report To:	Highlander Environ Ike Tavarez 1910 N. Big Spring S	·		Project Name: Site: Site Address:	Pogo/McMilliam 24-1/165( Eddy County, NM	)	
Fax To:	Midland Texas 79705- ph: (915) 682-4559 Highlander Environm Ike Tavarez	<b>fax: (915) 682</b> : ental Corp fax: (915) 682:		PO Number: State: State Cert. No.: Date Reported:	Texas 5/14/01		
Cli	ent Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD

	M N-1	01050133-01	Water	5/2/01 12:30:00 PM	5/4/01 9:45:00 AM	
	M <i>N</i> -2	01050133-02	Water	5/2/01 3:30:00 PM	5/4/01 9:45:00 AM	
-	M <del>V-4</del>	01050133-03	Water	5/2/01 1:30:00 PM	5/4/01 9:45:00 AM	

Neschich, Paul Senior Project Manager 7/11/01

Date

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Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer

7/11/01 10:22:57 AM



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### **Pogo Producing Company**

		Certificate o	-	umber:			
		<u></u> <u>0</u>	<u>1050133</u>		·····		
<u>Report To:</u>	Pogo Producing Com Don Riggs P.O Box 2504 5 Greenway Plaza, Su Houston			<u>Project Name:</u> <u>Site:</u> <u>Site Address:</u>	Pogo/McMilliam 2 Eddy County, NM		
	Texas 77252-2504 ph: (713) 297-5045	fax: (713) 297-4952		PO Number: State: State Cert. No.:	Texas		
<del>-ax To:</del>	Pogo Producing Comp Don Riggs Highlander Environme	fax : (713) 297-4952		<u>Date Reported:</u>	5/14/01		
	Ike Tavarez	fax : (915) 682-3946					
Clier	nt Sample ID L	ab Sample ID Matrix	Date Collec	ted Date	Received	COC ID	НО

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

fitte C. Fini Paul Neschich

Senior Project Manager

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer 5/14/01

Date

5/14/01 8:12:45 AM



Client Sample ID MW-1			Col	lected:	5/2/01 12:30:00	SPL Sample II	<b>D:</b> 0105	0133-01
			Site	e: Edo	dy County, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: mg	g/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

5/14/01 8:12.49 AM



Client Sample ID MW-2			Col	lected:	5/2/01 3:30:00 P	SPL Sample II	<b>)</b> : 0105	50133-02
			Site	: Edo	ly County, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: m	g/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

5/14/01 8 12:50 AM



•

Client Sample ID MW-4			Col	lected:	5/2/01 1:30:00 P	SPL Sample II	<b>D:</b> 010	50133-03
			Site	e: Edo	iy County, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: m	g/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

5/14/01 8:12:51 AM

**Quality Control Documentation** 

5/14/01 8:12:53 AM



#### **Quality Control Report**

### Pogo Producing Company

Pogo/McMilliam	24-1/1650
----------------	-----------

Analysis: Method:	Purgeab SW8021	e Aromatics 3								kOrder: Batch ID:		)50133 5058	l.	
		Method Blank	. <u></u>			Sam	ples in /	Analytic	al Batc	h:				
RunID: Analysis Date		510B-668583 Units: 01 20:23 Analyst	ug/L DL			0105	Sample 0133-01 0133-02 0133-03	A 2A		<u>Client Sar</u> MW-1 MW-2 MW-4	npie II	D		
			Deput	Dentimi	ī									
	Benzene	Analyte	Result ND	Rep Limit										
	Ethylbenzene		ND	1.0										
	Toluene		ND	1.0										
	Xylenes, Total		ND 00.4	<u>1.0</u> 72-137										
	Surr: 1,4-Difluor Surr: 4-Bromoflu		<u>90.4</u> 84.9	48-156										
					Control	Sample (I	(2)	·····						
,		RunID:		0510B-6685			ıg/L							
		Analysis Date:	05/10/20	01 19:59	A	nalyst: [	DL							
						<b>.</b>								
		Analy	rte		Spike	Result	Perce	1	ower	Upper				
		······································			Added		Recov	/ery	Limit	Limit				
		Benzene			50	54	•	107	70	130				
		Ethylbenzene			50	54		108	70	130				
		Toluene			50	53 53		107	70	130				
		Xylenes,Total			150	) 164		109	70	130				
		Matrix	Spike (M	S) / Matrix	x Spike	Duplicate	(MSD)	···- <u></u> ···				·····		
							1:::1							
		Sample Spiked:	010501											
		RunID:	-	10510B-66		Units:	ug/L							
			05/10/2	001 20:48	3	Analyst:	DL							
		Analysis Date:	00/10/2											
		Analysis Date:	00/10/2											
	Analyte	Analysis Date: Sample Result	MS Spike Added	MS Re		MS % Recovery	MSD Spike Added	MSD F	Result	MSD % Recovery	RPD	RPD Limit	Low Limit	
	Analyte	Sample Result	MS Spike Added	MS Re	F	Recovery	Spike Added	MSD F		Recovery		Limit	' Limit	Limit
		Sample	MS Spike Added 3 20	MS Re	1 34	Recovery	Spike Added 20	MSD F	34	Recovery	0.0300	Limit 21	' Limit 32	164
Invibenzene		Sample Result	MS Spike Added 3 20 D 20	MS Re	34 21	Recovery 107 107	Spike Added 20 20	MSD F	34 22	Recovery 107 108	0.0300 0.731	Limit 21 19	' Limit 32 52	Limit
Bienzene Elhylbenzene Toluene Xylenes Total		Sample Result 1 N N	MS Spike Added 3 20 D 20 D 20	MS Re	34 21 21	Recovery 107 107 105	Spike Added 20 20 20	MSD F	34 22 21	Recovery 107 108 106	0.0300 0.731 0.466	Limit 21 19 20	' Limit 32 52 38	1 1 1
Elhylbenzene		Sample Result 1 N	MS Spike Added 3 20 D 20 D 20	MS Re	34 21	Recovery 107 107	Spike Added 20 20	MSD F	34 22	Recovery 107 108 106	0.0300 0.731	Limit 21 19 20	' Limit 32 52 38	Limi 16 14 15

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

\* - 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.



#### **Quality Control Report**

#### Pogo Producing Company Pogo/McMilliam 24-1/1650

					Pogo/N	AcMillian	n 24-1/165	0							
Analysis: Method:	Chloride, T E325.3	otal									kOrder: Batch ID:		050133 4809	3	
		Method	Blank				Sam	ples in	Analy	tical Bate	:h:				
FtunID:	WET_010507	G-663827	Units:	mg/L			lah	Sample	D		<u>Client Sa</u>	mole l	D		
Analysis Date:	05/07/2001	15:15	Analyst:	сv				50133-0			MW-1		2		
-			-				010	50133-0	2B		MW-2				
							010	50133-0	3B		MW-4				
	An	alyte		Result	Rep Lim	nit									
Chic	oride			ND	1	.0									
		<u> </u>		Lai	boratory	(Control	Sample (	LCS)							
		RunID:		WET_010	507G-663	3829 I	Inits:	mg/L							
		Analysis D	)ate:	05/07/20				CV							
	-		Analid			- Spike	Denuit	Date	ant 1		linner				
			Analy	e		Spike Added	Result	Perc Reco		Lower Limit	Upper Limit				
	-	Chloride				10	∋ 10≀	3	99	90	110				
	-														
			Matrix	C-ilia (M		-in Calles	Durlingt								
			Matrix	Spike (IVI	Sj i matt	TX Spike	Duplicate	<u>(mou)</u>							
		Sample S	Spiked:	010501											
		RunID:	Data		0507G-66		Units:	mg/L							
		Analysis	Date:	05/07/2	001 15:1	5	Analyst:	CV							
A	nalyte		ample Result	MS	MS R		MS %	MSD	MSD	Result	MSD %	RPD			High
		г	162011	Spike Added			Recovery	Added			Recovery		Limit	Limit	Lima
Chloride			14	50		64.4	100	50	1	64.4	100	0 0	20	85	11:
									J						
Qualifiers:	ND/U - Not I	Detected at t	he Repor	ting Limit		MI	- Matrix Ir	terferen	се						
	B - Analyte o				od Blank		- Recovery								
	J - Estimate	J value betw	een MDL	and PQL		• -	Recovery	Outside	Advisa	able QC I	imits				

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:01050133Date and Time Received:5/4/01 9:45:00 AMTemperature:3		Received E Carrier nan Chilled by:	-
1. Shipping container/cooler in good condition?	Yes 🗹	No 🗌 🛛 N	lot Present
2. Custody seals intact on shippping container/co	oler? Yes	No 🗌 🛛 N	lot Present 🗹
3. Custody seals intact on sample bottles?	Yes	No 🗌 🛛 N	lot Present 🗹
4. Chain of custody present?	Yes 🗹	No 🗌	
5. Chain of custody signed when relinquished and	Ireceived? 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 🗹	Νο	
10. All samples received within holding time?	Yes 🗹	No 🗌	
11. Container/Temp Blank temperature in complian	ce? Yes 🗹	No 🗔	
12. Water - VOA vials have zero headspace?	Yes 🗹	No 🗌 🛛 N	ot Applicable
13. Water - pH acceptable upon receipt?	Yes 🗹	No 🗌 🛛 N	ot Applicable 🗌
SPL Representative:	Contact Date &	Time:	
Client Name Contacted:			
Non Conformance Issues:			
Client Instructions:			

5/14/01 8:13:05 AM

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(915)	HIGI ) 682-	4559		19 M	10 idla	N. and	Big I, T	g S exa	pri: is '	ng 797	St. '05		Fax	(91	5)				16			900121	- Pb Re Be	- Pd Bg Se					Meth					20	
CLIENT N	NGE:	· / .			,		SITE	MANA	GER:					2	Ī	P			ATIVI	F		8015 MOD.	3	8			7634	939/0439		Told					þ
CLIENT NA	NO.: / (	<u>,50</u>	PR	DJEC			  (i) {	24	1	E	ez. I dej	<i>(i.</i>	T. A	- CONTAIND	(11)			ETH			99	11 8015	6 A2 A8 B	4 74 8		Volatiloe	6340/836	L Vol. AP	909/	pli. TDS, Chloride	5	(11)		7	
LAB I.D. NUMBER	DATE	TDLE	MATRIX	GRAB							() ation		/	NUMBER OF	(M/A) GRANTIN	BCL	HN03	1CF	NONE	RTEX NORO / 608	MTHE 8080/608	1.814 416.1	RCRA Metal	TCIP Motab	TCIP Volati		GC.MS Val	GC.MS Sam	PCB's 8080/608	100 12 100 A	Gamma Spec.	Alpha Beta (Air)	11/11		
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RELINQUISH	14	gnature)	••••	<u> </u>	Date Time Date	<u> </u>	137	<u>(' /</u>					ature)			TI	ite: _ ne: _ ite: _					амрі // амрі									Date: Mme:				-
LINQUISH		2			Tim Det				. 1				ature)			De	ne: _					EDE		IVEF	ED			US PS			BILL HER:				_
LECRIVING I			<u>P</u>		Tim						•		ture)	ätil		74	De: _					UGHI		•••				50N:			RU		barges		
CITY: CONTACT:				NTS: _			ZIP:		DA1	<b>T:</b>	-	4/01		TDO	5:							11:		<u>/                                    </u>	. ( .	, · · ·	<u> </u>				1	ithori 'es		lo	
SAMPLE CON	IDITION WI	HEN RECE	IVED:			×	ATRIX:		-Veter -Soil		A-Abr SL-Slua	l'	SD-50 0-0Ц			F	REM/	RKS:																	

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### **Pogo Producing Company**

	Analysis Number: 050379	
Report To:	Project Name:	Pogo/McMillan 24 State #1
Highlander Environmental Corp	<u>Site:</u>	Eddy County, NM
lke Tavarez	Site Address:	
1910 N. Big Spring Street		
Midland	PO Number:	
Texas	<u>State:</u>	New Mexico
79705-	State Cert. No .:	
ph: (915) 682-4559 fax: (915) 682-3946	Date Reported:	5/21/01

# This Report Contains A Total Of 8 Pages

# **Excluding This Page**

And

# Chain Of Custody

5/21/01

Date

### Case Narrative for: Pogo Producing Company

#### **Certificate of Analysis Number:** 01050379 **Report To:** Project Name: Pogo/McMillan 24 State #1 Site: Eddy County, NM **Highlander Environmental Corp** Ike Tavarez Site Address: 1910 N. Big Spring Street PO Number: Midland State: **New Mexico** Texas 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 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.

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Neschich,Paul Senior Project Manager 5/21/01



### **Pogo Producing Company**

		C	ertificate	of Analysis Number	•		
			<u>c</u>	01050379			
Report To:	Highlander Envi	ronmental Corp		Project	Name: Pogo/McMill	an 24 State #1	
	lke Tavarez			Site:	Eddy County	, NM	
	1910 N. Big Spri	ng Street		<u>Site Ad</u>			
	Midland						
	Texas			<u>PO Nur</u>	<u>nber:</u>		
	79705-			State:	New Mexico		
	ph: (915) 682-45	59 fax: (915) 6	82-3946		ert. No.:		
<u>Fax To:</u>	Highlander Envir	onmental Corp	·····	Date R	eported: 5/21/01		
	Ike Tavarez	fax : (915)	682-3946				
Clie	nt Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
rench #2(Are	a 1)Bottom	01050379-01	Soil	5/9/01	5/11/01 10:00:00 AM	1	
rench #2(Are	a 2)Bottom	01050379-02	Soil	5/9/01	5/11/01 10:00:00 AM		
rench #2(Are	a 3)Bottom	01050379-03	Soil	5/9/01	5/11/01 10:00:00 AM		

5/9/01

5/11/01 10:00:00 AM

Q- Q

Paul Neschich Senior Project Manager

Trench #2(Area 4)Bottom

01050379-04

Soil

5/21/01

Π

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



.

Client Sample ID Tr	ench #2(Area	3)Bottom	Colle	cted:	5/9/01	SPL Sample II	<b>):</b> 0105	0379-03
			Site:	Edo	ly County, NM			
Analyses/Method		Result	Rep.Limit		Dil. Factor QUA	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEU	M HYDROCAR	BONS		MCL	E418.1	Units: m	g/Kg	
Petroleum Hydrocarb	ons,TR	1800	50		5	05/15/01 13:00	нн	671302
Prep Method	Prep Date		Prep Initials					
	05/15/2001 1	0:55						

Qualifiers:

ND/U - Not Detected at the Reporting Limit

 $\ensuremath{\mathsf{B}}$  - 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

5/21/01 8:31:34 AM



Client Sample ID Tr	ench #2(Area 4	4)Bottom	Colle	cted:	5/9/01	SPL Sample II	<b>D:</b> 01050	0379-04
			Site:	Edo	ly County, NM			
Analyses/Method		Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEUN	M HYDROCAR	BONS		MCL	E418.1	Units: m	g/Kg	
Petroleum Hydrocarb	ons,TR	4400	50		5	05/15/01 13:00	НН	671303
Prep Method	Prep Date	•	Prep Initials					
·	05/15/2001 1	0:55						

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

5/21/01 8:31:35 AM

Quality Control Documentation

5/21/01 8:31:37 AM



#### **Quality Control Report**

#### Pogo Producing Company Pogo/McMillan 24 State #1

Analysis: Method:	Total Petroleum Hydrocarbons E418.1						kOrder: Batch ID:	01050379 R35208
	Method Blank			Samp	les in Analy			
Rur ID:	EX_010515A-671298 Units: p	opm		Lah S	ample ID		Client Sa	mole ID
Analysis Date:	05/15/2001 13:00 Analyst: H	НН			)379-03A			(Area 3)Bottom
Preparation Dat	· · · · · · · · · · · · · · · · · · ·	Method			)379-04A			(Area 4)Bottom
Γ	Analyte	esult Rep Limit	I					
Pe	etroleum Hydrocarbons,TR	ND 10	-					
			0			·		
		Laboratory	Control S	Sample (L	<u>((S)</u>			
	RunID: EX	_010515A-671299	Un	nits: p	pm			
	Analysis Date: 05	6/15/2001 13:00	An	alyst: H	н			
	Preparation Date: 05	5/15/2001 10:55	Pro	ер Ву:	Method			
	Analyte	T	Spike	Result	Percent	Lower	Upper	
	, mayte		Added	ricoun	Recovery	Limit	Limit	
	Petroleum Hydrocarbons,	,TR	200	180	90	86	117	
	L	I		4	í	i	J	
	Matrix Sn	ike (MS) / Matri	y Snike (	Junlicate	(MSD)		····	
	<u></u>	ine (ine) / india		<u>opnouto</u>				
	Sample Spiked: 0	01050379-03						
	RunID: E	EX_010515A-67131	16 L	Jnits:	ppm			
	Analysis Date: 0	05/15/2001 13:00	) A	alyst:	нн			
	Preparation Date: 0	05/15/2001 10:55	5 F	Prep By:	Method	ł		

	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

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

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

5/21/01 8:31:53 AM



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

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i.

### Sample Receipt Checklist

Workorder: 01050379 Date and Time Received: 5/11/01 10:00:00	AM		Receive		E edEx
Temperature: 5			Chilled		ater Ice
1. Shipping container/cooler in good con	dition?	Yes 🗹	No 🗌	Not Present	
2. Custody seals intact on shippping con	tainer/cooler?	Yes 🗌	No 🗌	Not Present	
3. Custody seals intact on sample bottles	?	Yes 🗌	Νο	Not Present	
4. Chain of custody present?		Yes 🔽	No 🗌		
5. Chain of custody signed when relinqui	shed and received?	Yes 🔽	No 🗌	,	
6. Chain of custody agrees with sample la	abels?	Yes 🗹	No 🗌		
7. Samples in proper container/bottle?		Yes 🗹	No 🗌		
8. Sample containers intact?		Yes 🗹	No 🗌		
9. Sufficient sample volume for indicated	test?	Yes 🗹	Νο		
<b>10.</b> All samples received within holding tim	ne?	Yes 🗹	No 🗌		
11. Container/Temp Blank temperature in c	compliance?	Yes 🗹	No 🗌		
<b>12.</b> Water - VOA vials have zero headspace	?	Yes	Νο	Not Applicab	le 🗹
<b>13.</b> Water - pH acceptable upon receipt?		Yes 🗌	No 🗌	Not Applicab	le 🗹
SPL Representative:		Contact Date &	time:		
Non Conformance Issues: Client Instructions:					

5/21/01 8:31:54 AM

OF. Analysis Request and Chain of Custody Record PAGE: ANALYSIS REQUEST (Circle or Specify Method No.) HIGHLANDER ENVIRONMENTAL CORP. 8 8 1910 N. Big Spring St. 120005 문문 Midland. Texas 79705 £ Z (915) 682-4559 Fax (915) 682-3946 8 h Chloride KOD. 33 8280/824 CLIENT NAME: PRESERVATIVE SITE MANAGE CONTAINERS Traducing CU. 92.20 Knew AVAICZ 88 METHOD 8015 Volatiles 8 6 PROFECT NAME MILLAN 24 State #1 3 PROJECT NO . CLAS Vol. 8240/ Vol. <u>-</u> 1065 PCB's 8080/608 (M/X) 3 8020/602 (Asbestos) (1.81) BOD, 133, pH, Semi. Mctals Metals 5 Volatil 8020/ ŝ 808 PAH 8270 TLTERED LAB I.D. NUMBER **KATRIX** Gamma SAMPLE DENTIFICATIO DATE TIME NONE EON1H GC.MS COMP. GRAB Alpha XIII **THE** NUMBER RCRA d D 10 Ð HCL PLM ICE Hdi ğ Trench #2 (area 1) Intern Trench #2 ( area 2), bottom French #2 ( area 3 ), bottom. reach #2 (area 4) RELINGUISHED, BY/ (Signature) **RECEIVED BY:** (Signature) SAMPLED BY: (Frint & Sign) Date: Date: Date: Time: Time: Time: RELINQUISHED BY: (Signature) Date: RECEIVED BY: (Signature) SAMPLE SHIPPED BY: (Cirole) Date: Time: Time: FEDEX BUS AIRBILL # RELINQUISHED BY: (Signature) HAND DELIVERED UPS RECEIVED BY: (Signature) OTHER: Date: Date: Time: Time: Regults by: HIGHLANDER CONTACT PERSON: RECEIVING LABORATORY: RECEIVED BY: (Signature) 1/AE Tavarez RUSH Charges ADDRESS: Authorized: 1000 STATE: ZIP: CITY: . TDATE: PHONE: DATE: CONTACT: RUN BTEX ON highest - TPH result SAMPLE CONDITION WHEN RECEIVED: WATRIX: REMARKS: W-Veter SD-Solid A-412 S-Sail SL-Sludge 0-Other

01050379

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.



### Highlander Environmental Corp

Certificate of Analysis Number: 01050601									
<u>Report To:</u> Highlander Environmental Corp Ike Tavarez 1910 N. Big Spring Street	Project Name: POGO/McMillan 24 State #1 1650 <u>Site:</u> Eddy County, NM <u>Site Address:</u>								
Midland Texas 79705- ph: (915) 682-4559 fax: (915) 682-3946	PO Number: <u>State:</u> New Mexico <u>State Cert. No.:</u> <u>Date Reported:</u> 5/30/01								

# This Report Contains A Total Of 43 Pages

# **Excluding This Page**

And

# Chain Of Custody

5/30/01

Date



#### Case Narrative for: Highlander Environmental Corp

#### Certificate of Analysis Number: 01050601 POGO/McMillan 24 State #1 1650 **Report To:** Project Name: Eddy County, NM Site: **Highlander Environmental Corp Ike Tavarez** Site Address: 1910 N. Big Spring Street **PO Number:** Midland **New Mexico** State: Texas 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 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.

つ、よ Paul Neschich

Senior Project Manager

5/30/01



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### Highlander Environmental Corp

		C	ertificate o	f Analysis Numbe	er:				
			<u>0</u>	<u>1050601</u>					
<u>R∍port To:</u>	Highlander Environ Ike Tavarez 1910 N. Big Spring			Site:	t Name: ddress:	POGO/McMillan 24 State #1 1650 Eddy County, NM			
	Midland Texas 79705- ph: (915) 682-4559	fax: (915) 6	82-3946	<u>PO Nu</u> <u>State:</u> <u>State (</u>	<u>mber:</u> Cert. No.:	New Mexico			
Fax To:	Highlander Environr	nental Corp		Date R	Reported:				
	lke Tavarez	fax : (915)	682-3946						
Client	Sample ID	Lab Sample ID	Matrix	Date Collected	Date	Received	COC ID	HOLD	
T-1 Stockpile #1		01050601-01	Soil	5/16/01		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	ļ	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		17	
T-1 Stockpile #6	;	01050601-06	Soil	5/16/01	5/18/01	10:00:00 AM		Th	
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	1	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		17	
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	ł	01050601-17	Soil	5/16/01	5/18/01	10:00:00 AM			
T-2 Stockpile #1	0	01050601-18	Soil	5/16/01	5/18/01	10:00:00 AM			
T-2 Stockpile #1	1	01050601-19	Soil	5/16/01	5/18/01	10:00:00 AM			
T-2 Stockpile #1	2	01050601-20	Soil	5/16/01	5/18/01	10:00:00 AM			
T-2 Stockpile #1	3	01050601-21	Soil	5/16/01	5/18/01	10:00:00 AM		15	
Trench #2-botto	m Area 1	01050601-22	Soil	5/16/01	5/18/01	10:00:00 AM			
French #2-botto	m Area 2	01050601-23	Soil	5/16/01	5/18/01	10:00:00 AM			
• • • • • • • • • • • • • • • • • • • •	m Area 1	01050601-24	Soil	5/16/01	5/18/01			-+ =	

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Pau Neschich Sen or Project Manager 5/30/01

Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



### **Highlander Environmental Corp**

		С	ertificate (	of Analysis Numbe	r:					
			<u>(</u>	01050601						
<u>Fleport To:</u> Highlander Environmental Corp Ike Tavarez 1910 N. Big Spring Street				Site:	<u>Project Name:</u> <u>Site:</u> <u>Site Address:</u>		POGO/McMillan 24 State #1 1650 Eddy County, NM			
<u>Fax To:</u>	Midland Texas 79705- ph: (915) 682-4559 Highlander Environ Ike Tavarez	·	<u>State:</u> <u>State (</u>	PO Number:						
Clie	ent Sample ID	Lab Sample ID	Matrix	Date Collected	Date	Received	COC ID	HOLD		
Trench #3-bol	ttom Area 2	01050601-25	Soil	5/16/01	5/18/01	10:00:00 AM				
Trench #3-bol	ttom 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 Botto	om (5-6')	01050601-28	Soil	5/16/01	5/18/01	10:00:00 AM				
Flare Pit (Wes	st Wall Stockpile #1)	01050601-29	Soil	5/16/01	5/18/01	10:00:00 AM				
Flare Pit (Wes	st Wall Stockpile #2)	01050601-30	Soil	5/16/01	5/18/01	10:00:00 AM				

2-2

Paul Neschich Senior Project Manager 5/30/01

Date

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Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer

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Client Sample ID T-1	Colle	ected:	5/16/01	SPL Sample I	<b>D:</b> 0105	0601-01			
		Site	Edo	dy County, NM	County, NM				
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #		
CHLORIDE, TOTAL		MCL	E325.3	Units: mg	g/Kg				
Chloride	322	10		1	05/23/01 14:30	CV	682197		
TOTAL PETROLEUM	HYDROCARBONS		MCL	E418.1	Units: mg	g/Kg			
Petroleum Hydrocarbo	ns,TR 760	10		1	05/22/01 14:30	НН	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



01050601-02

SPL Sample ID:

Client Sample ID T-1 Stockpile #2

05/22/2001 9:00

Collected: 5/16/01

			Site	: Edo	ly County, I	M			
Analyses/Method		Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEUM HYDROCARBONS				MCL	E	418.1	Units: mg	g/Kg	
Petroleum Hydrocarbons,TR 2000		2000	100		10		05/22/01 14:30	нн	680105
Prep Method	Prep Date		Prep Initials						

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 5:17:01 PM



Client Sample ID T-1 Stockpile #3			Col	lected:	5/16/01	SPL Sample ID	<b>)</b> : 010	50601-03
			Site	: Edo	dy County, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: mg	ı/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 HYDROCARE	BONS			MCL	E418.1	Units: mg	ı/Kg	
Petroleum Hydrocarbons,TR	3700		100		10	05/22/01 14:30	нн	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	e: Edo	ly County, NM	1			
Analyses/Method	Result		Rep.Limit		Dil. Factor Q	UAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS				MCL	SW802	1B	Units: ug	J/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 HYDROCA	RBONS			MCL	E418	8.1	Units: mg	g/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

5/30/01 5:17:05 PM



Client Sample ID T-1 Stockpi	le #5	Colle	cted: 5/16/01	SPL Sample ID		601-05
		Site:	Eddy County, NM			
Analyses/Method	Result	Rep.Limit	Dil. Factor QUAL	Date Analyzed	Analyst	 Seq. #

CHLORIDE, TOTAL				MCL	E325.3	Units: m	g/Kg	
Chloride	830		10		1	05/23/01 14:30	CV	682201
PURGEABLE AROMATICS				MCL	SW8021B	Units: ug	J/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 HYDROCA	RBONS			MCL	E418.1	Units: m	g/Kg	
Petroleum Hydrocarbons,TR	2600		100		10	05/22/01 14:30	НН	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

M Matrix Interference

MI - Matrix Interference

5/30/01 5:17:08 PM



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Client Sample ID T-1 Stockpile #6		Collec	cted:	5/16/01	SPL Sample II	<b>D:</b> 0105	0601-06
		Site:	Edd	ly County, NM	·		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEUM HYDROCAR	BONS	•	MCL	E418.1	Units: m	g/Kg	
Petroleum Hydrocarbons,TR	620	10		1	05/22/01 14:30	НН	680109

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 5:17:09 PM



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. # MCL E325.3 CHLORIDE, TOTAL Units: mg/Kg 610 05/23/01 14:30 CV 682202 Chloride 10 1 TOTAL PETROLEUM HYDROCARBONS MCL E418.1 Units: mg/Kg 1800 100 05/22/01 14:30 HH 680110 Petroleum Hydrocarbons,TR 10

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



05/22/2001 9:00

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

01050601-08 Client Sample ID T-1 Stockpile #8 Collected: 5/16/01 SPL Sample ID: 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 05/22/01 14:30 HH Petroleum Hydrocarbons,TR 1300 100 10 680111 Prep Method Prep Date Prep Initials

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 5:17:12 PM



Client Sample ID T-2 S	Stockpile #1	Colle	ected:	5/16/01	SPL Sample I	<b>):</b> 010	50601-09
		Site:	Edo	dy County, NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: m	g/Kg	
Chloride	127	10		1	05/23/01 14:30	CV	682203
TOTAL PETROLEUM H	IYDROCARBONS		MCL	E418.1	Units: m	g/Kg	
Petroleum Hydrocarbons	,TR 1500	100		10	05/22/01 14:30	НН	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

5/30/01 5:17:14 PM



Client Sample ID T-2 Stockpile #2

Collected: 5/16/01

SPL Sample ID: 01050601-10

			Site	e: Edo	ly County, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS				MCL	SW8021B	Units: ug	J/Kg	
Benzene	ND		1		1	05/25/01 18:34	FB	685966
Ethylbenzene	NÐ		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 HYDROCA	RBONS			MCL	E418.1	Units: m	g/Kg	
Petroleum Hydrocarbons,TR	2200		100		10	05/22/01 14:30	НН	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

5/30/01 5:17:16 PM



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Client Sample ID T-2 Stockpile #	\$3	Colle	ected:	5/16/01	SPL Sample II	<b>):</b> 0105	0601-11
		Site:	Edo	ly County, NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: m	g/Kg	
Chloride	153	10		1	05/23/01 14:30	CV	682204
TOTAL PETROLEUM HYDROCA	RBONS		MCL	E418.1	Units: m	g/Kg	
Petroleum Hydrocarbons,TR	1800	100		10	05/22/01 14:30	нн	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



Client Sample ID T-2 Stockpile #4			Col	lected:	5/16/01		SPL Sample I	<b>D:</b> 01	050601-12
			Site	: Edo	ly County, I	M			
Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analy	st Seq. #
PURGEABLE AROMATICS				MCL	SW8	021B	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 HYDROCARI	BONS			MCL	E	118.1	Units: mg	g/Kg	
Petroleum Hydrocarbons,TR	1900		100		10		05/22/01 14:30	НН	680115

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Prep Method		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 5:17:20 PM



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Client Sample ID T-2 Stockpile #5		Colle	Collected: 5/16/01			SPL Sample ID: 0105	
		Site:	Edo	ly County, NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL	· · · · · · · · · · · · · · · · · · ·		MCL	E325.3	Units: mg	j/Kg	
Chloride	110	10		1	05/23/01 14:30	CV	682205
TOTAL PETROLEUM	HYDROCARBONS	······	MCL	E418.1	Units: mg	J/Kg	
Petroleum Hydrocarbor	ns,TR 1100	50		5	05/22/01 14:30	НН	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

5/30/01 5:17:22 PM



05/22/2001 9:00

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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 Dil. Factor QUAL Result Rep.Limit 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

Qualifiers:

- 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 5:17:23 PM

ND/U - Not Detected at the Reporting Limit



HOUSTON LABORATORY 8880 INTERCHANGE DRIVE HOUSTON, TEXAS 77054

HOUSTON, TEXAS 77054 (713) 660-0901

Client Sample ID T-2 Stockpile #7			Col	lected:	5/16/01	SPL Sample I	<b>):</b> 010	50601-15
			Site	: Edo	dy County, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: mg	g/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 HYDROCARE	BONS			MCL	E418.1	Units: mg	j/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

5/30/01 5:17:26 PM



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Client Sample ID T-2 Stockpile #8		Colle	cted:	5/16/01	SPL Sample II	<b>):</b> 0105	050601-16	
			Site:	Edo	ly County, NM			
Analyses/Method		Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEU	M HYDROCAR	BONS		MCL	E418.1	Units: m	g/Kg	
Petroleum Hydrocarb	ons,TR	1200	50		5	05/22/01 14:30	HH	680119
Prep Method	Prep Date		Prep Initials					

05/22/2001 9:00

Qualifiers:

- 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 5:17:27 PM



			SPL Sample ID:	01050601-17
Site:	Edo	ly County, NM		
Rep.Limit		Dil. Factor QUAL	Date Analyzed Ana	alyst Seq. #
	MCL	E325.3	Units: mg/Kg	
10		1	05/23/01 14:30 CV	682208
	MCL	E418.1	Units: mg/Kg	
50		5	05/22/01 14:30 HH	680120
	Rep.Limit	Rep.Limit MCL 10 MCL	Rep.LimitDil. Factor QUALMCLE325.3101MCLE418.1	Rep.Limit     Dil. Factor     QUAL     Date Analyzed     Analyzed       MCL     E325.3     Units: mg/Kg       10     1     05/23/01 14:30     CV       MCL     E418.1     Units: mg/Kg

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 5:17:29 PM



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Client Sample ID T-2 Stockpile #10		Colle	cted:	5/16/01		SPL Sample I	<b>D:</b> 0105	0601-18
		Site:	Edo	ly County,	NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
OTAL PETROLEUM HYDROCAR	BONS		MCL	E	418.1	Units: m	g/Kg	
Petroleum Hydrocarbons,TR	1700	50		5		05/22/01 14:30	НН	680121

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 5:17:30 PM



Client Sample ID T-2 Stockpile #11		Colle	Collected: 5/16/01			SPL Sample ID: 0105	
		Site:	Edd	ly 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 Hydrocarboi	ns,TR 1100	50		5	05/22/01 14:30	Н	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

5/30/01 5:17:32 PM



Client Sample ID T-2 Stockpile #12 Collected: 5/16/01 SPL Sample ID: 01050601-20 Site: Eddy County, NM Analyses/Method Dil. Factor QUAL Result Rep.Limit Date Analyzed Analyst Seq. # **PURGEABLE AROMATICS** MCL SW8021B Units: ug/Kg ND 05/25/01 20:07 FB Benzene 1 1 685969

Petroleum Hydrocarbons,TR	2000		50		5	05/22/01 14:30		68012
OTAL PETROLEUM HYDROCA	RBONS			MCI	F418.1	Units: m	a/Ka	
Surr: 4-Bromofluorobenzene	105	%	48-156		1	05/25/01 20:07	FB	68596
Surr: 1,4-Difluorobenzene	112	%	59-127		1	05/25/01 20:07	FB	68596
Xylenes, Total	3.5		1		1	05/25/01 20:07	FB	68596
Toluene	2.1		1		1	05/25/01 20:07	FB	68596
Ethylbenzene	ND		1		1	05/25/01 20:07	FB	68596

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 5:17:34 PM



Client Sample ID T-2 Stockpile #13 Collected: 5/16/01 SPL Sample ID: 01050601-21 Site: Eddy County, NM Dil. Factor QUAL Analyses/Method Date Analyzed Analyst Result Rep.Limit Seq. # CHLORIDE, TOTAL MCL E325.3 Units: mg/Kg 05/23/01 14:30 CV 682210 Chloride 93.2 10 1 TOTAL PETROLEUM HYDROCARBONS MCL E418.1 Units: mg/Kg 05/23/01 11:00 G\_T 681209 Petroleum Hydrocarbons,TR 10 1 470

ļ	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

5/30/01 5:17:35 PM



Client Sample ID Trench #2-bott	om Area 1		Col	lected:	5/16/01	SPL Sample II	<b>):</b> 0105	0601-22
			Site	e: Edo	dy County, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: m	g/Kg	
Chloride	50.8		10		11	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 HYDROCA	RBONS			MCL	E418.1	Units: mg	j/Kg	··· ····
Petroleum Hydrocarbons,TR	190		10		1	05/23/01 11:00	GT	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

5/30/01 5:17:38 PM



i.

Client Sample ID Trench #2-bottom Area 2		Colle	ected:	5/16/01	SPL Sample ID	: 0105	0601-23
		Site:	Edo	ly County, NM			
Analyses/Method	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. ‡
CHLORIDE, TOTAL				E325.3	Units: mg/Kg		
Chloride	33.9	10		1	05/23/01 14:30	CV	682214
TOTAL PETROLEUM HYDROCA	RBONS		MCL	E418.1	Units: mg/	/Kg	<u> </u>
Petroleum Hydrocarbons,TR	25	10		1	05/23/01 11:00 0	S_T	681211

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 5:17:40 PM



Client Sample ID Trench #3-bottom Area 1		Colle	cted:	5/16/01	SPL Sample ID	: 01050	01050601-24	
			Site:	Edd	ly County, NM			
Analyses/Method	-	Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
TOTAL PETROLEUM HYDROCARBONS			MCL	E418.1	Units: mg	/Kg		
Petroleum Hydrocarbo	ons,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

5/30/01 5:17:41 PM



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

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

			Site	e: Edo	dy County, NM				
Analyses/Method	Result		Rep.Limit		Dil. Factor QU	JAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325	5.3	Units: m	g/Kg	
Chloride	5250		100		10		05/23/01 14:30	CV	682215
PURGEABLE AROMATICS				MCL	SW8021	1B	Units: ug	g/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 HYDROCA	RBONS			MCL	E418	3.1	Units: m	g/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

- $\ensuremath{\mathsf{B}}$  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 5:17:44 PM



Client Sample ID Trench #3-bottom Area 3		Colle	ected:	5/16/01	SPL Sample ID	: 0105	0601-26
		Site:	Edd	ly 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
OTAL PETROLEUM H	YDROCARBONS		MCL	E418.1	Units: mg	/Kg	
Petroleum Hydrocarbons,	TR 3400	50		5	05/23/01 11:00 (	G_T	681214

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

5/30/01 5:17:46 PM



Client Sample ID Trench	#3-bottom Area 4	Colle	ected:	5/16/01	SPL Sample ID	: 0105	0601-27
		Site:	Edd	ly 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 HY	DROCARBONS		MCL	E418.1	Units: mg	/Kg	
Petroleum Hydrocarbons,TI	R 2700	50		5	05/23/01 11:00	G_Ť	681215
Prep Method Pr	ep 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

5/30/01 5:17:48 PM



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T.

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

			Site	e: Edo	ly County, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: mg	g/Kg	
Chloride	847		10		1	05/23/01 14:30	CV	682219
PURGEABLE AROMATICS				MCL	SW8021B	B 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	ТМ	678302
Xylenes, Total	11		1		1	05/22/01 2:51	тм	678302
Surr: 1,4-Difluorobenzene	127	%	59-127		1	05/22/01 2:51	ТМ	678302
Surr: 4-Bromofluorobenzene	309 MI	%	48-156		1 *	05/22/01 2:51	ТМ	678302
TOTAL PETROLEUM HYDROCA	RBONS			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

5/30/01 5:17:50 PM



05/23/2001 9:00

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

Client Sample ID Fla	re Pit (West V	Vall Stockpi	le #1) Colle	ected:	5/16/01	SPL Sample ID	<b>):</b> 010	50601-29
			Site:	Edd	iy County, NM			
Analyses/Method		Result	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: mg	g/Kg	
Chloride		491	10		1	05/23/01 14:30	CV	682220
TOTAL PETROLEUM	HYDROCAR	BONS		MCL	E418.1	Units: mg	j/Kg	
Petroleum Hydrocarbo	ns,TR	400	10		1	05/23/01 11:00	G_T	681217
Prep Method	Prep Date		Prep Initials					

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 5:17:52 PM



Client Sample ID Flare Pit (West	t Wall Stock	pile #	#2) Col	lected:	5/16/01	SPL Sample II	<b>)</b> : 010	50601-30
			Site	: Ede	dy County, NM			
Analyses/Method	Result		Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL				MCL	E325.3	Units: mg	g/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 HYDROCA	RBONS			MCL	E418.1	Units: mg	J/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

 $\ensuremath{\mathsf{B}}$  - 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 Dílution

MI - Matrix Interference

5/30/01 5:17:55 PM



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5/30/01 5:17:56 PM



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## **Quality Control Report**

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#### Highlander Environmental Corp

#### POGO/McMillan 24 State #1 1650

Analysis:		al Petroleum Hy	drocarbons								kOrder:		050601		
Method:	E41	8.1								Lab	Batch ID:	R3	5715		
		Met	hod Blank				San	nples i	n Analy	tical Bate	ch:				
RunID:	EX_0	010522C-680100	Units:	mg/Kg	3		Lab	Samp	le ID		Client S	ample I	D		
Analysis Dat	e: 05/2	2/2001 14:30	Analyst:	нн				50601-			T-1 Stoc				
Preparation I		2/2001 9:00	Prep By:		Method		010	50601-	02A		T-1 Stoc				
•							010	50601-	03A		T-1 Stoc	kpile #3			
	r					1	010	50601-	04A		T-1 Stoc	kpile #4			
	<b>D</b>	Analyte			Rep Limit	4	010	50601-	05A		T-1 Stoc	kpile #5			
	Petroleum H	ydrocarbons,TR		N	D 10	J	010	50601-	06A		T-1 Stoc	kpile #6			
							010	50601-	07A		T-1 Stoc	kpile #7			
							010	50601-	08A		T-1 Stoc	kpile #8			
							010	50601-	09A		T-2 Stoc	kpile #1			
							010	50601-	10A		T-2 Stoc	kpile #2			
								50601-			T-2 Stoc	kpile #3			
								50601-			T-2 Stoc	-			
								50601-			T-2 Stoc	-			
								50601-			T-2 Stoc				
								50601-			T-2 Stoc	-			
								50601-			T-2 Stoc				
								50601-			T-2 Stoc				
								50601- 50601-			T-2 Stoc				
								50601- 50601-2			T-2 Stoc T-2 Stoc				
				<u>La</u>	aboratory (	ontro	ol Sample (	LUSI							
		RuniD	:	EX_0105	22C-680101		Units:	mg/Kg							
		-	is Date:		001 14:30		•	нн							
		Prepa	ation Date:	05/22/20	001 9:00		Prep By:	N	lethod						
			Analy	te		Spike	Result	Per	cent	Lowèr	Upper				
						Addee	d	Rec	overy	Limit	Limit				
		Petroleur	n Hydrocarbo	ons,TR		2	00 18	0	92	86	117				
		<u></u>			•										
			Matrix	Spike (N	IS) / Matrix	( Spik	e Duplicat	e (MSD	1						
		Sam	ole Spiked:	01050	601-01										
		Runi	D:	EX_010	)522C-68012	4	Units:	mg/K	g						
		Anal	vsis Date:	05/22/	2001 14:30	1	Analyst:	нн							
		Prep	aration Date:	05/22/	2001 9:00		Prep By:		Method	t					
	Analyte		Sample	MS	MS Re	sult	MS %	MSD	MSE	D Result	MSD %	RPD	RPD	Low	High
	-		Result	Spike Added			Recovery	Spike Addeo	{		Recovery	i		Limit	
0 117			-445-2		·····	J		·					1	L	
Qualifiers:		U - Not Detected Analyte detected	•	0			MI - Matrix I D - Recover			duo to D	ilution				
		απαινια παιαστάπ		анеп ме	ILIOO BIADK		J - KHCOVEL	v i inrot	RULIADIO	сицето ГЛ	ULIUON				

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.



#### **Quality Control Report**

#### Highlander Environmental Corp POGO/McMillan 24 State #1 1650

Analysis: Method:	Total Petrol E418.1	leum Hydrocarbons									01050601 R35715		
		<u>Matrix</u> S	Spike (M	S) / Matrix Spik	e Duplicate	e (MSD)							
		Sample Spiked: RunID: Analysis Date: Preparation Date:		01-01 522C-680124 001 14:30 001 9:00	Units: Analyst: Prep By:	mg/Kg HH M	lethod						
	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 Hy	ydrocarbons,TR	760	200	940	88.6	200	950	91.1	2.73	20	72	119	

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

nk D - Recovery Unreportable due to Dilution \* - Recovery Outside Advisable QC Limits

J - Estimated value between MDL and PQL

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 5:18:33 PM



#### **Quality Control Report**

## **Highlander Environmental Corp**

#### POGO/McMillan 24 State #1 1650

Analysis: Method:	Total Petrole E418.1	um Hydrocarbons							orkOrder: DBatch ID:		)50601 5759		
		Method Blank				Sam	ples in .	Analytical Ba	tch:				
Rur ID:	EX_010523A-68	1202 Units:	mg/Kg			Lab	Sample	ID	Client Sa	mple i	D		
Analysis Date:	05/23/2001 11	:00 Analyst:	GТ				50601-21		T-2 Stock				
Preparation Date:	05/23/2001 9:		_	<b>Nethod</b>		0105	50601-22	2A	Trench #	•		1	
						0105	50601-23	BA	Trench #	2-bottor	n Area	2	
r		· · · · · · · · · · · · · · · · · · ·				0105	50601-24	A	Trench #	3-bottor	n Area	1	
	Anal		Result	Rep Limit		0105	50601-25	A	Trench #	3-bottor	n Area	2	
Petro	leum Hydrocarbon:	s,1Rl	ND	10		0105	50601-26	5A	Trench #	3-bottor	n Area	3	
						0105	50601-27	'A	Trench #	3-bottor	n Area	4	
						0105	0601-28	A	Flare Pit	Bottom	(5-6')		
						0105	60601-29	A	Flare Pit	(West V	Vall Sto	ockpil	
						0105	50601-30	A	Flare Pit	(West V	Vall Sto	ockpil	
			La	boratory Co	ntrol S	ample (I	LCS)			v			
		RunID:	EX 01052	23A-681203	Un	its: ı	mg/Kg						
		Analysis Date:	-	01 11:00			G_T						
		Preparation Date:	05/23/20			ep By:		thod					
		Analy		e.	oike	Result	Perce	ent Lower	Upper				
					ided	Result	Recov		Upper Limit				
	Pe	troleum Hydrocarbo	ons,TR		200	190		95 8	6 117				
		Matrix	Spike (M	S) / Matrix S	pike D	uplicate	(MSD)						
		Sample Spiked:	010505	528-03									
		RunID:	EX_010	523A-681226	U	nits:	mg/Kg						
		Analysis Date:	05/23/2	2001 11:00	A	nalyst:	G_T						
		Preparation Date:	05/23/2	2001 9:00	Ρ	rep By:	N	lethod					
Ar	alyte	Sample Result	MS Spike	MS Resul	1	IS % covery	MSD Spike	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limi
			Added				Added						
Petroleum Hydroca	arbons,TR	1(	200	1	190	90.0	200	20	92.5	5 2.74	20	72	11

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

\* - 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.



#### **Quality Control Report**

#### **Highlander Environmental Corp**

Analysis: Method:	Purgeabl SW8021E	le Aromatics B							rkOrder: Batch ID:		050601 5571		
		Method Blank				Sam	ples in <i>l</i>	Analytical Bat	ch:				
Rur ID:	HP_O_010	0521A-677713 Units:	ug/Kg			Lab	Sample	ID	Client Sa	mple I	D		
Analysis Date	e: 05/21/200	01 12:30 Analyst:	тм				0601-28		Flare Pit I				
		Analyte	Result	Rep Limit									
	Benzene		ND	4/									
	Ethylbenzene		ND										
	Toluene Xylenes,Total		ND ND	1.0									
	Surr: 1,4-Difluore	obenzene	97.9										
	Surr: 4-Bromoflu		105.1	48-156									
		······································	La	boratory Cor	ntrol Sa	ample (L	<u>_CS)</u>						
		RunID:	HP_O_01	0521A-677711	Unit	ts: ι	lg/Kg						
				01 11:53			rgi ig FM						
		,				, - · · ·							
		A				D							
		Analyt	e		ike ded	Result	Perce Recov		Upper Limit				
		Despec					ļ	-					
		Benzene			50	43		87 60	120				
		C the dhapper			<b>F</b> 0				107				
		Ethylbenzene			50	45		90 68					
		Toluene			50	44		89 64	122				
									122				
		Toluene			50	44		89 64	122				
		Toluene Xylenes,Total	Spike (M	S) / Matrix Si	50 150	44 137		89 64	122				
		Toluene Xylenes,Total	Spike (M	S) / Matrix S	50 150	44 137		89 64	122				
		Toluene Xylenes,Total	Spike (M 010506		50 150	44 137		89 64	122				
		Toluene Xylenes,Total Matrix S	010506		50 150 pike Du	44 137		89 64	122				
		Toluene Xylenes,Total <u>Matrix S</u> Sample Spiked:	010506 HP_O_0	32-01	50 150 pike Du	44 137 uplicate	(MSD)	89 64	122				
		Toluene Xylenes,Total <u>Matrix S</u> Sample Spiked: RunID:	010506 HP_O_0	32-01 10521A-67829	50 150 pike Du	44 137 uplicate	(MSD) ug/Kg	89 64	122				
		Toluene Xylenes,Total <u>Matrix S</u> Sample Spiked: RunID:	010506 HP_O_0	32-01 10521A-67829	50 150 pike Du	44 137 uplicate	(MSD) ug/Kg	89 64	122				
	Analyte	Toluene Xylenes,Total <u>Matrix S</u> Sample Spiked: RunID: Analysis Date:	010506 HP_O_0 05/21/2	32-01 10521A-67829 001 23:14	50 150 pike Du 6 Un An	44 137 uplicate nits: nalyst:	(MSD) ug/Kg TM	89 64 91 68	122	RPD	RPD	Low	High
	Analyte	Toluene Xylenes,Total <u>Matrix S</u> Sample Spiked: RunID:	010506 HP_O_0	32-01 10521A-67829	50 150 pike Du 6 Un An	44 137 uplicate nits: nalyst: S %	(MSD) ug/Kg	89 64	122	RPD	RPD Limit	Low Limit	
	Analyte	Toluene Xylenes,Total <u>Matrix S</u> Sample Spiked: RunID: Analysis Date: Sample	010506 HP_O_0 05/21/2 MS	32-01 10521A-67829 001 23:14	50 150 pike Du 6 Un An	44 137 uplicate hits: halyst: S % covery	(MSD) ug/Kg TM MSD	89 64 91 68	122 129 MSD %	RPD			
Benzene	Analyte	Toluene Xylenes,Total <u>Matrix S</u> Sample Spiked: RunID: Analysis Date: Sample Result	010506 HP_O_0 05/21/2 MS Spike Added	32-01 10521A-678290 001 23:14 MS Result	50 150 pike Du 6 Un An M: Rec	44 137 uplicate nits: nalyst: S % covery	(MSD) ug/Kg TM MSD Spike Added	89 64 91 68 MSD Result	122 129 MSD % Recovery		Limit	Limit	Limi
		Toluene Xylenes,Total <u>Matrix S</u> Sample Spiked: RunID: Analysis Date: Sample Result ND	010506 HP_O_0 05/21/2 MS Spike Added 20	32-01 10521A-67829 001 23:14 MS Result	50 150 pike Du 6 Un An Rec 21	44 137 uplicate hits: halyst: S % covery 107	(MSD) ug/Kg TM MSD Spike Added 20	89 64 91 68 MSD Result	122 129 MSD % Recovery 111	3.68	Limit	Limit 35	Limit
Ethy Ibenzene		Toluene Xylenes,Total Sample Spiked: RunID: Analysis Date: Sample Result ND	010506 HP_O_0 05/21/2 MS Spike Added 20 20	32-01 10521A-67829 001 23:14 MS Result	50 150 pike Du 6 Un An 8 8 21 20	44 137 uplicate hits: halyst: S % covery 107 102	(MSD) ug/Kg TM MSD Spike Added 20 20	89 64 91 68 MSD Result 22 22	122 129 MSD % Recovery 111 111	3.68 8.59	Limit 34 35	Limit 35 31	Limi 13 13
Benzene Ethylbenzene Toluene Xylenes, Total		Toluene Xylenes,Total <u>Matrix S</u> Sample Spiked: RunID: Analysis Date: Sample Result ND	010506 HP_0_0 05/21/2 MS Spike Added 20 20 20	32-01 10521A-67829 001 23:14 MS Result	50 150 pike Du 6 Un An Rec 21	44 137 uplicate hits: halyst: S % covery 107	(MSD) ug/Kg TM MSD Spike Added 20	89 64 91 68 MSD Result	122 129 MSD % Recovery 111 111 127	3.68 8.59 20.4	Limit 34 35 28	Limit 35 31 31	13 13 13

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

- B Analyte detected in the associated Method Blank
- D Recovery Unreportable due to Dilution
- J Estimated value between MDL and PQL
- \* 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 5:19:15 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: Method:	Purgeable Aron SW8021B	atics						kOrder: Batch ID:		050601 5986		
		Method Blank			Sam	ples in /	Analytical Bate	:h:				
RunID:	HP_O_010525A-68	5953 Units:	ug/Kg		Lab	Sample	ID	Client Sa	mple I	D		
Ana'ysis Da	te: 05/25/2001 9:01	Analyst:	FB			60601-03		T-1 Stock		_		
		•			0105	50601-04	A	T-1 Stock				
					0105	50601-05	A	T-1 Stock				
	Appleta		Desult	Don timit	0105	60601-10	A	T-2 Stock	vpile #2			
	Analyte		Result ND	Rep Limit	0105	01050601-12A		T-2 Stock	oile #4			
	Ethylbenzene		ND	1.0	0105	60601-15	A	T-2 Stock	pile #7			
	Toluene		ND	1.0	0105	50601-20	A	T-2 Stock	oile #1	2		
	Xylenes, Total Surr: 1,4-Difluorobenzen		<u>ND</u> 96.4	1.0 59-127	0105	60601-22	A	Trench #2-bottom A Trench #3-bottom A			1	
	Surr: 4-Bromofluorobenz		101.3	48-156	0105	5060 <b>1-2</b> 5	A				2	
					0105	60601-30	A	Flare Pit (	West V	Vall Sto	ockpil	
			La	boratory Contro	ol Sample (I	LCS)						
	Ru	nID:	HP O 010	0525A-685950	Units: ı	Jg/Kg						
			05/25/20			≂B						
		Analyt	e	Spike	Result	Perce	ent Lower	Upper				
				Adde	t	Recov	ery Limit	Limit				
	Benz	ene			50 49	9	97 60	120				
	Ethyl	benzene			50 48	3	96 68	127				
	Tolue	ne			50 49	)	97 64	122				
	Xyler	es,Total		1	50 147	'	98 68	129				
		Matrix	Spike (M	S) / Matrix Spik	e Duplicate	(MSD)			14000			
		ample Spiked:	010507									
		tuniD:		10525A-685951	Units:	ug/Kg						
	P	nalysis Date:	05/25/2	001 7:59	Analyst:	FB						
			<b></b>				······································					
	Analyte	Sample Result	MS Spike Added	MS Result		MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	
		ND	20	24	118	20	23	115	2.23	34	35	139
Benzene												
	e	ND	20	23	116	20	23	113	2.97	35	31	137
Benzone Ethylbenzer Toluene	е	ND ND		23 24	116 118	20 20	23		2.97 3.90			137 137

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

\* - 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.



T-2 Stockpile #11

### **Quality Control Report**

#### Highlander Environmental Corp POGO/McMillan 24 State #1 1650

Analysis: Method:	Chloride, Total E325.3				WorkOrder: Lab Batch ID:	01050601 R35816
	Metho	d Blank		Samples in Analyti	cal Batch:	
Rur ID:	WET_010523B-682195	Units:	mg/Kg	Lab Sample ID	Client Sar	nple ID
Analysis Date:	05/23/2001 14:30	Analyst:	CV	01050601-01A	T-1 Stock	bile #1
				01050601-03A	T-1 Stockp	ile #3
				01050601-05A	T-1 Stockp	ile #5
r		·····		01050601-07A	T-1 Stockp	ile #7
Chi	Analyte		Result Rep Limit	01050601-09A	T-2 Stockp	ile #1
	oride		ND 10	01050601-11A	T-2 Stockp	ile #3
				01050601-13A	T-2 Stockp	ile #5
				01050601-15A	T-2 Stockp	ile #7
				01050601-17A	T-2 Stockp	ile #9

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

Sample Spiked:
RunID:
Analysis Date:

01050601-01 WET\_010523B-682198 05/23/2001 14:30

Units: mg/Kg Analyst: CV

01050601-19A

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

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

J - Estimated value between MDL and PQL

L \* - 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



#### **Quality Control Report**

## **Highlander Environmental Corp**

POGO/McMillan 24 State #1 1650

Analysis: Met iod:	Chloride, Total E325.3				WorkOrder: Lab Batch ID:	01050601 R35816A
		od Blank		Samples in Analytic		
Run D:	WET_010523B-682195	Units:	mg/Kg	Lab Sample ID	Client Sa	nple ID
Ana ysis Date:	05/23/2001 14:30	Analyst:	CV	01050601-21A	T-2 Stock	bile #13
				01050601-22A	Trench #2	-bottom Area 1
				01050601-23A	Trench #2	-bottom Area 2
r				01050601-25A	Trench #3	-bottom Area 2
Chin	Analyte		Result Rep Limit	01050601-26A	Trench #3	-bottom Area 3
Chlo	noe		ND 10	01050601-27A	Trench #3	-bottom Area 4
				01050601-28A	Flare Pit B	ottom (5-6')
				01050601-29A	Flare Pit (	Vest Wall Stockpil
				01050601-30A	Flare Pit (\	Vest Wall Stockpil

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

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

	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	F	20	91.8	115

**Qualifiers:** 

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

D - Recovery Unreportable due to Dilution

mg/Kg

J - Estimated value between MDL and PQL

\* - Recovery Outside Advisable QC Limits

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5/30/01 5:20:16 PM

Sample Receipt Checklist And Chain of Custody

5/30/01 5:20:17 PM



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### Sample Receipt Checklist

Date and Time Received: 5/18/01 10:00:00 AM		Carrier	name: I	FedEx
Temperature: 4		Chilled	by: N	Water Ice
1. Shipping container/cooler in good condition?	Yes 🗹	No 🗌	Not Preser	nt 🗌
2. Custody seals intact on shippping container/cooler?	Yes 🗌	No 🗌	Not Preser	nt 🔽
3. Custody seals intact on sample bottles?	Yes	No 🗌	Not Preser	nt 🗹
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 🗌		
<b>10.</b> All samples received within holding time?	Yes 🗹	No		
11. Container/Temp Blank temperature in compliance?	Yes 🗹	No 🗌		
<b>12.</b> Water - VOA vials have zero headspace?	Yes 🗌	No	Not Applica	able 🔽
13. Water - pH acceptable upon receipt?	Yes	No 🗌	Not Applica	able 🗹
SPL Representative: Client Name Contacted: Non Conformance Issues:	Contact Date 8	time:		

5/30/01 5:20 18 PM

Analysis Request and (	bain of Custod	<b>17</b>	200	and	1				_	<u> </u>	ī	AGE	_		T	$\mathcal{O}$	OF:		3
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HIGHLANDER ENV. 1910 N. Big Midland, Te (915) 682-4559	Spring St.				8		TURK		Cr Pb Hg Se										
ILIENT NAME: POGO Producing SITE M	E louarez	VERS		SERVA ŒTHO			NOD A		2 2 2			RD / R2	8270/625		Chloride				
PROJECT NO .: 1650 PROJECT NAME: AMIL		CONTAINERS /N)				205	B08 B016		4	1	Volatiles	68/ UY68		809	08 H TYS	1 0	(ALT)	(1)	af a
in a la tela	Le Carty HM. E/DENTIFICATION	NUMBER OF CO. FILTERED (Y/N)	HCL HN03	ICE	NONE	BTEX 8020/602	MTBE 8020/602	PAH 8270	RCRA Metals Ag	TCLP Volatiles	TCLP Semi Volatiles	RCI CT WS Vol ROAD /ROAD	GC MS Semi. Vol.	PCB's 8080/608	Pest. 808/608 BOD 755 pH	Gemma Spec.	Alpha Beta (Air)	PLM (Asbestos	Chtru
Sudar SY T-1 Stock	epilo - # 1	1		/			Ì	K											X
5 x T-1 Stoc	Lpilo - # 2 Lpilo - # 3	1					У	C											
5 × T-1 Stoc	Lpile #3	1		1			Y	<u>, , , , , , , , , , , , , , , , , , , </u>											X
	chpilo - #4	1		1			¥	;											
5 × T-1 Ste	chipelo # 5	1		/			>	C											X
T + T-1 Sta	charle # 6	1		/			Y												
54 7-1 5	tochail # 7	1		1			Y												X
5× T-1 5	tochpil #8	1		/			X												
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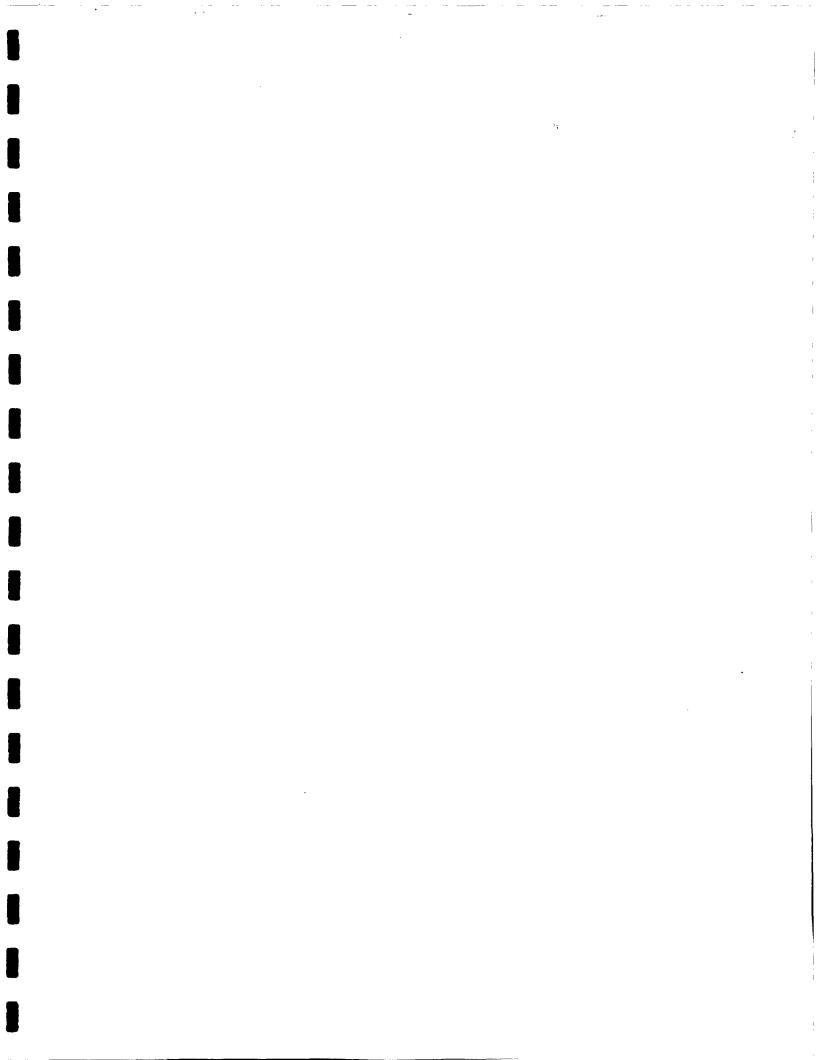
Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold Copy

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Analysis Request and Ch	ain of Custod	y R	ec	ord	L -					NAL		RE	QUE			OF:	2	
HIGHLANDER ENVIR 1910 N. Big Sr		COF	RP.				5		8		Spe	cify	Met	hod	No.)			Π
(915) 682-4559 Midland, Texas		D15) /	882-	.408	g I		11(1005	Cr Pb Hg Se	נ									
TENT NAME.		<u> </u>	PRE	SERVA	TIVE		KOD.	3 3				8260/624 6270/625		Chlorida				
ROJECT NO .: 1650 PROJECT NAME: Mc Milli	RE Cuave _	CONTAINERS (N)		ETHO.			8015 <u>k</u> od.	g As Ba Cd		atiles		ol 627	5	504		G_	<i>.</i> ,	
ROJECT NO.: //// NB I.D. DATE TIME E S S S S S S S S S S S S S S		RED (Y,	HCL HN03	ICE	NONE	BTEX 8020/802 MTBE 8020/802	TPB) (418.1) PAH 8270	RCRA Metals Ag	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624 GC.MS Semi. Vol. 6270/624	PCB's 8080/608	Pest. 808/608 Ron 755 nH	Gemme Spec.	Alpha Bota (Air) PIM (Asbertos)	Hone	
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5 1 T-2 Sta	upile # 5	1		/			X										X	
51 T-2 50	dyrile #6	1					X											
S- T-2_ Sta	schiel #7	<u>ر</u>	_			_	X		_		_	_					X	$\left  \right $
) T-2 St	viljile # 8		_				×								-			<u>   </u>
	repilo # 9	1					χ ,	<b>├</b>		$\left  \right $		_					X	┟╌┥
7 T-2 St	ochila # 10			Í,	_		4	$\left  - \right $		$\left  \right $			+		+			$\left  - \right $
V 5 7-2 54	tochqile # 11	<u></u>		14			X	┝╌┝╴	+	$\left  - \right $		f -	$\left  \right $	_				┝╌┤
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CPLE CONDITION WHEN RECEIVED: WATRIX: W-W S-S	Tator A-Air SD-Solid		REM	RKS	75×	on	his	hesi	Ţ¥]	PF	4.	fire	51	bel	-a1"	¢ 7	-Z	

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					<b>~</b>				(Cire	A Je	NAL: or !	YSIS Spec	RE( ify	QUES Moti	ST 10d	No.)			
HIGHLANDER ENV 1910 N. Big Midland, T (915) 682-4559					46		200024		Cd Cr Pb Hg Se Cd Cr Pd Hg Se										
JUGO TOducing SITE	HE JOUREZ	INERS	PI	RESER METH	VATTVE IOD		8015 MOD		<b>a</b> a			280 /824	8270/625		Chloride				
ROJECT NO.: PROJECT NAVE: MCN	Villani Stele # 1	CONTAINERS				802	.   ~		A 44 44	8	Semi Volatiles	B240/R	Aol.	1908	808 H. TDS.	ij	(aur) (arr)	di	
B I.D. DATE TIME TIME SAM	delle Qu. Nm. DLE IDEDITIFICATION	FILTERED (Y/V)	HCL	HN03 ICE	NONE	BTEX 8020/802	TPH (181)	PAR 6270	RCRA Metals Ag TCLP Metals Ag	TCLP Volatiles	TCIP Semi	RCI GC MS Vol	GC.MS Semi. Vol. 8270/62	PCB's 8080/608	Pest. 808/608 BOD. 753 pH	Сатта Зрес.	Alpha Beta (Air) PIM (Ashestes)	Alon	
5/16/01 1 T-2 ST	Octopilo # 13	1		/	-		Y											Х	·
Irench #	Z-bottom, Area 1			^	1		X	r  										X	4
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Nease Fill out all copies - Laboratory retains yellow co	py - Return original copy to Highland	ler En	irom	intal C	/	Project	Ma	nager	rete	uns .	pink	cop	y -	Acco	untin	g re	ceives	Gold	copy.





## Highlander Environmental Corp

	f Analysis Number: 1060189	
Report To:	Project Name:	POGO Producing 1650
Highlander Environmental Corp	<u>Site:</u>	McMillan 24 State #1 Eddy Co, NM
lke 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



### Case Narrative for: Highlander Environmental Corp

	f Analysis Number: <u>1060189</u>	
Report To:	Project Name:	POGO Producing 1650
Highlander Environmental Corp	<u>Site:</u>	McMillan 24 State #1 Eddy Co, NM
lke 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.

1 - Q·Q

Paul Neschich Senior Project Manager 6/13/01



# Highlander Environmental Corp

)		C	ertificate o	of Analysis Numbe	er:			
			<u>0</u>	1060189				
Report To:	Highlander Envir Ike Tavarez	onmental Corp		<u>Projec</u> Site:	t Name:	POGO Produ McMillan 24 S	cing 1650 State #1 Eddy Co	), NM
	1910 N. Big Sprir	ng Street		Site A	ddress:			
	Midland							
	Texas			<u>PO Nu</u>	imber:			
	79705-			State:		Texas		
	ph: (915) 682-455	59 fax: (915) 6	82-3946	State	Cert. No.:			
<u>Fax To:</u>	Highlander Enviro Ike Tavarez	onmental Corp fax : (915)	682-3946	Date R	Reported:	6/13/01		
Clie	nt 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	0'	01060189-02	Soil	6/1/01	6/6/01	10:00:00 AM		
T-3 Area 1 8.0	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	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	0'	01060189-09	Soil	6/1/01	6/6/01	10:00:00 AM		
Dry Wash, Are		01060189-10	Soil	6/1/01		10:00:00 AM		
Dry Wash, Are		01060189-11	Soil	6/1/01		10:00:00 AM		
Dry Wash, Are		01060189-12	Soil	6/1/01		10:00:00 AM		
Dry Wash, Are		01060189-13	Soil	6/1/01		10:00:00 AM		
Dry Wash, Are		01060189-14	Soil	6/1/01		10:00:00 AM		<u>   </u>
Flare Pit Stock		01060189-15	Soil	6/1/01		10:00:00 AM		
Flare Pit Stock	· · · · · · · · · · · · · · · · · · ·	01060189-16	Soil	6/1/01		10:00:00 AM		$\square$
Flare Pit Stock	cpile #3	01060189-17	Soil	6/1/01	6/6/01	10:00:00 AM		

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Paul Neschich Serior Project Manager 6/13/01 Date

Joel Grice Laboratory Director

Ted Yen Quality Assurance Officer



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Client Sample ID T-3 Area 1 3.0'		Coll	ected:	6/4/01		SPL Sample II	D: 01	060189-01
		Site	: Mcl	Millan 24 State	e #1	Eddy Co, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor QL	JAL	Date Analyzed	Analys	t Seq. #
CHLORIDE, TOTAL			MCL	E325	5.3	Units: m	g/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



i.

i

Client Sample ID T-3 Area 1 6.0'		Col	lected:	6/1/01	SPL Sample ID	): 0106	0189-02
		Site	: Mcl	Willan 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	J/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



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Client Sample ID T-3 Area 1 8.0'		Col	ected:	6/1/01		SPL Sample II	<b>D</b> : 0106	0189-03
		Site	: Mcl	Millan 24 St	ate #1	Eddy Co, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E	325.3	Units: m	g/Kg	
Chloride	1660	20		2		06/08/01 10:00	CV	701438

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



Client Sample ID T-3 Area 2 2.0'		Colle	ected:	6/1/01	SPL Sample II	D: 0106	0189-04
		Site:	Mc	Millan 24 State #	1 Eddy Co, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUA	L Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: m	g/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



Client Sample ID T-3 Area 3 3.0'		Col	ected:	6/1/01	SPL Sample II	D: 0106	0189-05
		Site	: Mcl	Millan 24 State #	1 Eddy Co, NM		
Analyses/Method	Result	Rep.Limit		Dil. Factor QUA	L Date Analyzed	Analyst	Seq. #
CHLORIDE, TOTAL			MCL	E325.3	Units: m	g/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



Client Sample ID T-3 Area 3 6.0'		Colle	ected:	6/1/01		SPL Sample II	<b>D:</b> 0106	0189-06		
	Site: McMillan 24 State #1 Eddy Co, NM									
Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #		
CHLORIDE, TOTAL			MCL	E3	25.3	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



Client Sample ID T-3 Area 4 2.0'		Coll	ected:	6/1/01		SPL Sample II	<b>D:</b> 0106	0189-07		
		Site: McMillan 24 State #1 Eddy Co, NM								
Analyses/Method	Result	Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #		
CHLORIDE, TOTAL		MCL		E	325.3	3 Units: mg/Kg		*** <u>**********************************</u>		
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



Client Sample ID T-3 Area 4 6.0'		Col	lected:	6/1/01	SPL Sample I	<b>D:</b> 01060	0189-09			
	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	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

6/13/01 4:10:20 PM



Client Sample ID Dry Wash, Area 1			Collected: 6/1/01			SPL Sample ID:	010	50189-10
			Site	e: Mcl	Millan 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	ГМ	702836
Ethylbenzene	22		5		5	06/12/01 18:12	ſM	702836
Toluene	16		5		5	06/12/01 18:12	ſM	702836
Xylenes, Total	140		5		5	06/12/01 18:12	M	702836
Surr: 1,4-Difluorobenzene	105	%	59-127		5	06/12/01 18:12	ГМ	702836
Surr: 4-Bromofluorobenzene	327 MI	%	48-156		5 *	06/12/01 18:12	M	702836
TOTAL PETROLEUM HYDROCA	RBONS			MCL	E418.1	Units: mg/	Kg	
Petroleum Hydrocarbons,TR	4800		100		10	06/07/01 14:00 H		697218

Prep Method	Prep Date	Prep Initials
-	06/07/2001 12:15	

Qualifiers:

ND/U - Not Detected at the Reporting Limit

 $\ensuremath{\mathsf{B}}$  - 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

6/13/01 4:10:20 PM



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Client Sample ID Dry Wash, Area 2		Colle	Collected: 6/1/01			): 0106	0189-11	
			Site	Mcl	Millan 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	ı/Kg	
Chloride		2370	50		5	06/08/01 10:00	CV	701447
TOTAL PETROLEUM	HYDROCAR	BONS		MCL	E418.1	Units: mg	/Kg	
Petroleum Hydrocarbo	ons,TR	1200	50		5	06/07/01 14:00	НН	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

6/13/01 4:10:20 PM



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I.

Client Sample ID Dry W	Client Sample ID Dry Wash, Area 3			6/1/01	SPL Sample ID	<b>):</b> 010	60189-12
		Site:	Mc	Millan 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	j/Kg	
Chloride	2030	50		5	06/08/01 10:00	CV	701448
TOTAL PETROLEUM HY	DROCARBONS		MCL	E418.1	Units: mg	j/Kg	
Petroleum Hydrocarbons,	rr 400	10		1	06/07/01 14:00	нн	697220
Prep Method F	Prep Date	Prep Initials					
C	6/07/2001 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, Are	Client Sample ID Dry Wash, Area 4		Collected: 6/1/01			SPL Sample ID	<b>):</b> 010	60189-13
			Site	: Mc	Millan 24 State #1	Eddy Co, NM		
Analyses/Method	Result	<u>-</u> -	Rep.Limit		Dil. Factor QUAL	Date Analyzed	Analyst	Seq. ‡
CHLORIDE, TOTAL			MCL	E325.3	Units: mg	j/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	ТМ	702835
Ethylbenzene	ND		1		1	06/12/01 17:42	тм	702835
Toluene	ND		1		1	06/12/01 17:42	ТМ	702835
Xylenes,Total	7.5		1		1	06/12/01 17:42	ТМ	702835
Surr: 1,4-Difluorobenzene	118	%	59-127		1	06/12/01 17:42	тм	702835
Surr: 4-Bromofluorobenzene	114	%	48-156		1	06/12/01 17:42	ТМ	702835
TOTAL PETROLEUM HYDROCA	RBONS			MCL	E418.1	Units: mg	/Kg	
Petroleum Hydrocarbons,TR	3900		100		10	06/07/01 14:00	НН	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 Dr	Client Sample ID Dry Wash, Area 5			ected:	6/1/01	SPL Sample II	<b>D:</b> 0106	0189-14
			Site:	Mcl	Millan 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	M HYDROCAF	RBONS		MCL	E418.1	/ Units: m	g/Kg	
Petroleum Hydrocarb	ons,TR	2800	50		5	06/07/01 14:00	нн	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

6/13/01 4:10:22 PM

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Client Sample ID Flare Pit Stock	Client Sample ID Flare Pit Stockpile		Collected: 6/1/01			SPL Sample ID	: 0106	0189-15			
	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	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	ТМ	697664			
Ethylbenzene	7.7		1		1	06/07/01 17:59	ТМ	697664			
Toluene	ND		1		1	06/07/01 17:59	ТМ	697664			
Xylenes, Total	49		1		1	06/07/01 17:59	ТМ	697664			
Surr: 1,4-Difluorobenzene	105	%	59-127		1	06/07/01 17:59	ТМ	697664			
Surr: 4-Bromofluorobenzene	353 MI	%	48-156		1 *	06/07/01 17:59	тм	697664			
TOTAL PETROLEUM HYDROCA	RBONS			MCL	E418.1	Units: mg/	/Kg				
Petroleum Hydrocarbons,TR	490		10		1	06/07/01 14:00	H	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

6/13/01 4:10:22 PM

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Client Sample ID Flare Pit Stock	pile #2		Collected: 6/1/01				SPL Sample II	<b>D:</b> 0106	60189-16
			Site	: Mcl	Millan 24 Si	tate #1	Eddy Co, NM		
Analyses/Method	Result		Rep.Limit		Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
PURGEABLE AROMATICS				MCL	SW8	021B	Units: ug	/Kg	
Benzene	ND		1		1		06/07/01 18:29	ТМ	697665
Ethylbenzene	ND		1		1		06/07/01 18:29	ТМ	697665
Toluene	ND		1		1		06/07/01 18:29	TM	697665
Xylenes, Total	9.8		1		1		06/07/01 18:29	ТМ	697665
Surr: 1,4-Difluorobenzene	108	%	59-127		1		06/07/01 18:29	ТМ	697665
Surr: 4-Bromofluorobenzene	124	%	48-156		1		06/07/01 18:29	ТМ	697665
TOTAL PETROLEUM HYDROCA	RBONS			MCL	E	418.1	Units: m	g/Kg	
Petroleum Hydrocarbons,TR	840		10		1		06/07/01 14:00	нн	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

6/13/01 4:10:23 PM

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Client Sample ID Flare Pit	Stockpile #3	Collec	cted: 6/1/01	SPL Sample ID:	010601	89-17
		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	ТМ	697666
Ethylbenzene	5.4		1		1	06/07/01 19:00	ТМ	697666
Toluene	ND		1		1	06/07/01 19:00	ТМ	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	ТМ	697666
Surr: 4-Bromofluorobenzene	245 MI	%	48-156		1 *	06/07/01 19:00	ТМ	697666
OTAL PETROLEUM HYDROCA	RBONS			MCL	E418.1	Units: mg/	/Kg	
Petroleum Hydrocarbons,TR	830		10		1	06/07/01 14:00	н	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

6/13/01 4:10.23 PM

**Quality Control Documentation** 

6/13/01 4:10:23 PM



#### **Quality Control Report**

### Highlander Environmental Corp

POGO Producing 1650

Analysis: Method:	Total Petro E418.1	leum Hy	drocarbons								kOrder: Batch ID:		060189 6666	l I	
Method:	E418.1											R3	0000		
			hod Blank				San	nples in	Analytical	Batc	h:				
RunID:	EX_010607B	-697207	Units:	mg/Kg			Lab	Sample	ID		<u>Client S</u>	ample I	D		
Aralysis Date:	06/07/2001	14:00	Analyst:	нн			010	60189-10	)A		Dry Was	sh, Area	1		
Preparation Date:	06/07/2001	12:15	Prep By:	N	Nethod		010	60189-11	A		Dry Was	sh, Area	2		
							010	60189-12	2A		Dry Wash, Area 3				
	A	alyte		Result	Rep Limit	}		60189-13			Dry Was				
Petro	eum Hydrocarb	<u> </u>		ND		1		60189-14			Dry Was				
								60189-15			Flare Pit	•			
							60189-16			Flare Pit					
							010	60189-17	'A		Flare Pit	Stockpi	le #3		
	·····			La	boratory (	Contro	Sample (	LCS)							
		RuniD	:	EX_01060	)7B-697208		Units:	mg/Kg							
	Analy	sis Date:	06/07/20	01 14:00			нн								
		Prepa	ration Date:	06/07/20	01 12:15		Prep By:	Me	ethod						
			Analyt	e		Spike	Result	Perce	ent Low	er	Upper				
						Addeo	1	Reco	very Lim	iit 🛛	Limit				
		Petroleu	m Hydrocarbo	ns,TR		20	00 18	0	90	86	117				
1															
			Matrix	Spike (M	S) / Matrix	( Spik	e Duplicat	e (MSD)							
		Sam	ple Spiked:	010601	80.17										
		Run	• •		607B-69722	7	Units:	mg/Kg							
			ysis Date:	_	2001 14:00		Analyst:								
			aration Date:		2001 12:15		Prep By:		Nethod						
													000	Low	Linh
Ar	alyte		Sample	MS	MS Res	sult	MS %	MSD	MSD Res	ulti	MSD %	RPD	RPD	LOW	i mian
Ar	alyte		Sample Result	MS Spike	MS Res	sult	MS % Recovery	Spike	MSD Res	ult	MSD % Recovery		Limit		High Limil
Ar	alyte				MS Res	sult		1	MSD Res	ult	-		1		

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

wir - Matrix interierence

nod Blank D - Recovery Unreportable due to Dilution

DL and PQL \* - 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.



#### **Quality Control Report**

#### Highlander Environmental Corp

#### POGO Producing 1650

Analysis: Method:	Purgeable SW8021B	Aromatics						kOrder: Batch ID:		)60189 6652		
		Method Blank			Sam	ples in <i>i</i>	Analytical Batc	h:				
Rt nID: Ar alysis Date		507A-697007 Units: 1 10:57 Analyst	ug/Kg : TM		0106	Sample 60189-15 60189-16 60189-17	A A	<u>Client Sar</u> Flare Pit S Flare Pit S Flare Pit S	Stockpil Stockpil	e e #2		
[	A	Analyte	Result	Rep Limit								
	Benzene		ND	1.0								
	Ethylbenzene		ND	1.0								
	Toluene		ND	1.0								
	Xylenes, Total Surr: 1,4-Difluorol		ND 98.6	<u>1.0</u> 59-127								
ļ	Surr: 4-Bromofluc		96.8									
L			· · · · · · · · · · · · · · · · · · ·									
			La	boratory Contro	ol Sample (I	LCS)						
		RunID:		0607A-697006	Units: u	ug/Kg						
		Analysis Date:	06/07/20	01 9:37	Analyst:	ТМ						
		Anal	rte	Spike	Result	Perce	ent Lower	Upper				
				Adde	d	Recov	very Limit	Limit				
		Benzene			50 53	3	106 60	120				
					50 53 50 54	+	106 60 109 68	120				
		Ethylbenzene			50 54	4	109 68	127				
		Ethylbenzene Toluene			50 54 50 54	1	109         68           107         64	127 122				
		Ethylbenzene			50 54	1	109 68	127				
		Ethylbenzene Toluene			50 54 50 54	1	109         68           107         64	127 122				
		Ethylbenzene Toluene Xylenes,Total	spike (M	1	50 54 50 54 50 165	1 1 5	109         68           107         64	127 122				<u>.</u>
		Ethylbenzene Toluene Xylenes,Total <u>Matrix</u>		1 S) / Matrix Spik	50 54 50 54 50 165	1 1 5	109         68           107         64	127 122				
		Ethylbenzene Toluene Xylenes,Total <u>Matri</u> Sample Spiked:	010602	1 S) / Matrix Spik	50 54 50 54 50 165 e Duplicate	4 5 5 6 (MSD)	109         68           107         64	127 122				<u>.</u>
		Ethylbenzene Toluene Xylenes,Total <u>Matrix</u> Sample Spiked: RunID:	010602 HP_O_0	1 5) / Matrix Spik 04-03 10607A-697659	50 54 50 54 50 165 e Duplicate Units:	4 4 5 (MSD) ug/Kg	109         68           107         64	127 122				
		Ethylbenzene Toluene Xylenes,Total <u>Matri</u> Sample Spiked:	010602 HP_O_0	1 S) / Matrix Spik	50 54 50 54 50 165 e Duplicate	4 5 5 6 (MSD)	109         68           107         64	127 122				
		Ethylbenzene Toluene Xylenes,Total <u>Matrix</u> Sample Spiked: RunID:	010602 HP_O_0	1 5) / Matrix Spik 04-03 10607A-697659	50 54 50 54 50 165 e Duplicate Units:	4 4 5 (MSD) ug/Kg	109         68           107         64	127 122				
		Ethylbenzene Toluene Xylenes,Total <u>Matrix</u> Sample Spiked: RunID:	010602 HP_O_0 06/07/2	1 5) / Matrix Spik 04-03 10607A-697659 001 14:53	50 54 50 54 50 165 e Duplicate Units: Analyst:	4 9 9 (MSD) 9 (MSD) 10 (MSD) 10 (MSD) 10 (MSD)	109     68       107     64       110     68	127 122 129				
	Analyte	Ethylbenzene Toluene Xylenes,Total <u>Matrix</u> Sample Spiked: RunID: Analysis Date: Sample	010602 HP_O_0 06/07/2 MS	1 5) / Matrix Spik 04-03 10607A-697659	50 54 50 54 50 165 e Duplicate Units: Analyst: MS %	4 4 5 (MSD) ug/Kg TM	109         68           107         64	127 122 129 MSD %	RPD	RPD		
	Analyte	Ethylbenzene Toluene Xylenes,Total <u>Matrix</u> Sample Spiked: RunID: Analysis Date:	010602 HP_O_0 06/07/2 MS Spike	1 5) / Matrix Spik 04-03 10607A-697659 001 14:53	50 54 50 54 50 165 e Duplicate Units: Analyst:	4 4 4 5 6 (MSD) Ug/Kg TM MSD Spike	109     68       107     64       110     68	127 122 129	RPD	RPD Limit	Low Limit	High Limit
	Analyte	Ethylbenzene Toluene Xylenes,Total <u>Matrix</u> Sample Spiked: RunID: Analysis Date: Sample	010602 HP_O_0 06/07/2 MS	1 5) / Matrix Spik 04-03 10607A-697659 001 14:53	50 54 50 54 50 165 e Duplicate Units: Analyst: MS %	4 4 5 (MSD) ug/Kg TM	109     68       107     64       110     68	127 122 129 MSD %	RPD			
Benzene	Analyte	Ethylbenzene Toluene Xylenes,Total <u>Matrix</u> Sample Spiked: RunID: Analysis Date: Sample	010602 HP_O_0 06/07/2 MS Spike Added	1 5) / Matrix Spik 04-03 10607A-697659 001 14:53 MS Result 22	50 54 50 54 50 165 e Duplicate Units: Analyst: MS %	4 4 4 5 6 (MSD) Ug/Kg TM MSD Spike	109 68 107 64 110 68 MSD Result	127 122 129 MSD %	RPD 10.3			
		Ethylbenzene Toluene Xylenes,Total Sample Spiked: RunID: Analysis Date: Sample Result	010602 HP_O_0 06/07/2 MS Spike Added D 20	1 5) / Matrix Spik 04-03 10607A-697659 001 14:53 MS Result	50 54 50 54 50 165 e Duplicate Units: Analyst: MS % Recovery	4 4 5 0 0 0 0 0 0 0 0 0 0 0 0 0	109 68 107 64 110 68 MSD Result	127 122 129 MSD % Recovery		Limit 34	Limit	Limit
Benzene Ethylbenzene Tolu ene		Ethylbenzene Toluene Xylenes,Total Sample Spiked: RunID: Analysis Date: Sample Result	010602 HP_O_0 06/07/2 MS Spike Added D 20 D 20	1 5) / Matrix Spik 04-03 10607A-697659 001 14:53 MS Result 22	50 54 50 54 50 165 e Duplicate Units: Analyst: MS % Recovery 109	4 4 5 ug/Kg TM MSD Spike Added 20	109 68 107 64 110 68 MSD Result	127 122 129 MSD % Recovery 121	10.3	Limit 34	Limit 35	Limit

Qualifiers:

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#### **Quality Control Report**

# **Highlander Environmental Corp**

POGO Producing 1650

Ar alysis: Method:	Purgeable SW8021B		CS						rkOrder: Batch ID:		060189 6927		
			hod Blank			Sam	ples in A	Analytical Bat					
RunID:	HP_0_0106			ug/Kg							_		
							Sample		Client Sa				
Analysis Date:	: 06/12/200	1 13:04	Analyst:	ТМ			50189-10		Dry Wast				
						0106	60189-13	A	Dry Wash	n, Area	4		
Г				D	<b>D</b>								
Ļ		Analyte			Rep Limit								
	3enzene			ND	1.0								
	Ethylbenzene			ND	1.0								
	Toluene			ND	1.0								
Ľ	Xylenes, Total			ND	<u>1.0</u> 59-127								
Ļ	Surr: 1,4-Difluoro Surr: 4-Bromofluc			98.2 95.4	48-156								
						trol Sample (							
		RuniC	1:	HP_O_010	0612A-702820	Units:	ug/Kg						
		Analy	sis Date:	06/12/20	01 10:56	Analyst:	тм						
		ſ <u></u>				Dec.H	D		[]]]				
			Analyte	; 	Spi Ado	led	Perce Recov	very Limit	Upper Limit				
		Benzene				50 46		91 60					
		Ethylben	zene			50 40	6	93 68	3 127				
		Toluene				50 46	5	91 64					
						50 40 150 139		91 64 93 68	122				
		Toluene	Total			150 139	ə		122				
		Toluene	Total	Spike (M	S) / Matrix Sp	*	ə		122				
		Toluene Xylenes,	Total	Spike (M: 010603		150 139	ə		122				
		Toluene Xylenes,	Total <u>Matrix S</u> ple Spiked:	010603		150 139	ə		122				
		Toluene Xylenes, Sam Runl	Total <u>Matrix S</u> ple Spiked: D:	010603 HP_O_0	05-12 10612A-702821	150 139 ike Duplicate Units:	e (MSD) ug/Kg		122				
		Toluene Xylenes, Sam Runl	Total <u>Matrix S</u> ple Spiked:	010603 HP_O_0	05-12	150 139	) : (MSD)		122				
		Toluene Xylenes, Sam Runl	Total <u>Matrix S</u> ple Spiked: D:	010603 HP_O_0	05-12 10612A-702821 001 11:31	150 139 ike Duplicate Units: Analyst:	e (MSD) ug/Kg TM	93 68	122 129				
	Anaiyte	Toluene Xylenes, Sam Runl	Total <u>Matrix S</u> ple Spiked: D: ysis Date: Sample	010603 HP_O_0 06/12/2 MS	05-12 10612A-702821	150 139 ike Duplicate Units: Analyst: MS %	e (MSD) ug/Kg TM MSD		MSD %	RPD		Low	High
	Analyte	Toluene Xylenes, Sam Runl	Total <u>Matrix S</u> ple Spiked: D: ysis Date:	010603 HP_O_0 06/12/2 MS Spike	05-12 10612A-702821 001 11:31	150 139 ike Duplicate Units: Analyst:	e (MSD) ug/Kg TM MSD	93 68	MSD %	RPD		Low Limit	High
	Analyte	Toluene Xylenes, Sam Runl	Total <u>Matrix S</u> ple Spiked: D: ysis Date: Sample	010603 HP_O_0 06/12/2 MS	05-12 10612A-702821 001 11:31	150 139 ike Duplicate Units: Analyst: MS %	e (MSD) ug/Kg TM MSD	93 68	122 129	RPD			High
Benzene	Analyte	Toluene Xylenes, Sam Runl	Total <u>Matrix S</u> ple Spiked: D: ysis Date: Sample	010603 HP_O_0 06/12/2 MS Spike	05-12 10612A-702821 001 11:31 MS Result	150 139 ike Duplicate Units: Analyst: MS %	e (MSD) ug/Kg TM MSD Spike Added	93 68	MSD % Recovery		Limit	Limit	Limi
	Anaiyte	Toluene Xylenes, Sam Runl	Total <u>Matrix S</u> ple Spiked: D: ysis Date: Sample Result	010603 HP_O_0 06/12/2 MS Spike Added 20	05-12 10612A-702821 001 11:31 MS Result	150 139 ike Duplicate Units: Analyst: MS % Recovery 8 90.3	e (MSD) ug/Kg TM MSD Spike Added 20	93 68 MSD Result	MSD % Recovery 87.1	3.64	Limit	Limit 35	Limi
Ethylbenzene	Anaiyte	Toluene Xylenes, Sam Runl	Total <u>Matrix S</u> ple Spiked: D: ysis Date: Sample Result ND ND	010603 HP_O_0 06/12/2 MS Spike Added 20 20	05-12 10612A-702821 001 11:31 MS Result	150 139 ike Duplicate Units: Analyst: MS % Recovery 8 90.3 8 89.8	ug/Kg TM MSD Spike Added 20 20	93 68 MSD Result 17 17	MSD % Recovery 87.1 85.3	3.64 3 5.17	Limit 34 35	Limit 35 31	Limi 13 13
Benzene Ethylbenzene Foluene Xylenes, Total	Analyte	Toluene Xylenes, Sam Runl	Total <u>Matrix S</u> ple Spiked: D: ysis Date: Sample Result ND	010603 HP_O_0 06/12/2 MS Spike Added 20	05-12 10612A-702821 001 11:31 MS Result	150 139 ike Duplicate Units: Analyst: MS % Recovery 8 90.3	e (MSD) ug/Kg TM MSD Spike Added 20	93 68 MSD Result	MSD % Recovery 87.1 85.3 86.3	3.64 5.17 4.80	Limit 34 35 28	Limit 35 31 31	13 13 13

Qualifiers:

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J - Estimated value between MDL and PQL

\* - Recovery Outside Advisable QC Limits

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#### **Quality Control Report**

#### **Highlander Environmental Corp** POGO Producing 1650

Analysis: Method:	Chloride, Total E325.3				WorkOrder: Lab Batch ID:	01060189 R36859
	Metho	d Blank		Samples in Analytic	al Batch:	
Ru וD:	WET_010608R-701432	Units:	mg/Kg	Lab Sample ID	Client Sar	nple ID
Analysis Date:	06/08/2001 10:00	Analyst:	CV	01060189-01A	T-3 Area 1	3.0'
-				01060189-02A	T-3 Area 1	6.0'
				01060189-03A	T-3 Area 1	8.0'
<b></b>				01060189-04A	T-3 Area 2	2.0'
	Analyte		Result Rep Limit	01060189-05A	T-3 Area 3	3.0'
Ch	oride		<u>ND 10</u>	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	–	Low Limit	High Limit
Chlcride	9700	12500	22500	102	12500	22500	102	0	20	91.8	115

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

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



#### **Quality Control Report**

## Highlander Environmental Corp

#### POGO Producing 1650

Analysis: Method:	Chloride, Total E325.3				WorkOrder: Lab Batch ID:	01060189 R36859A
	Metho	d Blank		Samples in Analyti	cal Batch:	······································
RunID:	WET_010608R-701432	Units:	mg/Kg	Lab Sample ID	Client San	nple ID
Analysis Date:	06/08/2001 10:00	Analyst:	CV	01060189-12A	Dry Wash,	Area 3
				01060189-13A	Dry Wash,	Area 4
				01060189-14A	Dry Wash,	Area 5
Γ	Analyte		Result Rep Limit	01060189-15A	Flare Pit S	lockpile
C	nloride		ND 10			

#### 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
Chl	oride	850	1000	1830	98.3	1000	1860	102	3.39	20	91.8	115

Qualifiers:

ND/U - Not Detected at the Reporting Limit

MI - Matrix Interference

B - Analyte detected in the associated Method Blank

J - Estimated value between MDL and PQL

D - Recovery Unreportable due to Dilution

and PQL \* - Recovery Outside Advisable QC Limits

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

Sample Receipt Checklist And Chain of Custody

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#### Sample Receipt Checklist

......

Workord	or:	01060189		Receive	d Bv	DS	
	I Time Received:	6/6/01 10:00:00 AM		Carrier n		FedEx	
				Chilled b		Water Ice	
Tempera		4			·y.		
1. Ship	ping container/co	ooler in good condition?	Yes 🗹	No 🗌	Not Prese	nt 🗌	
2. <sup>Cust</sup>	ody seals intact o	on shippping container/cooler?	Yes	No 🗌	Not Prese	nt 🗹	
3. Cust	ody seals intact o	on sample bottles?	Yes 🗌	No 🗌	Not Prese	nt 🗹	
4. Chai	n of custody pres	sent?	Yes 🗹	No 🗌			
5. Chai	n of custody sign	ed when relinquished and received?	Yes 🗹	No 🗌			
6. Chai	n of custody agre	ees with sample labels?	Yes 🔽	No 🗌			
7. <sup>Sam</sup>	ples in proper co	ntainer/bottle?	Yes 🗹	No 🗌			
	ple containers inf Sample ID-T-3 Area	tact? a 4 4.0' was received broken	Yes 🗌	No 🗹			
9. <sup>Suffi</sup>	cient sample volu	ume for indicated test?	Yes 🗹	No 🗌			
10. <sup>All s:</sup>	amples received	within holding time?	Yes 🔽	No 🗌			
11. <sup>Cont</sup>	ainer/Temp Blanl	<pre>k temperature in compliance?</pre>	Yes 🗹	No 🗌			
12. <sup>Wate</sup>	er - VOA vials hav	e zero headspace?	Yes 🗌	No 🗌	Not Applic	able 🗹	
13. <sup>Wate</sup>	er - pH acceptable	e upon receipt?	Yes 🗌	No 🗌	Not Applic	able 🗹	
Clier	PL Representativ	d: Ike Tavarez	Contact Date &	Time: 6/6/01	3:28:00 PM		
Non (	Conformance 1.L Issues:	ogged 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').

			<del></del>							$\Box$			_		0	1			0.57.		
Analysis Reque	est and Cha	in of Cus	stody	F	lea	201	rd	┝						PAG		QUE	ST.		) <b>F</b> :		
HIGHLANDI 19 (915) 682 <sub>7</sub> 4559	ER ENVIRO 910 N. Big Sp Midland, Texas	ring St. 79705	L C				946			120005	- <u>i</u> -	Cr Pd Hg Se	OF \	Spe							
CLIENT NAME: FODUCINE (	Cu. SITE MANAG	Tavarez	<u> </u>	T		ESE	RVATIV HOD	E		8015 MOD.	Ba	Ba Cd			8280/624 6270/625	•	Chlorid				
PROJECT NO .: /640 PROJE	The Millar	1 24 State #	CONTAI	(11)					/808		a Ag As	4 44	Valatile				908 off. 1705.	ц Ц	(ALF)	1	
LAB I.D. NUMBER DATE TIME	Edday SAMPLE ID	Co. DM. ENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	BONH	NONE		HTEK 8020/802 NTBE 8020/808	1.814 418.1 1.40 0000	RCRA Metals	TCIP Metals A	TCLP Semi Valatiles	RCI	GC.MS Vol. 8240/8280/624 GC.MS Semi. Vol. 8270/624	PCB's 8080/608	Peat. B08/608 BOD. TSS. pH. TDS. Chloride	Gamma Spec.	Alpha Beta (Air)	Allen	
6/1/0/ 5	T-3 (nea 1	(3.0)	1				1													X	1
6/1/01 5 -	T-3. Cirea-1	(6.0')	1																	X	,
6/1/01 5 .	47-3, Grea 1	(8,0')	1																	X	*
6/1/01 5 1	T-3 Chea	2 (2.0')	1				1													X	
6/1/0/ 5/	T-3. Chee.	3 (3.0')	[]																	X	
6/1/4 5 7	T-3, aua-	3 (6.0')	1																	K	
\$/1/61 5 1	T-3, ana	4(20)	(																	X	-
0/1/6/ 5/1	T-3, Goa	+ (4,0)	/														_			X	
4/1/6/ 5 1	T-3 ana	4 (6.0')	)				1											K		X	1
	11/11													_	+	$\frac{1}{1}$					
RELINGVISHED BY: (Signature)	Date:	RECEIVED BY: (Signatur			Date Time	×								v -		2	_	Date: Nime:			
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signatur	-		Time				-	SAMPI FEDED	٢				BUS						
	Date:	RECEIVED BY: (Signatur	]			); );				HAND HIGHI		_			UPS RSON	;	OT	Ra	ruite	by:	
RECEIVING LABORATORY:	ZIP:	DATE: (Signature)				<u>o</u>	>	<u> </u>				The						40	ISH CI thoris	arges ed: No	
CONTACT: PHONE: SAMPLE CONDITION WHEN RECEIVED:	MATRIX: W-We S-So	ter A-Air SI	D-Solid -Other	<u>.                                    </u>	<u> </u>	MARK			<u> </u>	<u></u>								<u> </u>	203	. /	TA

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.

Analysis Request and Chain of Custo	dy	R	lec	or	d						AN	IALY	IGE: SIS					F:	2	<u>م</u>
HIGHLANDER ENVIRONMENTAL 1910 N. Big Spring St. Midland, Texas 79705 (915) 682-4559 Fax					46			. 72005	90 00 40			or Sj			leth:		¥o.)			
IENT NAME: SITE MANAGER: TOLOGE 2	SALIN			eser Meth		VE		8015 MOD.	2 2 4	As Ba Cd			360/62	8270/625		Chloride				
ROJECT NO.: 160 PROJECT NAME: (M.11G.1.)4 State 4/ 160 CLS MARE: CM.11G.1.)4 State 4/ Edde a. Pw JMBER DATE TIME E SAMPLE DENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	ICE	NONE	BTEXS	BTEX BO20/602' WTHE RO20/608	119. (119.) 80	PAH 8270 Pres Watata 1- 4-	TCLP Metals Ag As	TCLP Volatiles	TCLP Semi Volatiles PCT	Vol. 8240/		PCB's 8080/808 Peet 808/808	BOD, TSS, pH. TDS,	Gamma Spec.	Alpha Bota (Air) PLM (Asbestos)	Dia 1	rever
6/1/01 SX Drywash, Great	1				1			X												ΪX
6/1/01 SX Drybesh, Greaz	1			1				X												X
6/1/0, SX Drabash, ana 3	1			1	1			X												X
1101 St Drigbash, area 4					1			X												X
6/1/01 St Drybash, area 5	1							X									$\left[ - \right]$			*
aliloi SX Flare pit studpile.	1			,	/	*		X												X
aliloi SX Flare LEST ball stachile #2	1			/		*		$\left  \chi \right $								4				
6/1/01 SX Flare pit studpite. 6/1/01 SX Flare LEST ball studpite #2 6/1/01 SX Flare LEST ball studpite #3	-				1	X		X												
INQUISIEND BY: (Signature) Date: RECEIVED BY: (Signature) Time:			Date. Time					SANG	-1-	4	<u>I</u>	In	<u> </u>				Date:			
INQUISHED BY: (Signature) Date: RECEIVED BY: (Signature) INQUISHED BY: (Signature) Date: RECEIVED BY: (Signature)			Date Time Date					SÁMP FEDE HANI	X			BY: (	B	e) US PS			BILL	#		
EIVING LABORATORY: FILME: RECEIVED BY: (Signature)	) Xah	<u>13</u>	Time Time				-			DER (		ACT					Rea RUA	thoriz	arges ed:	
TACT: DATE:		<u>+</u>			: Ri	تر ر	87	<u>  *</u> EX	07	(2)	)h	iche	151	72	H	P	y u	Va		NO Arte C