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# REPORTS

**DATE:**

2000

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# Highlander Environmental Corp.

Midland, Texas

June 16, 2000

Ms. Donna Williams  
Environmental Bureau  
Oil Conservation Division  
1625 N. French Drive  
Hobbs New Mexico 88240

**RE: Subsurface Investigation for (Reference #1345 Leak), located at the Pogo Producing Company, E. C. Hill "B" Lease (SE of Well # 6), Lea County, New Mexico**

Dear Ms. Williams:

## **Introduction**

Highlander Environmental Corp. (Highlander) was contacted by Pogo Producing Company (Pogo) to assess a spill, which occurred southeast of Well #6, Pogo E.C. Hill "B" lease, in Lea County, New Mexico. The Site is located in Section 27, Township 23 South, Range 37 East. Figure 1 show the location of the spill area. The New Mexico Oil Conservation Division (NMOCD) estimates that the groundwater depth in this area is 78 feet below ground surface.

## **Background**

On August 27, 1999, Highlander was contacted to inspect a flowline spill that occurred southeast of Well #6 at the Pogo E. C. Hill "B" lease in Lea County, New Mexico. During the inspection, several flowlines were observed around the spill area. These lines were all above ground, except at the lease road where the lines were buried to cross the road. The flowline leak occurred at the lease road and migrated on the surface north of the release point and east on the lease road. The surface impact and lines are shown in Figure 2. Highlander personnel collected soil samples from the spill area. However, deeper soil samples were not collected due to a dense caliche encountered at the Site. A workplan dated September 10, 1999 was prepared and submitted to the NMOCD in Hobbs, New Mexico for review and approval.

On October 14 and 15, 1999, Highlander proceeded with the investigation to excavate the surface spill areas. Prior to the removal of the impacted soil, a trench was installed to remove the buried flowline at the lease road. During the excavation, older spills were observed north and south of the release point. The older spill impacts appeared to extend deeper than the surface spill. Based on the findings, the excavation at the lease road was halted north and south of the release point. The surface spill, which migrated down the lease road, was blended with a backhoe. However, no samples were collected from this

Submit 3 Copies  
to Appropriate  
District Office

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-103  
Revised 1-1-89

DISTRICT I  
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II  
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION  
2040 Pacheco St.  
Santa Fe, NM 87505

WELL API NO.	30-025-33448
5. Indicate Type of Lease	STATE <input type="checkbox"/> FEE <input checked="" type="checkbox"/>
6. State Oil & Gas Lease No.	16232

**SUNDRY NOTICES AND REPORTS ON WELLS**  
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name	E.C. Hill "B"
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1. Type of Well:	OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER flowline leak
------------------	--

8. Well No.	#2 (SE of #6)
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2. Name of Operator	Pogo Producing Company
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9. Pool name or Wildcat	(58300) Teague Paddock Blinbry
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3. Address of Operator	300 N. Marienfeld, Midland, TX 79701
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4. Well Location	Unit Letter <u>K</u> : <u>1340</u> Feet From The <u>South</u> Line and <u>2310</u> Feet From The <u>West</u> Line Section <u>27</u> Township <u>23S</u> Range <u>37E</u> NMPM Lea County
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10. Elevation (Show whether DF, RKB, RT, GR, etc.)	3267' GR
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11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input checked="" type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG AND ABANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>		CASING TEST AND CEMENT JOB <input type="checkbox"/>	
OTHER: <input type="checkbox"/>		OTHER: <u>Spill clean up</u> <input type="checkbox"/>	

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

August 26, 1999 - flowline leak occurred, recovered 5 bbls.  
August 27, 1999 - flowline repaired and spill area assessed.

Remedial Action - The soil will be excavated and transported to an approved landfill for disposal. An area at the site will be remediated to OCD clean up guidelines.

INSPECTED BY: Buddy Hill DATE 9-21-99  
CLEAN UP IN PROGRESS: YES  NO   
REMARKS: Oil streak.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Robin S. McCarley TITLE Production Tech. DATE 9/13/99  
TYPE OR PRINT NAME Robin S. McCarley TELEPHONE NO. (915)685-8100

(This space for State Use)

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_  
CONDITIONS OF APPROVAL, IF ANY:

TO: Company/Operator Pogo / Robin McCadey  
By: NMOCD Rep. Danna Williams  
Date: 10-19-99

## REJECT NOTICE

Please Note Your Attached C-141 Report(s) has been rejected because of the following reason(s); Please make corrections and resubmit within 15 days unless otherwise allowed or marked for a longer time period.

Note: Failure to contact NMOCD or to re-submit within time allowed may result in a Notice of Violation being issued.

Wrong form, please find new C-141 enclosed.

Incorrect or inaccurate information submitted: see comments below.

"Initial" or "Final" check box was not marked.

Missing Information; see comments below.

Wrong Operator ! Operators are responsible to submit C-141 for all leaks & spills on their leases and/or properties under their control. Second and third party responsibility is between operator and those parties.

Improper Disposal of Oilfield Waste without NMOCD approval:

- Road spreading without NMOCD approval.
- Land farming without permit or NMOCD approval.
- Burying of Oilfield Waste without NMOCD approval.
- Off-site disposal without NMOCD approval
- Building roads, berms/dykes out of Contaminated Soils without NMOCD approval.

Not Signed.

NMOCD Can not accept your C-141 as a "Final" report at this time. Please do one of the following;

- Submit a Site Corrective Action Plan for NMOCD approval within \_\_\_\_ days.
- Please Describe in detail what Clean-up Action was taken and area affected. If none taken explain why?
- Please Describe in detail what Remediation action will be taken? If none planned please explain why?
- Please Describe what Remediation clean-up levels will be achieved? If none planned please indicate why?
- Operator has indicated off-site disposal, please indicate where waste was disposed of?
- Was Vertical Extent of contamination Checked? If Yes please provide information. If No please provide Explanation?
- Please provide Vertical extent of contamination within \_\_\_\_ days. Please sample for one or more of the following: TPH\_\_\_\_, BTEX\_\_\_\_, Chlorides\_\_\_\_, Other\_\_\_\_; Please provide at what depth the analysis was taken.

Comments:

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Please Re-Submit C-141 or information requested and include a copy of this reject notice to:

New Mexico Oil Conservation Div  
District I Office  
P.O. 1980  
Hobbs, NM 88241

file:wp/rejform

Submit 3 Copies  
to Appropriate  
District Office

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-103  
Revised 1-1-89

DISTRICT I  
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OIL CONSERVATION DIVISION  
2040 Pacheco St.  
Santa Fe, NM 87505

DISTRICT II  
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

WELL API NO.	30-025-33448
5. Indicate Type of Lease	STATE <input type="checkbox"/> FEE <input checked="" type="checkbox"/>
6. State Oil & Gas Lease No.	16232

SUNDRY NOTICES AND REPORTS ON WELLS  
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A  
DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT"  
(FORM C-101) FOR SUCH PROPOSALS.)

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2. Name of Operator	Pogo Producing Company
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	Section <u>27</u> Township <u>23S</u> Range <u>37E</u> NMPM Lea County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)	3267' GR
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11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

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PERFORM REMEDIAL WORK <input checked="" type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>
OTHER: <input type="checkbox"/>	PLUG AND ABANDONMENT <input type="checkbox"/>
	CASING TEST AND CEMENT JOB <input type="checkbox"/>
	OTHER: Spill clean up <input type="checkbox"/>

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

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INSPECTED BY: Buddy Hill DATE 9-21-99  
CLEAN UP IN PROGRESS: YES  NO   
REMARKS: Oil streak.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.  
SIGNATURE Robin S. McCarley TITLE Production Tech. DATE 9/13/99  
TYPE OR PRINT NAME Robin S. McCarley TELEPHONE NO. (915)685-8100

(This space for State Use)  
APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_  
CONDITIONS OF APPROVAL, IF ANY:

Sent a  
Rejection Notice  
on 9-22-99





NEW MEXICO ENERGY, MINERALS  
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
DISTRICT I HOBBS  
PO BOX 1980, Hobbs, NM 88241  
(505) 393-6161  
FAX (505) 393-0720

Jennifer A. Salisbury  
CABINET SECRETARY

January 25, 2000

Pogo Producing Company  
Attn: Don Riggs  
300 N. Marienfeld  
Midland, Texas 79701

Re: Work Plan for the E.C. Hill "B" Lease  
UL K-Sec 27-Ts23S-R37E

Dear Mr. Riggs:

The New Mexico Oil Conservation Division (NMOCD) is in receipt of the E.C. Hill "B" Lease Work Plan dated November 19, 1999, submitted by Highlander on Pogo's behalf. **The NMOCD hereby approves Pogo's Work Plan with the following conditions:**

1. Pogo shall notify the NMOCD at least 48 hours in advance of the scheduled activities such that the NMOCD has the opportunity to witness the events and/or split samples during NMOCD's normal working hours.
2. If Pogo leaves soil stockpiled over night then the piles of soil shall be placed on plastic to prevent any future leaching or Pogo will sample the area when the soil has been removed.
3. All waste disposed of off-site must receive NMOCD approval prior to disposal.

Please be advised that NMOCD approval of this plan does not relieve Pogo of liability should their operations fail to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve Pogo of responsibility for compliance with any other federal, state or local laws and/or regulations.

If you have any further questions, or need any assistance please do not hesitate to write or call me at (505) 393-6161 ext...113.

Sincerely,

Donna Williams  
Environmental Engineer Specialist  
cc: Roger Anderson – Environmental Bureau Chief  
Chris Williams – District I Supervisor



NEW MEXICO ENERGY, MINERALS  
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
DISTRICT I HOBBS  
PO BOX 1980, Hobbs, NM 88241  
(505) 393-6161  
FAX (505) 393-0720

Jennifer A. Salisbury  
CABINET SECRETARY

September 22, 1999

Pogo Producing Company  
Attn: Don Riggs  
300 N. Marienfeld  
Midland, Texas 79701

Re: Work Plan for the E.C. Hill "B" Lease  
UL K-Sec 27-Ts23S-R37E

Dear Mr. Riggs:

The New Mexico Oil Conservation Division (NMOCD) is in receipt of the E.C. Hill "B" Lease Work Plan submitted by Highlander on Pogo's behalf. **The NMOCD hereby approves Pogo's Work Plan with the following conditions:**

1. Pogo has not determined vertical extent in the work plan activities; therefore, Pogo shall determine vertical extent at all 4 sample point locations prior to closure of the site.
2. Pogo shall also provide horizontal extent of the contamination.
3. Pogo shall notify the NMOCD at least 48 hours in advance of the scheduled activities such that the NMOCD has the opportunity to witness the events and/or split samples.
4. If Pogo leaves soil stockpiled over night then the piles of soil shall be placed on plastic to prevent any future leaching or Pogo will sample the area when the soil has been removed.
5. NMOCD realizes that the source of the leak is under the road; Nevertheless, NMOCD requests vertical extent to be determined at the source.
6. **NMOCD request that an approved Closure Report be submitted to our District I office by September 10, 2000.**

If you have any further questions, or need any assistance please do not hesitate to write or call me at (505-393-6161 ext...113).

Sincerely,

A handwritten signature in black ink that reads "Donna Williams".

Donna Williams  
Environmental Engineer Specialist  
Cc: Wayne Price; Chris Williams;



NEW MEXICO ENERGY, MINERALS  
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
DISTRICT I HOBBS  
PO BOX 1980, Hobbs, NM 88241  
(505) 393-6161  
FAX (505) 393-0720

Jennifer A. Salisbury  
CABINET SECRETARY

February 21, 2000

Pogo Producing Co.  
Attn: Clay Osborn  
300 N. Marienfeld Ste. 600  
Midland, Texas 79701

Re: Remediation Plan on E.C. Hill "A"  
UL -Sec 37-T23S-R37E

Dear Mr. Osborn:

The New Mexico Oil Conservation Division (NMOCD) is in receipt of the remediation plan submitted by Highlander Environmental Corp. on February 2, 2000. **The NMOCD hereby approves the work plan with the following conditions:**

1. Pogo shall notify the NMOCD at least 48 hours in advance of the scheduled activities such that the NMOCD has the opportunity to witness the events and/or split samples during NMOCD's normal working hours.
2. Pogo shall submit a site assessment and/or a remediation plan after the determination of vertical and horizontal extent of contamination.
3. Please submit to the NMOCD a copy with the assessment and/or remediation plan of all analyticals taken prior to remediation procedures.
4. Please include in the information submitted a map plotting the locations as well as the depths of each sample collected.

If you have any further questions, or need any assistance please do not hesitate to write or call me at (505) 393-6161 ext...113.

Sincerely,

Donna Williams  
Environmental Engineer Specialist  
cc: Roger Anderson - Environmental Bureau Chief  
Chris Williams - District I Supervisor

12368



# Highlander Environmental Corp.

Midland, Texas

April 28, 2000

Ms. Donna Williams  
Environmental Bureau  
New Mexico Oil Conservation Division  
P.O. Box 1980  
Hobbs, New Mexico

**RE: Work Plan for Spill located at the Pogo E.C. Hill "A and B" Tank Battery, Lea County, New Mexico**

Dear Ms. Williams,

Highlander Environmental Corp. (Highlander) was contacted to prepare a work plan for evaluation of a spill, which occurred at the E.C. Hill "A and B" Tank Battery (water disposal facility) in Lea County, New Mexico. The Site is located in Section 27, Township 23 South, Range 37 East. Based on published data, the depth to groundwater in this area is greater than 50' below surface. A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (OCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The proposed recommended remedial action level (RRAL) for TPH is 1,000 mg/kg.

On January 8, 2000, the water disposal storage tank at the facility ran over and produced water flowed on the surface soil around the tank and down the lease road. The amount of fluid loss in the overflow is not known. Approximately 85 barrels of produced water was reportedly recovered with vacuum trucks and hauled to disposal.

### Proposed Work Plan

Highlander will attempt to define the vertical extent of hydrocarbon impact in the subsurface soil. Soil samples will be collected for evaluation of Total Petroleum Hydrocarbon (TPH) by method modified 8015B (DRO/GRO), Benzene, Toluene, Ethylbenzene and Xylene (BTEX) by method SW 846-8020 and chloride by method SW846-9252. If necessary, Highlander will submit a corrective action plan for the impacted soil. If the soil concentrations do not exceed the RRAL concentrations, a closure report will be prepared and submitted which will include the laboratory analysis.

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

Very truly yours,

Ike Tavarez  
Project Manager/Geologist

cc: Don Riggs - Pogo Producing Co.  
Rex Jasper - Pogo Producing Co.

area. Figure 3 shows the approximate areas of the older spills.

Based on the findings of the older spills, a workplan was requested by the NMOCD to define the vertical and horizontal extent of the soil impact. The workplan is shown in Appendix A.

### **Regulatory**

A risk-based evaluation was performed for the Site in accordance with the 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 RRAL for TPH is 1,000 mg/kg.

### **Hydrology**

Groundwater in the Teague Paddock Field study area, southern Lea County, is obtained almost entirely from the Ogallala formation with some wells in the Quaternary alluvium. Sediments of Quaternary age can be observed in southern Lea County in the form of alluvial deposits, probably of both Pleistocene and Recent age, and dune sands of Recent age. The Quaternary alluvium has been deposited in topographically low areas where the older Ogallala formation had been stripped away.

The primary aquifer, the Ogallala formation, consists of inter-fingering bodies of fine to coarse sand, gravel, silt, and clay-material. In places, the upper part of the formation contains several hard, erosionally resistant beds of caliche. The thickness of the Ogallala formation is primarily controlled by the morphology of the eroded pre-Ogallala surface. To the east of the study area, in the San Simon Ridge area, the Ogallala has been stripped. To the west of the study area, in the Rattlesnake Ridge area, the base of the Ogallala is above the elevation of the water table.

Water in the Ogallala formation is unconfined and is contained in the pore spaces of unconsolidated or partly consolidated sediments. The saturated thickness of the Ogallala in the study area varies between 60 and 80 feet. The altitude of the water table in the area is approximately 3,225 feet above mean sea level (MSL) and the average depth to groundwater in the area is about 120 feet below ground surface. Groundwater flow in the general area of the Teague Paddock Field is south-southeast.

The quality of groundwater in the area is generally fresh with a total dissolved solids being typically less than 1,000 ppm. Water from the Quaternary alluvium generally is high in silica (65 to 82 ppm), moderately high in calcium plus magnesium, low in sodium plus potassium, moderately low in sulfate and chloride. Uncontaminated water from the Ogallala formation is high in silica (49 to 73 ppm), contains moderate concentrations of calcium and magnesium. The water is generally hard.



The hydrogeologic data presented in this section was derived from Ground Water Report 6, "Geology and Ground Water Conditions in Southern Lea County, New Mexico," published by New Mexico Institute of Mining & Technology (1961).

### **Borehole Installation**

A total of eleven (11) boreholes were installed at the Site to define the vertical and horizontal extent of subsurface impact. Three (3) boreholes were installed in the center of the spill area for evaluation of the vertical extent of impact. The remaining boreholes were installed to define the horizontal extent of the impact. The borehole locations are show in Figure 4.

An air rotary drilling rig was used to collect soil samples from the boreholes. At the center boreholes (BH-1, BH-2 and BH-3), splitspoon samples were collected continuously from surface to a depth of 10' below surface and then every five feet to the total depths of 36', 26' and 31' respectively. Once the depth of contamination was vertically defined, the perimeter boreholes (BH-4 through BH-11) were installed and collected soil samples at five foot intervals to a total depth of 16' below surface. Drill cuttings were visually inspected between intervals for lithologic or organic vapor shifts.

The soil samples were analyzed using the Ambient Temperature Headspace (ATH) method. 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 OVM was calibrated to a 75 parts per million (ppm) isobutylene standard and has a detection limit of 0.1 ppm. According to NMOCD guidelines (Guidelines for Unlined Surface Impoundment Closure, February 1993), a soil headspace gas measurement of 100 ppm may be substituted for laboratory analysis of benzene and total BTEX (sum of benzene, toluene, ethylbenzene and xylene). However, a headspace gas analysis cannot be substituted for total petroleum hydrocarbon (TPH) analysis. Table 1 presents a summary of the soil headspace gas readings from soil borings. The headspace gas readings of soil samples from the borings are also presented on the sample logs presented in Appendix B.

All downhole equipment (i.e., drill rods, drill bits, etc.) was thoroughly decontaminated between each borehole with a high-pressure hot water wash and rinse. Soil cuttings from drilling were stockpiled adjacent to the well until disposal is arranged. Once the boreholes were completed, they were grouted to surface.

### **Soil Sampling and Analysis**

Based on the OVM evaluation, a minimum of two samples were collected from each borehole. The samples selected were determined from field observation and OVM readings. All samples were collected and preserved in laboratory prepared sample containers with standard QA/QC procedures. All samples were shipped under proper chain-of-custody control and analyzed within the standard holding times. The soil samples were analyzed for Total Petroleum Hydrocarbon (TPH) by method modified 8015 DRO/GRO, benzene,



toluene, ethylbenzene, and xylene (BTEX) by method SW 846 5030/8020 and chloride by method SW846-9252. The analytical reports and chain of custody documentation are enclosed in Appendix C. The soil sample results are summarized in Table 2.

### Soil Sample Results

Referring to Table 1, the boreholes (BH-1, BH-2 and BH-3) were installed in the center of the spill area for vertical evaluation. Elevated OVM readings were observed in the shallow soils, which decreased with depth. Boreholes BH-1, BH-2 and BH-3 showed significant OVM level reductions at depths of approximately 9-10', 6-7' and 9-10', respectively. The OVM readings from the perimeter boreholes (BH-4 through BH-11) were all below 20 ppm OVM, except for BH-8 (1-2') with an OVM level of 246 ppm. This hydrocarbon impact was a result of surficial leakage during the removal of the lines.

Soil samples for analysis were selected at the intervals immediately below where elevated OVM levels showed significant reduction. Referring to Table 2, the benzene and total BTEX levels reported in all the soil samples were below the RRAL of 10 ppm and 50 ppm, respectively. The benzene levels were below the test method detection limit in all soil samples, except in BH-8, which reported a benzene level of 0.043 mg/kg at 1-2' below surface. In the center boreholes (BH-1, BH-2 and BH-3), the maximum total BTEX level reported in the soil samples was 0.028 mg/kg from boring BH-1 (6-7'). The remaining perimeter boreholes (BH-4 through BH-11) showed traces of total BTEX in BH-6, BH-7 and BH-8 ranging from 0.001 mg/kg to 0.352 mg/kg.

The proposed RRAL for TPH (1,000 mg/kg) was not exceeded in any of the samples from the boreholes. The TPH (DRO) ranged from 6.1 mg/kg to 550 mg/kg and the TPH (GRO) ranged from 0.32 mg/kg to 6.4 mg/kg. The highest TPH (DRO) concentration was reported in the 1'-2' soil sample from boring BH-8 at 550 mg/kg. The chloride levels showed a range of 51.7 mg/kg to 1,360 mg/kg in the shallow soils. All detectable chloride levels decreased with depth and are not considered to be an environmental concern.

Based on the OVM data, TPH and BTEX analysis, the impact at the Site appears to be somewhat shallow. Boreholes (BH-1, BH-2 and BH-3) show vertical extent of impact to approximately 6-7', 5-6' and 9-10' below surface, respectively. The perimeter boreholes did not show any significant impact. Impacted soil appears to be confined to the immediate spill area, measuring approximately 20'x 50'. The approximate area is shown in Figure 5.

### Conclusions

1. The New Mexico Oil Conservation Division estimates the depth to groundwater in this area at approximately 78 feet below ground surface.
2. A total of eleven (11) boreholes were installed at the Site. Three (3) boreholes were installed in the center of the spill area for evaluation of the vertical extent of impact. The remaining boreholes were installed to define the horizontal extent of the impact.



3. Soil samples for analysis were selected at the intervals immediately below where elevated OVM levels showed significant reduction. The benzene and total BTEX levels reported in the soil samples were below the RRAL of 10 mg/kg and 50 mg/kg, respectively. In addition, the proposed RRAL for TPH (1,000 mg/kg) was not exceeded in any of the samples from the boreholes.
4. Based on the OVM data, TPH and BTEX analysis, the impact at the Site appears to be somewhat shallow. The center boreholes showed vertical impact to depths ranging from 5'-10'. The perimeter boreholes did not show any significant impact. Impacted soil appears to be confined to the immediate spill area. The approximate area is show in Figure 5.
5. The chloride levels ranged from 51.7 mg/kg to 1,360 mg/kg in shallow soils. All chloride levels decreased with depth. The chloride levels detected are not considered to be an environmental concern.

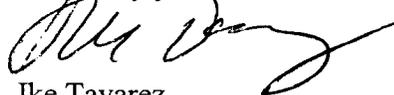
#### **Workplan/Remedial Action**

1. The soil impact at the Site will be excavated and hauled to disposal at Sundance Service, Inc. located in Eunice, New Mexico. Once the impacted soil is removed to the appropriate depth, composite soil samples will be collected from each sidewall and from the bottom of the excavation. Once the RRAL are achieved, the excavation will be backfilled with clean fill material. A closure report will be submitted upon the completion of the remedial activities.

All samples will be collected and preserved in laboratory prepared sample containers with standard QA/QC procedures. All samples will be shipped under proper chain-of-custody control and analyzed within the standard holding times. The soil samples will be analyzed for Total Petroleum Hydrocarbon (TPH) by method modified 8015 DRO/GRO, Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method SW 846 5030/8020 and chloride by method SW846-9252.

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

Very truly yours,



Ike Tavarez  
Project Manager/Geologist

cc: Don Riggs – Pogo Producing Co.  
Rex Jasper – Pogo Producing Co.



**Table 1**  
**Pogo Producing Company**  
**E.C. Hill (SE of Well #6)**  
**Summary of Headspace Gas Analysis**  
**Lea County, New Mexico**

Sample ID	Depth (ft)	OVM (ppm)		Sample ID	Depth (ft)	OVM (ppm)
BH-1	2-3	522		BH-3	1-2	34
	3-4	498			2-3	465
	4-5	318			3-4	627
	5-6	214			4-5	547
	6-7	111			5-6	572
	7-8	92			6-7	613
	8-9	125			7-8	626
	9-10	12			8-9	647
	15-16	27			9-10	76
	20-21	16			15-16	129
	25-26	36			20-21	28
	30-31	28			25-26	8
	35-36	10			30-31	7
BH-2	1-2	475				
	2-3	491				
	3-4	515				
	4-5	391				
	5-6	71				
	6-7	20				
	7-8	19				
	8-9	9				
	9-10	15				
	15-16	21				
	20-21	2				
	25-26	4				

**Table 1 (con't)**  
**E.C. Hill (SE of Well #6)**  
**Summary of Headspace Gas Analysis**  
**Lea County, New Mexico**

Sample ID	Depth (ft)	OVM (ppm)		Sample ID	Depth (ft)	OVM (ppm)
BH-4	1-2	3		BH-8	1-2	246
	5-6	6			5-6	12
	10-11	7			10-11	8
	15-16	8			15-16	10
BH-5	1-2	10		BH-9	1-2	12
	5-6	9			5-6	12
	10-11	8			10-11	15
	15-16	8			15-16	12
BH-6	1-2	16		BH-10	1-2	15
	5-6	16			5-6	15
	10-11	15			10-11	16
	15-16	12			15-16	15
BH-7	1-2	9		BH-11	1-2	18
	5-6	13			5-6	18
	10-11	11			10-11	17
	15-16	10			15-16	9

**TABLE 2**  
**Pogo Producing Company**  
**E.C. Hill B (SE of #6)**  
**Lea County, New Mexico**

Sample ID	Date Sampled	Depth (ft)	OVM (ppm)	TPH			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				GRO (mg/kg)	DRO (mg/kg)							
BH-1	2/15/00	6-7	111	1.7	240	ND	ND	0.0048	0.024	0.0288	172	
BH-1	2/15/00	15-16	27	ND	38	ND	ND	ND	ND	ND	-	
BH-1	2/15/00	20-21	16	-	-	-	-	-	-	-	ND	
BH-2	2/15/00	5-6	71	1.3	29	ND	ND	ND	0.0182	0.0182	ND	
BH-2	2/15/00	15-16	21	ND	13	ND	ND	ND	ND	ND	ND	
BH-3	2/15/00	15-16	129	ND	ND	ND	ND	ND	ND	ND	86.1	
BH-3	2/15/00	20-21	28	0.32	46	ND	ND	ND	0.0019	0.0019	155	
BH-4	2/16/00	1-2	3	ND	200	ND	ND	ND	ND	ND	103	
BH-4	2/16/00	10-11	7	ND	ND	ND	ND	ND	ND	ND	51.7	
BH-5	2/16/00	1-2	10	ND	ND	ND	ND	ND	ND	ND	ND	
BH-5	2/16/00	5-6	9	ND	ND	ND	ND	ND	ND	ND	68.9	
BH-6	2/16/00	1-2	16	ND	18	ND	ND	ND	0.0011	0.0011	551	
BH-6	2/16/00	5-6	16	ND	ND	ND	ND	ND	0.0022	0.0022	465	

ND - Not Detected (below detection limit)  
(-) Not Analyzed

**TABLE 2 (con't)**  
**Pogo Producing Company**  
**E.C. Hill B (SE of #6)**  
**Lea County, New Mexico**

Sample ID	Date Sampled	Depth (ft)	OVM (ppm)	TPH			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				GRO (mg/kg)	DRO (mg/kg)							
BH-7	2/16/00	1-2	9	ND	ND	ND	ND	ND	0.0053	0.0053	0.0053	1030
BH-7	2/16/00	5-6	13	ND	ND	ND	ND	ND	ND	ND	ND	569
BH-8	2/16/00	1-2	246	6.4	550	0.043	0.092	0.042	0.175	0.352	0.352	1,360
BH-8	2/16/00	5-6	12	ND	6.1	ND	ND	ND	ND	ND	ND	379
BH-9	2/16/00	1-2	12	ND	52	ND	ND	ND	ND	ND	ND	310
BH-9	2/16/00	10-11	15	ND	ND	ND	ND	ND	ND	ND	ND	138
BH-10	2/16/00	1-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	982
BH-10	2/16/00	10-11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH-11	2/16/00	1-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH-11	2/16/00	5-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND - Not Detected (below detection limit)

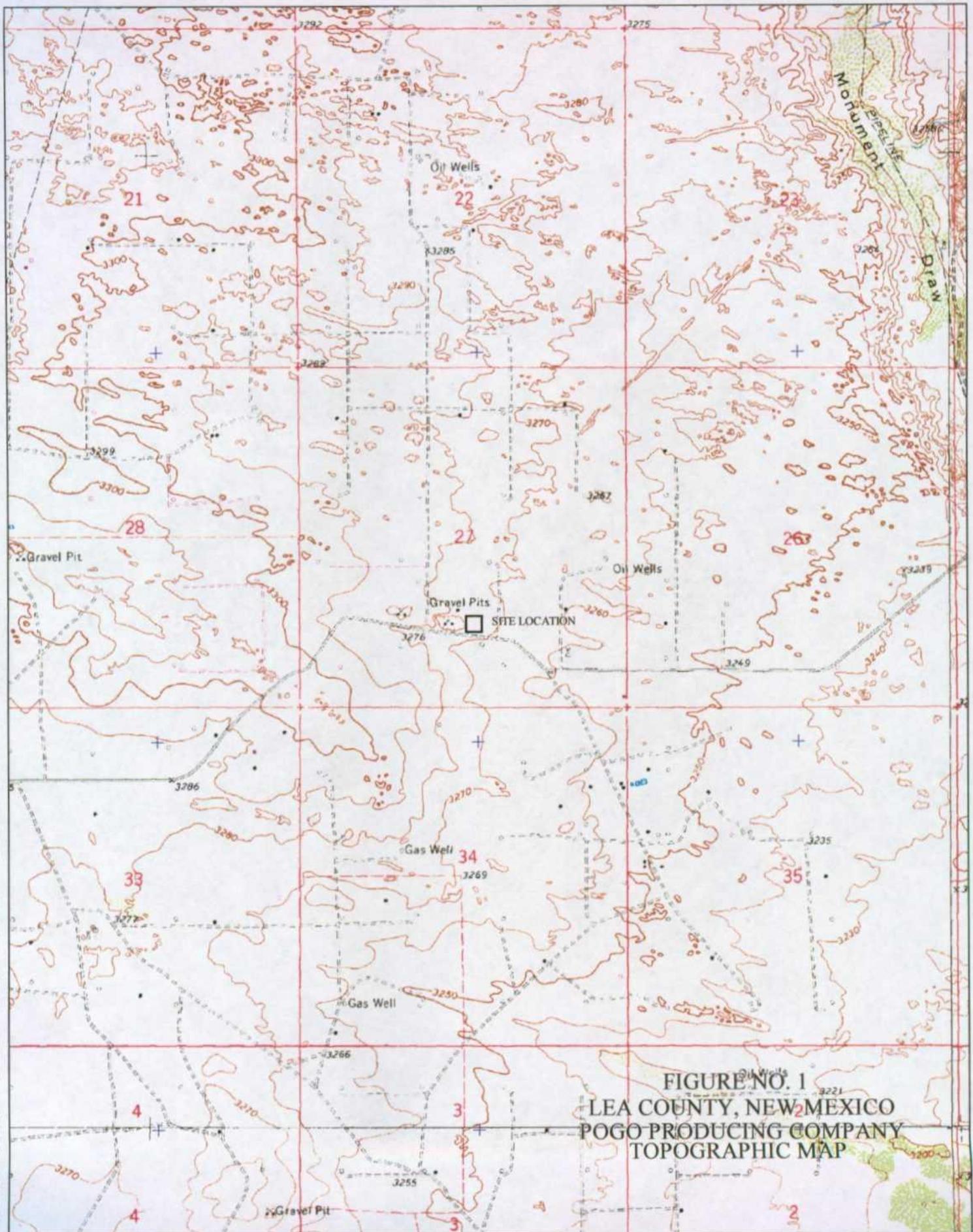
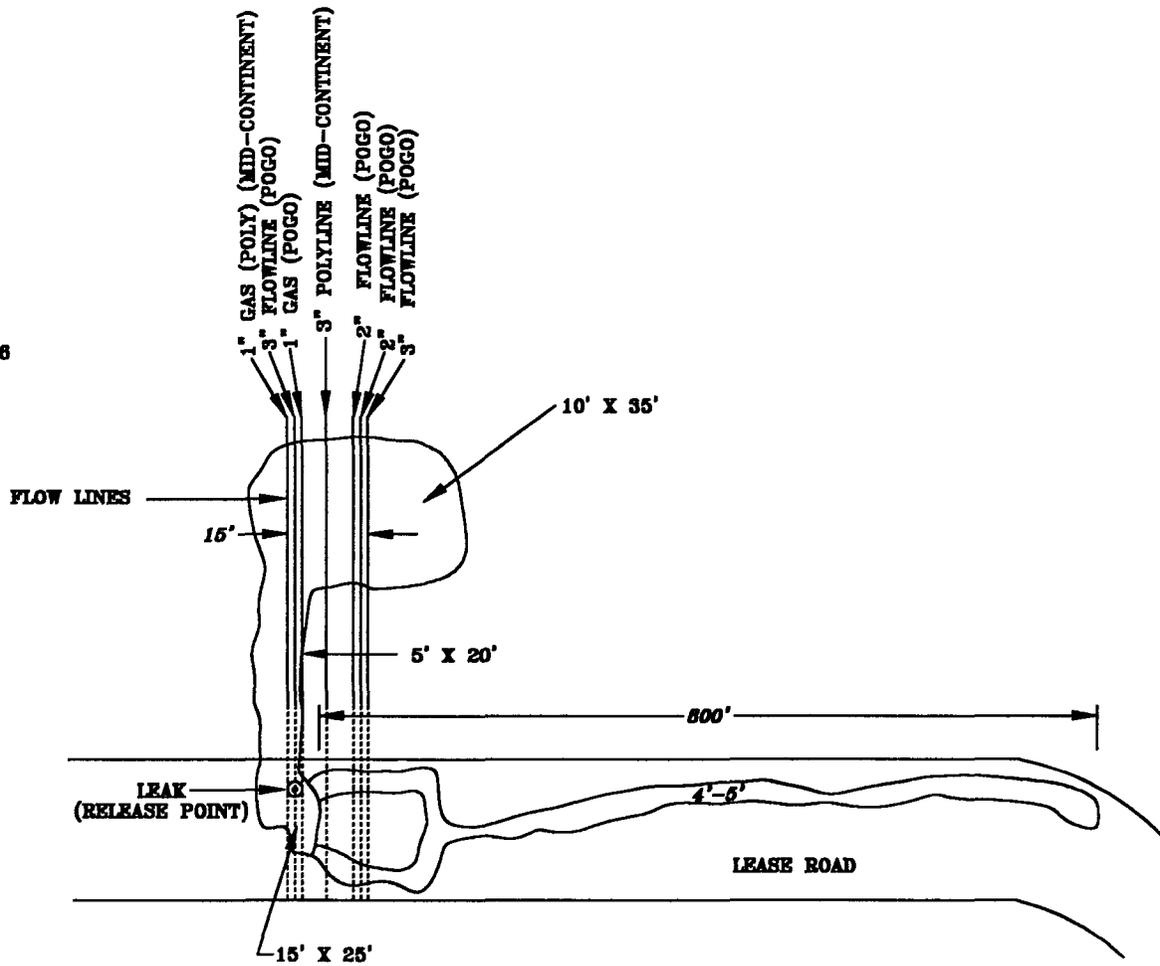


FIGURE NO. 1  
 LEA COUNTY, NEW MEXICO  
 POGO PRODUCING COMPANY  
 TOPOGRAPHIC MAP



WELL #6



LINES AND SURFACE SPILL AREA

NOT TO SCALE

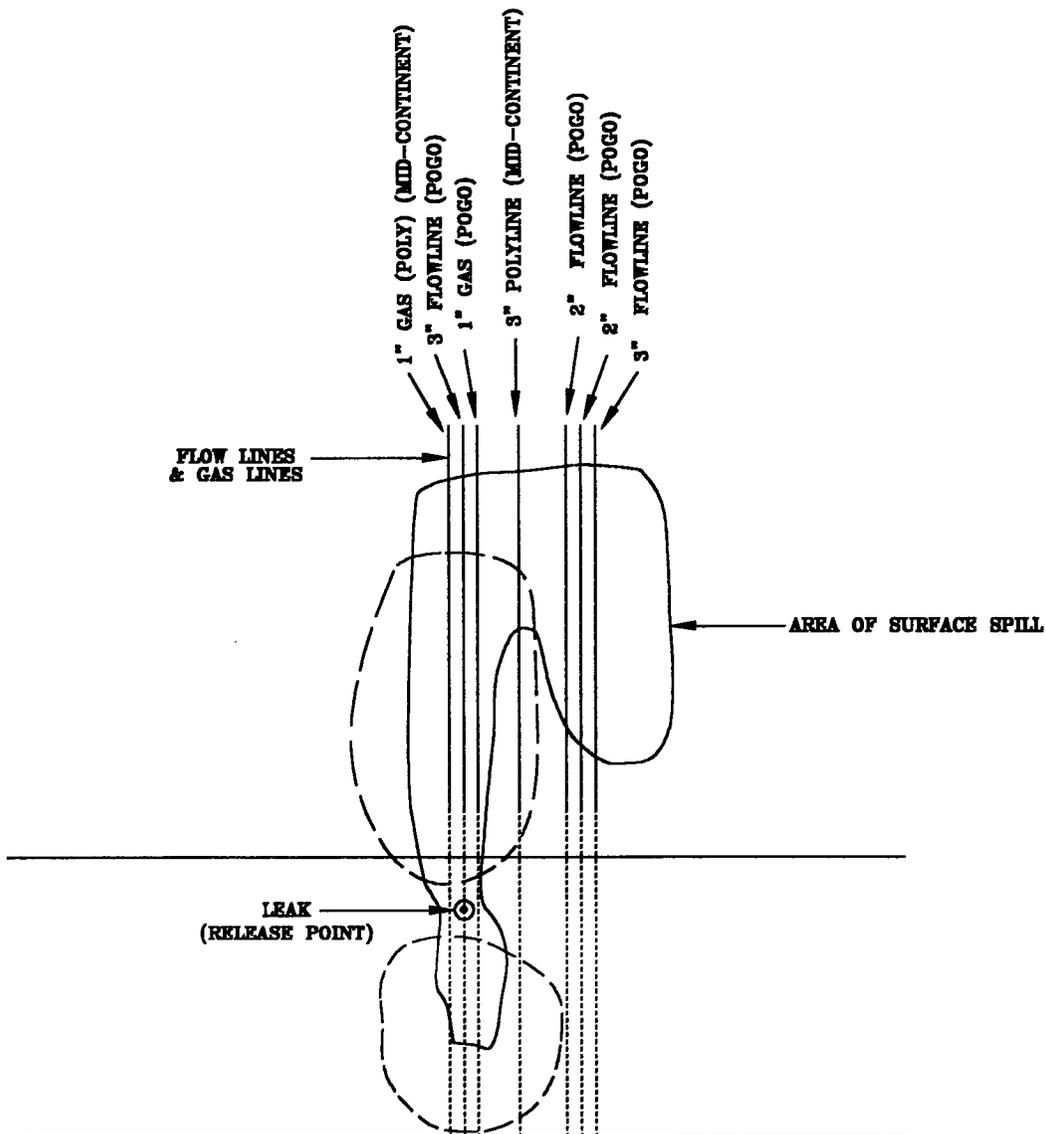
FIGURE NO. 2

LEA COUNTY, NEW MEXICO
POGO PRODUCING COMPANY
EAST OF E.C. HILL B #6 SITE PLAN
HIGHLANDER ENVIRONMENTAL CORP. MIDLAND, TEXAS

DATE: 10/18/99
DWN. BY: JDA
FILE: EAST OF E.C. HILL-B



WELL #6



----- APPROXIMATE AREA OF OLDER SPILLS  
————— AREA OF SURFACE SPILL

NOT TO SCALE

FIGURE NO. 3

LEA COUNTY, NEW MEXICO
POGO PRODUCING COMPANY
EAST OF E.C. HILL B #6 SITE PLAN
HIGHLANDER ENVIRONMENTAL CORP. MIDLAND, TEXAS

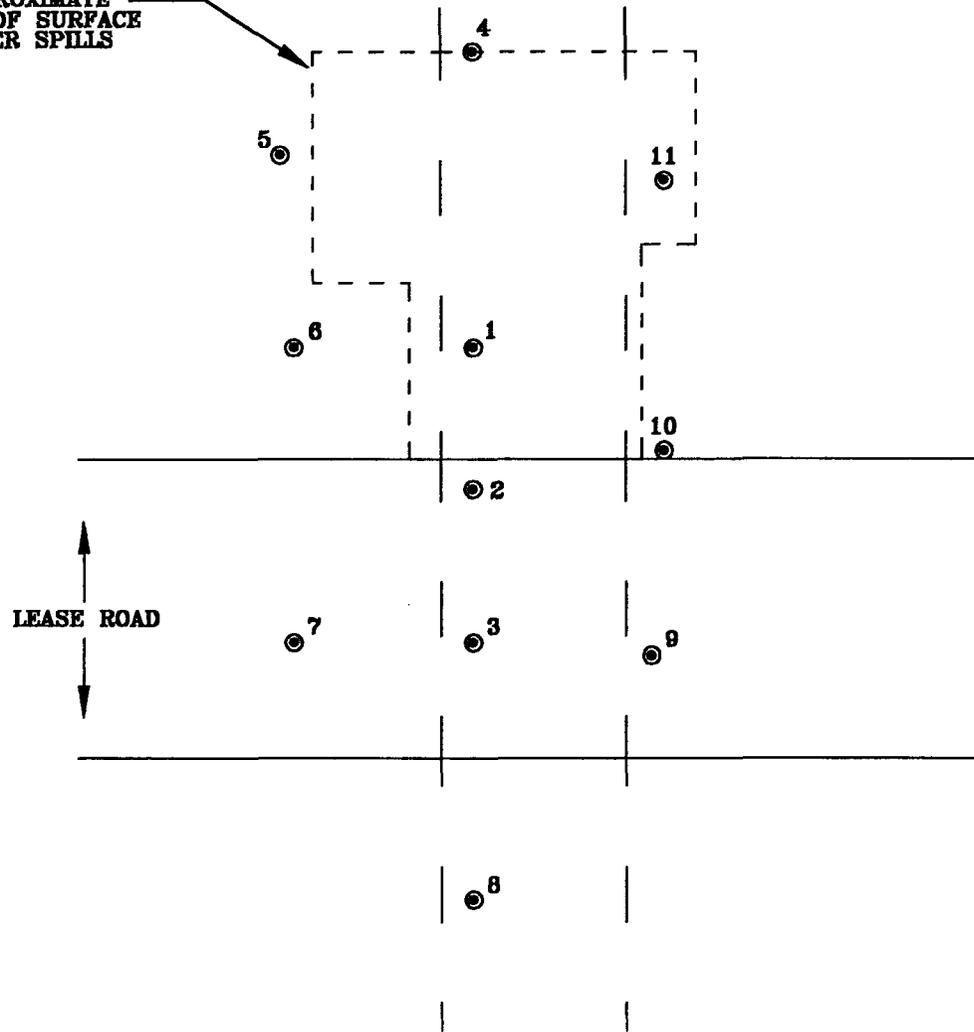
DATE: 10/18/99  
DWN. BY: JDA  
FILE: 04/000001-8.A



3" LINE (INACTIVE)

3" LINE (INACTIVE)

APPROXIMATE  
AREA OF SURFACE  
OLDER SPILLS



SCALE: 1"=15'

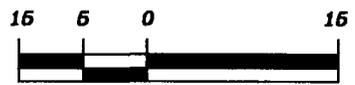


FIGURE NO. 4

LEGEND

● BOREHOLE LOCATIONS

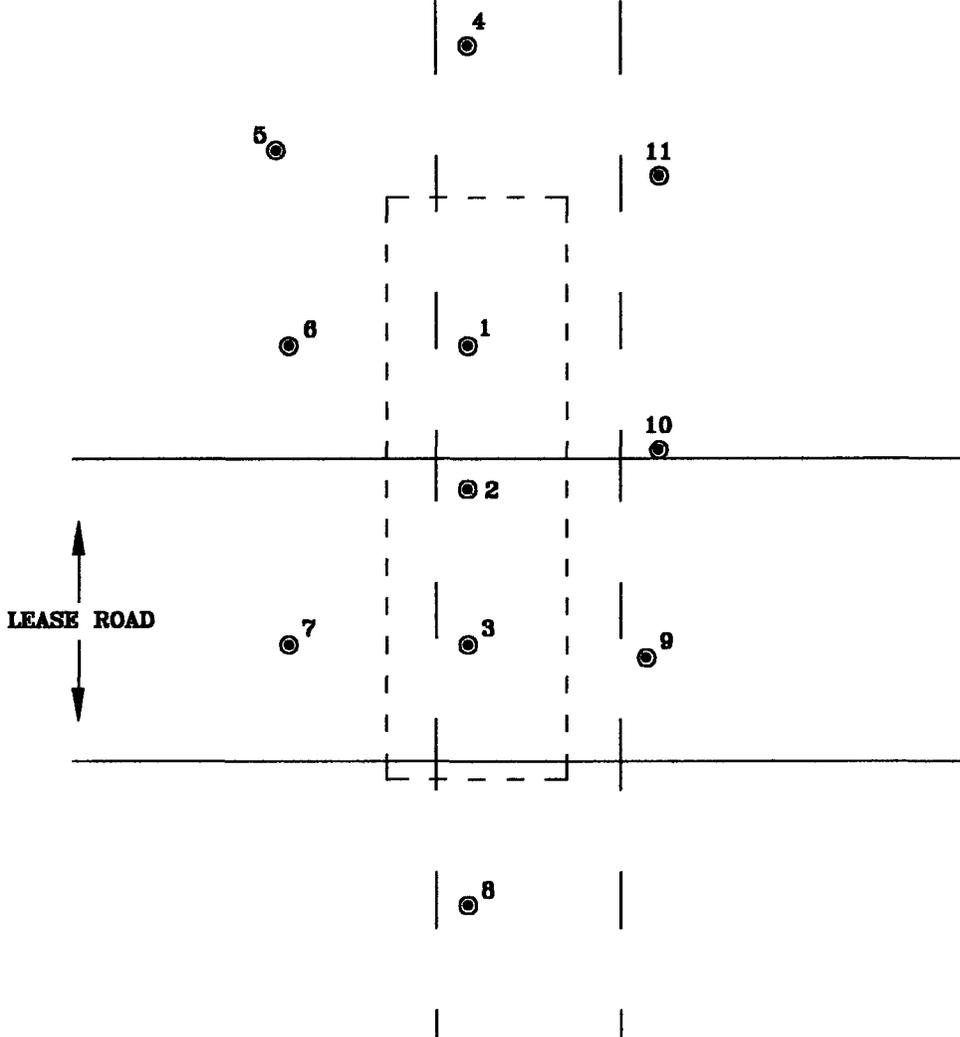
DATE:  
02/24/00  
DWN. BY:  
JDA  
FILE:  
C:\POGO\SITE-PLAN

LEA COUNTY, NEW MEXICO
POGO PRODUCING COMPANY
EAST OF E.C. HILL B #6 BOREHOLE LOCATIONS
HIGHLANDER ENVIRONMENTAL CORP. MIDLAND, TEXAS



3" LINE (INACTIVE)

3" LINE (INACTIVE)



SCALE: 1"=15'

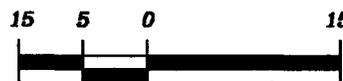


FIGURE NO. 5

LEA COUNTY, NEW MEXICO

POGO PRODUCING COMPANY

EAST OF E.C. HILL B #6  
APPROXIMATE AREA OF SOIL IMPACT

HIGHLANDER ENVIRONMENTAL CORP.  
MIDLAND, TEXAS

LEGEND

● BOREHOLE LOCATIONS

- - - APPROXIMATE AREA OF SOIL IMPACT

DATE:  
02/24/00

DWN. BY:  
JDA

FILE:  
C:\POGO\SOIL-IMPACT



# Highlander Environmental Corp.

Midland, Texas

November 19, 1999

Ms. Donna Williams  
Environmental Bureau  
Oil Conservation Division  
P.O. Box 1980  
Hobbs New Mexico

**RE: Work Plan for the Spill located at the Pogo E. C. Hill B Lease, Lea County,  
New Mexico**

Dear Ms. Williams:

## 1.0 Background

On August 27, 1999, Highlander Environmental Corp. (Highlander) was contacted to inspect a flowline spill that occurred southeast of Well #6 at the Pogo Producing Company E. C. Hill Lease in Lea County, New Mexico. During the inspection, several lines were observed around the spill area. These lines were all aboveground except at the lease road where the lines were buried to cross the lease road. The flowline leak occurred at the lease road and migrated on the surface north of the release point and east on the lease road. The surface impact and lines are shown in Figure 1. Highlander personnel collected soil samples from the spill area. However, deeper soil samples were not collected due to the dense caliche encountered at the Site. A workplan dated September 10, 1999 was prepared and submitted to the New Mexico Oil Conservation Division (NMOCD) in Hobbs, New Mexico for review and approval. The workplan and NMOCD approval letter are found in Appendix A.

On October 14 and 15, 1999, Highlander proceeded with the investigation to excavate the surface spill areas. Prior to the removal of the impacted soil, a trench was installed to remove the buried flowline at the lease road for access. During the excavation, older spills were observed north and south of the release point. The older spill impacts appeared to extend deeper than the surface spill. Based on the findings, the excavation at the lease road was halted north and south of the release point. Figure 2 shows the approximate areas of the older spills.

Prior to backfilling the trench, soil samples SP-1A (4.0') and SP-1 A (sidewall) were collected at the release point area and showed TPH levels of 1,430 mg/kg and 10,450 mg/kg, respectively. The benzene levels were below the method detection limit and total BTEX levels were less than 50 mg/kg. The results are summarized in Table 1. Once the soil samples were collected, the trench was backfilled with clean fill material. The impacted soil from the trench was transported to Sundance Service Inc. for disposal.

The northeast area was excavated to a depth of 1.0' below surface. One composite sample SP-2A was collected for evaluation and showed a TPH level of 490 mg/kg and no detectable levels of BTEX. The soil from this area was transported to Sundance Service Inc. for disposal. Soil samples results are summarized in Table 1. The surface spill, which migrated down the lease road, was blended with a backhoe. However, no samples were collected from this area.

Based on the findings of the older spills, a workplan was requested by the NMOCD to define the vertical and horizontal extent of the soil impact.

## **2.0 Workplan**

### **2.1 Borehole Installation**

The investigation will consist of evaluating the spill area to define the vertical and horizontal extent of subsurface impact, and to the extent possible, to segregate the recent spill from older spills. A minimum of two (2) boreholes are proposed in the center of the spill area for evaluation of the vertical extent of impact, and to attempt to segregate spill ages. Based on the results and field observation, the number and location of the perimeter boreholes will be determined during the evaluation to define the horizontal extent of the impact.

An air rotary drilling rig will be used to collect soil samples. Splitspoon or core-barrel samples will be collected continuously on the center boreholes. Once the depth of contamination has been vertically defined, the perimeter boreholes will be installed. Based on the field observations, the sampling frequency on the perimeter boreholes will be determined during the evaluation. Drill cuttings will be visually inspected between intervals for lithologic or organic vapor shifts. If necessary for segregation of spills, sampling frequency will be increased. It is estimated at this time that these boreholes will not exceed thirty (30) feet in depth. All vadose zone samples will be inspected for lithologic characteristics and field screened with an organic vapor meter. A headspace gas survey will be performed by collecting discrete soil samples and placing a portion of the sample in a clean plastic sample bag, leaving a vacant headspace in the top of the bag. The bag is sealed and after approximately fifteen minutes at ambient temperature storage, the concentration of organic vapors in the sample bag headspace is measured using a Thermo Environmental Industries, Inc., Model 580 B, Organic Vapor Meter (OVM). The groundwater depth in this area is estimated by the New Mexico Oil Conservation Division



(NMOCD) at 78 feet below ground surface. The samples will also be inspected for moisture content to insure that boreholes are not advanced beyond the capillary fringe.

All downhole equipment (i.e., drill rods, drill bits, etc.) will be thoroughly decontaminated between each borehole with a high-pressure hot water wash and rinse. Soil cuttings from drilling will be stockpiled adjacent to the well until disposal is arranged. Once the boreholes are completed, the boreholes will be grouted to surface.

## 2.2 Soil Sampling and Analysis

Based on the OVM evaluation, and in an attempt to segregate spills, a minimum of two samples will be collected from each borehole. The samples selected will be determined from field observation and OVM readings. All samples will be collected and preserved in laboratory prepared sample containers with standard QA/QC procedures. All samples will be shipped under proper chain-of-custody control and analyzed within the standard holding times. The soil samples will be analyzed for Total Petroleum Hydrocarbon (TPH) by method modified 8015 DRO/GRO, Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method SW 846 5030/8020 and chloride by method SW846-9252. For additional evaluation, selected soil samples in the center boreholes will be analyzed by Zymax forensics (C<sub>4</sub> to C<sub>44</sub>), Whole oil, High resolution, (GCFID).

## 2.3 Reporting

Once the analytical data has been received from the laboratory, a comprehensive report will be prepared to include field observations, boring logs with lithologic descriptions, OVM readings, plats, cross-sections and sample analyses.

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

Very truly yours,

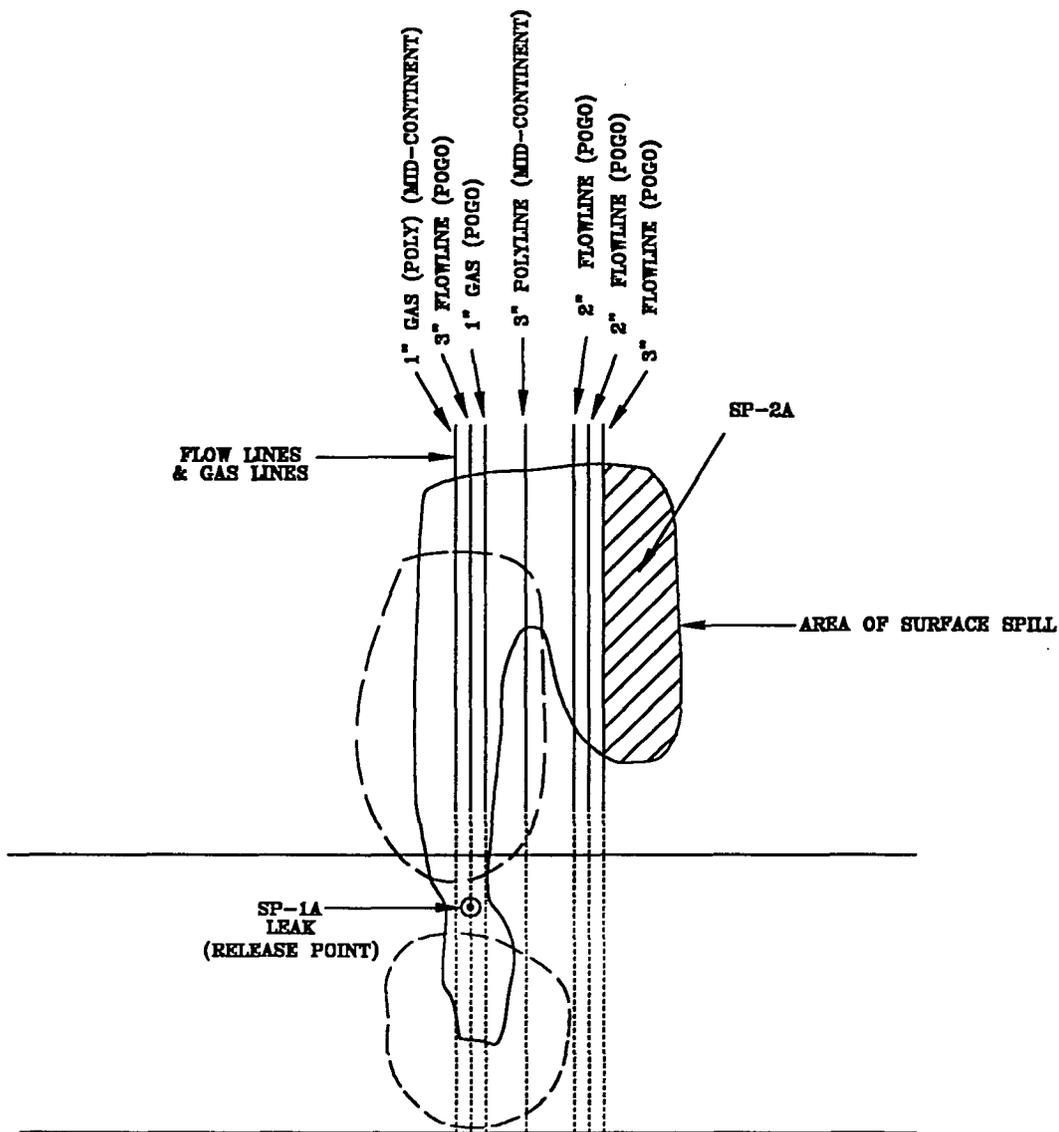
*Ike Tavaraz*  
Ike Tavaraz  
Geologist  
TMR

cc: Don Riggs – Pogo Producing Co.  
Rex Jasper – Pogo Producing Co.





WELL #6



SP-1A - TRENCHED AT RELEASE POINT AND SAMPLED

SP-2A -  AREA EXCAVATED AND SAMPLED

--- APPROXIMATE AREA OF OLDER SPILLS

--- AREA OF SURFACE SPILL

NOT TO SCALE

FIGURE NO. 2

LEA COUNTY, NEW MEXICO
POGO PRODUCING COMPANY
EAST OF E.C. HILL B #8 FLOW LINE LEAK
HIGHLANDER ENVIRONMENTAL CORP. MIDLAND, TEXAS

DATE: 10/18/99
DWN. BY: JDA
FILE: 04/0004/11-11A



WELL #8  
⊙

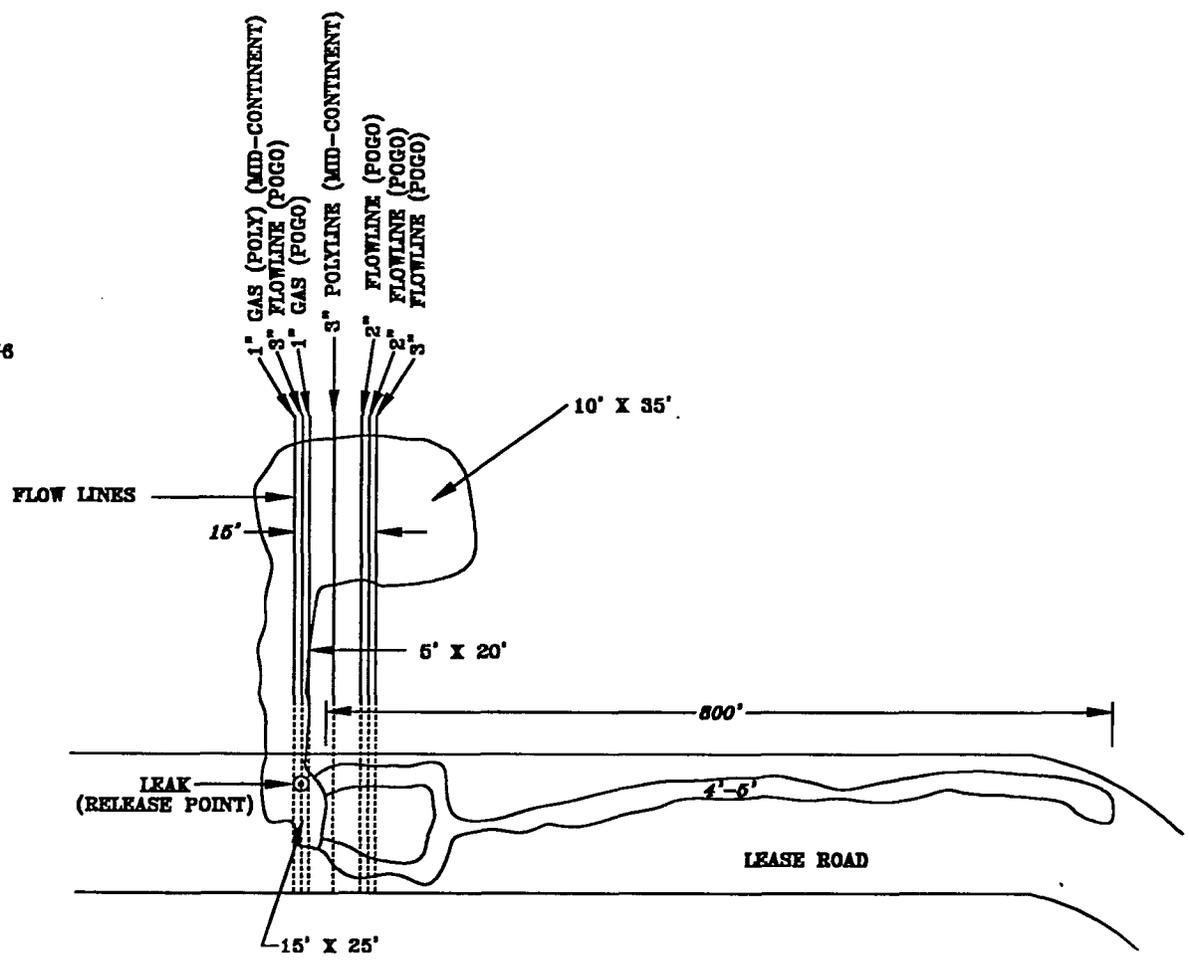


FIGURE NO. 1

LEA COUNTY, NEW MEXICO	
POGO PRODUCING COMPANY	
EAST OF E.C. HILL B #8 FLOW LINE LEAK	
HIGHLANDER ENVIRONMENTAL CORP. MIDLAND, TEXAS	

DATE:  
10/18/99  
DWN. BY:  
JDA  
FILE:  
E/C/HILL-8

NOT TO SCALE

Table 1

Pogo Producing Company  
 E.C. Hill "B" Flowline Leak  
 Lea County, New Mexico

(concentrations in mg/kg)

Sample ID	Depth (ft)	Benzene	Toluene	Ethylbenzene	Xylene	Total BTEX	TPH	Chloride
SP-1A	4'	<0.001	<0.001	<0.001	1.285	1.285	1,430	523
SP-1A (sidewalls)	2-4'	<0.001	2.38	5.08	23.83	31.29	10,450	381
SP-2A	1'	<0.001	<0.001	<0.001	<0.001	<0.001	490	530

# ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

HIGHLANDER ENVIRONMENTAL CORP.  
ATTN: MR. IKE TAVAREZ  
1910 N. BIG SPRING STREET  
MIDLAND, TEXAS 79705  
FAX: 915-682-3946

Sample Type: Soil  
Sample Condition: Intact/ Iced  
Project #: 1345  
Project Name: Pogo/ E.C. Hill "B" Lse. (SE Well #6)  
Project Location: Lea Co., N.M.

Sampling Date: See Below  
Receiving Date: 10/18/99  
Analysis Date: CI 10/18/99  
Analysis Date: TPH 10/19/99

ELT#	FIELD CODE / SAMPLE DATE	TPH (mg/kg)	Chloride (mg/kg)
20852	S-1A (4.0') 10/14/99	1430	523
20853	S-1A (Side Walls) 10/14/99	10450	381
20854	S-2A (1.0') 10/15/99	490	53

BLANK	<10	<10
% INSTRUMENT ACCURACY	96	101
% EXTRACTION ACCURACY	104	*

Methods: EPA 418.1 , SW 846-9252

  
Raland K. Tuttle

10-19-99  
Date

# ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

HIGHLANDER ENVIRONMENTAL CORP.  
ATTN: MR. IKE TAVAREZ  
1910 N. BIG SPRING STREET  
MIDLAND, TEXAS 79705  
FAX: 915-682-3946

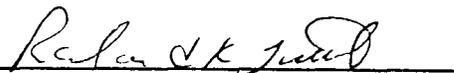
Sample Type: Soil  
Sample Condition: Intact/Iced  
Project #: 1345  
Project Name: Pogo/E.C. Hill "B" Lse. (SE Well #6)  
Project Location: Lea Co., N.M.

Sampling Date: See Below  
Receiving Date: 10/18/99  
Analysis Date: 10/18/99

ELT#	FIELD CODE / SAMPLE DATE	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYLBENZENE (mg/kg)	m,p-XYLENE (mg/kg)	o-XYLENE (mg/kg)
20852	S-1A (4.0') 10/14/99	<0.100	<0.100	<0.100	0.746	0.539
20853	S-1A (Side Walls) 10/14/99	<0.100	2.38	5.08	15.71	8.12
20854	S-2A (1.0') 10/15/99	<0.100	<0.100	<0.100	<0.100	<0.100

%IA	95	94	93	93	92
%EA	97	92	92	94	90
BLANK	<0.100	<0.100	<0.100	<0.100	<0.100

METHODS: EPA SW 846-8020,5030

  
Raland K. Tuttle

10-19-99  
Date



# Analysis Request and Chain of Custody Record

## HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.  
Midland, Texas 79705

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

CLIENT NAME: Pro Habermay SITE MANAGER: \_\_\_\_\_  
 PROJECT NO.: B45 PROJECT NAME: Pro Habermay Mill B LLC (School 6)  
100 County rd.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD				
									HCL	HNO3	ICB	NONE	
	04/16/99		S	X	X	S-1A (4.0)	1				X		
	1/15/99		S	X	X	S-1A (side cells)	1				X		
	1/15/99		S	X	X	S-2A (1.0)	1				X		

RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: 1/15/99 Time: 11:45  
 RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RECEIVED BY: (Signature) \_\_\_\_\_ Date: 1-18-99 Time: 1145

RECEIVING LABORATORY: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_  
 CITY: \_\_\_\_\_ PHONE: \_\_\_\_\_  
 SAMPLE CONDITION WHEN RECEIVED: \_\_\_\_\_

MATRIX: W-Water S-Sol A-Air SI-Sludge SD-Solid O-Other  
 REMARKS: \_\_\_\_\_

PAGE: \_\_\_\_\_ OF: \_\_\_\_\_  
 ANALYSIS REQUEST  
 (Circle or Specify Method No.)

BTEX 8080/808	X
MTR 8080/808	X
TPH (A18) 8015 MOD. TX1005	X
PAH 8370	
RCRA Metals Ag As Ba Cd Cr Pb Hg Se	
TCF Metals Ag As Ba Cd Cr Pb Hg Se	
TCF Volatiles	
TCF Semi Volatiles	
ECI	
GCMS Vol. 8340/8260/834	
GCMS Semi Vol. 8270/825	
PCB's 8080/808	
Post. 808/808	
BOD, TSS, pH, TDS, Chloride	
Gamma Spec	
Alpha Beta (Ab)	
PM (Asbestos)	

SAMPLED BY: (Print & Sign) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 SAMPLE SHIPPED BY: (Circle) BUS UPS  
 FEDEX  
 AIRBILL # \_\_\_\_\_ OTHER: \_\_\_\_\_  
 REWRITE BY: \_\_\_\_\_  
 HIGHLANDER CONTACT PERSON: \_\_\_\_\_  
 RUSH CHANGE AUTHORIZED: Yes \_\_\_\_\_ No \_\_\_\_\_

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.



NEW MEXICO ENERGY, MINERALS  
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
DISTRICT I HOBBS  
PO BOX 1980, Hobbs, NM 88241  
(505) 393-6161  
FAX (505) 393-0720

Jennifer A. Salisbury  
CABINET SECRETARY

September 22, 1999

Pogo Producing Company  
Attn: Don Riggs  
300 N. Marienfeld  
Midland, Texas 79701

Re: Work Plan for the E.C. Hill "B" Lease  
UL K-Sec 27-Ts23S-R37E

Dear Mr. Riggs:

The New Mexico Oil Conservation Division (NMOCD) is in receipt of the E.C. Hill "B" Lease Work Plan submitted by Highlander on Pogo's behalf. **The NMOCD hereby approves Pogo's Work Plan with the following conditions:**

1. Pogo has not determined vertical extent in the work plan activities; therefore, Pogo shall determine vertical extent at all 4 sample point locations prior to closure of the site.
2. Pogo shall also provide horizontal extent of the contamination.
3. Pogo shall notify the NMOCD at least 48 hours in advance of the scheduled activities such that the NMOCD has the opportunity to witness the events and/or split samples.
4. If Pogo leaves soil stockpiled over night then the piles of soil shall be placed on plastic to prevent any future leaching or Pogo will sample the area when the soil has been removed.
5. NMOCD realizes that the source of the leak is under the road; Nevertheless, NMOCD requests vertical extent to be determined at the source.
6. **NMOCD request that an approved Closure Report be submitted to our District I office by September 10, 2000.**

If you have any further questions, or need any assistance please do not hesitate to write or call me at (505-393-6161 ext...113).

Sincerely,

Donna Williams  
Environmental Engineer Specialist  
Cc: Wayne Price; Chris Williams;

























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

## Highlander Environmental Corp

Certificate of Analysis Number:  
**00020581**

<b>Report To:</b> Highlander Environmental Corp Ike Tavarez 1910 N. Big Spring Street  Midland Texas 79705- ph: (915) 682-4559 fax: (915) 682-3946	<b>Project Name:</b>  <b>Site:</b> Pogo/Ec. Hill "B" (SE of #6) <b>Site Address:</b>  <b>PO Number:</b>  <b>State:</b> Texas <b>State Cert. No.:</b>  <b>Date Reported:</b> 3/13/00
<b>Fax To:</b> Highlander Environmental Corp Ike Tavarez fax: (915) 682-3946	

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
BH-1(2-3)	00020581-01	Soil	2/15/00 9:35:00 AM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-1(2-3)	00020581-01	Soil	2/15/00 9:35:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-1(3-4)	00020581-02	Soil	2/15/00 9:40:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-1 (4-5)	00020581-03	Soil	2/15/00 9:45:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-1 (5-6)	00020581-04	Soil	2/15/00 9:48:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-1 (6-7)	00020581-05	Soil	2/15/00 9:57:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-1 (7-8)	00020581-06	Soil	2/15/00 10:00:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-1 (8-9)	00020581-07	Soil	2/15/00 10:05:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-1 (9-10)	00020581-08	Soil	2/15/00 10:10:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-1 (15-16)	00020581-09	Soil	2/15/00 10:15:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-1 (20-21)	00020581-10	Soil	2/15/00 10:20:00 AM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-1 (25-26)	00020581-11	Soil	2/15/00 10:25:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-1(30-31)	00020581-12	Soil	2/15/00 10:30:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-1(35-36)	00020581-13	Soil	2/15/00 10:40:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-2(1-2)	00020581-14	Soil	2/15/00 11:10:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-2(2-3)	00020581-15	Soil	2/15/00 10:13:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-2(3-4)	00020581-16	Soil	2/15/00 11:18:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-2(4-5)	00020581-17	Soil	2/15/00 11:25:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-2(5-6)	00020581-18	Soil	2/15/00 11:30:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-2(6-7)	00020581-19	Soil	2/15/00 11:35:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-2(7-8)	00020581-20	Soil	2/15/00 11:40:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-2(8-9)	00020581-21	Soil	2/15/00 11:45:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-2(9-10)	00020581-22	Soil	2/15/00 11:50:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-2(15-16)	00020581-23	Soil	2/15/00 1:05:00 PM	2/21/00 4:40:45 PM		<input type="checkbox"/>

6/27/00

Tatosian, Gina  
 Senior Project Manager

Date

Joel Grice  
 Laboratory Director

Ted Yen  
 Quality Assurance Officer

6/27/00 3:56:23 PM



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

Highlander Environmental Corp

Certificate of Analysis Number:

00020581

<b>Report To:</b> Highlander Environmental Corp Ike Tavarez 1910 N. Big Spring Street  Midland Texas 79705- ph: (915) 682-4559 fax: (915) 682-3946	<b>Project Name:</b>  <b>Site:</b> Pogo/Ec. Hill "B" (SE of #6) <b>Site Address:</b>  <b>PO Number:</b> <b>State:</b> Texas <b>State Cert. No.:</b> <b>Date Reported:</b> 3/13/00
<b>Fax To:</b> Highlander Environmental Corp Ike Tavarez fax: (915) 682-3946	

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
BH-2(20-21)	00020581-24	Soil	2/15/00 1:10:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-2(25-26)	00020581-25	Soil	2/15/00 1:20:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-3(1-2)	00020581-26	Soil	2/15/00 1:48:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-3(2-3)	00020581-27	Soil	2/15/00 1:52:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-3(3-4)	00020581-28	Soil	2/15/00 1:55:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-3(4-5)	00020581-29	Soil	2/15/00 2:00:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-3(5-6)	00020581-30	Soil	2/15/00 2:05:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-3(6-7)	00020581-31	Soil	2/15/00 2:07:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-3(7-8)	00020581-32	Soil	2/15/00 2:10:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-3(8-9)	00020581-33	Soil	2/15/00 2:13:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-3(9-10)	00020581-34	Soil	2/15/00 2:15:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-3(15-16)	00020581-35	Soil	2/15/00 2:20:00 PM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-3(20-21)	00020581-36	Soil	2/15/00 2:30:00 PM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-3(25-26)	00020581-37	Soil	2/15/00 2:35:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-3(30-31)	00020581-38	Soil	2/15/00 2:40:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-4(1-2)	00020581-39	Soil	2/16/00 9:25:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-4(5-6)	00020581-40	Soil	2/16/00 9:30:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-4(10-11)	00020581-41	Soil	2/16/00 9:35:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-4(15-16)	00020581-42	Soil	2/16/00 9:40:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-5(1-2)	00020581-43	Soil	2/16/00 9:55:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-5(5-6)	00020581-44	Soil	2/16/00 10:00:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-5(10-11)	00020581-45	Soil	2/16/00 10:05:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-5(15-16)	00020581-46	Soil	2/16/00 10:10:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-6(1-2)	00020581-47	Soil	2/16/00 10:25:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>

6/27/00

Tatosian, Gina  
 Senior Project Manager

Date

Joel Grice  
 Laboratory Director

Ted Yen  
 Quality Assurance Officer



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

Highlander Environmental Corp

Certificate of Analysis Number:

**00020581**

<b>Report To:</b> Highlander Environmental Corp Ike Tavaréz 1910 N. Big Spring Street  Midland Texas 79705- ph: (915) 682-4559 fax: (915) 682-3946	<b>Project Name:</b>  <b>Site:</b> Pogo/Ec. Hill "B" (SE of #6) <b>Site Address:</b>  <b>PO Number:</b>  <b>State:</b> Texas <b>State Cert. No.:</b>  <b>Date Reported:</b> 3/13/00
<b>Fax To:</b> Highlander Environmental Corp Ike Tavaréz fax: (915) 682-3946	

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
BH-6(5-6)	00020581-48	Soil	2/16/00 10:30:00 AM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-6(10-11)	00020581-49	Soil	2/16/00 10:35:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-6(15-16)	00020581-50	Soil	2/16/00 10:40:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-7(1-2)	00020581-51	Soil	2/16/00 11:00:00 AM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-7(5-6)	00020581-52	Soil	2/16/00 11:05:00 AM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-7(10-11)	00020581-53	Soil	2/16/00 11:10:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-7(15-16)	00020581-54	Soil	2/16/00 11:15:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-8(1-2)	00020581-55	Soil	2/16/00 11:40:00 AM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-8(5-6)	00020581-56	Soil	2/16/00 11:45:00 AM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-8(10-11)	00020581-57	Soil	2/16/00 11:50:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-8(15-16)	00020581-58	Soil	2/16/00 11:55:00 AM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-9(1-2)	00020581-59	Soil	2/16/00 1:20:00 PM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-9(5-6)	00020581-60	Soil	2/16/00 1:25:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-9(10-11)	00020581-61	Soil	2/16/00 1:30:00 PM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-9(15-16)	00020581-62	Soil	2/16/00 1:35:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-10(1-2)	00020581-63	Soil	2/16/00 2:00:00 PM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-10(5-6)	00020581-64	Soil	2/16/00 2:03:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-10(10-11)	00020581-65	Soil	2/16/00 2:05:00 PM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-10(15-16)	00020581-66	Soil	2/16/00 2:10:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-11(1-2)	00020581-67	Soil	2/16/00 2:25:00 PM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-11(5-6)	00020581-68	Soil	2/16/00 2:30:00 PM	2/21/00 4:40:45 PM		<input type="checkbox"/>
BH-11(10-11)	00020581-69	Soil	2/16/00 2:33:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>
BH-11(15-16)	00020581-70	Soil	2/16/00 2:35:00 PM	2/21/00 4:40:45 PM		<input checked="" type="checkbox"/>

6/27/00

Tatosian, Gina  
 Senior Project Manager

Date

Joel Grice  
 Laboratory Director  
 Ted Yen  
 Quality Assurance Officer



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

Client Sample ID BH-1 (6-7) Collected: 2/15/00 9:57:00 SPL Sample ID: 00020581-05

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	172	10.0	1		02/28/00 15:00		203542
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	240	25	5		02/24/00 2:28		202714
Surr: Pentacosane	335.2	% 55-155	5	*	02/24/00 2:28		202714
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	1.7	0.10	1		02/23/00 3:48		198507
Surr: 1,4-Difluorobenzene	92.5	% 63-122	1		02/23/00 3:48		198507
Surr: 4-Bromofluorobenzene	497.0	% 39-150	1	*	02/23/00 3:48		198507
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/23/00 3:48		198476
Ethylbenzene	4.8	1.0	1		02/23/00 3:48		198476
Toluene	ND	1.0	1		02/23/00 3:48		198476
m,p-Xylene	12	1.0	1		02/23/00 3:48		198476
o-Xylene	12	1.0	1		02/23/00 3:48		198476
Xylenes, Total	24	1.0	1		02/23/00 3:48		198476
Surr: 1,4-Difluorobenzene	90.6	% 59-127	1		02/23/00 3:48		198476
Surr: 4-Bromofluorobenzene	191.7	% 48-156	1	*	02/23/00 3:48		198476

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



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Client Sample ID BH-1 (15-16)

Collected: 2/15/00 10:15:00 SPL Sample ID: 00020581-09

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	38	5.0	1		02/24/00 5:02		202715
Surr: Pentacosane	118.8	% 55-155	1		02/24/00 5:02		202715
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	2.5	25		02/23/00 12:57		198914
Surr: 1,4-Difluorobenzene	85.9	% 63-122	25		02/23/00 12:57		198914
Surr: 4-Bromofluorobenzene	105.1	% 39-150	25		02/23/00 12:57		198914
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	25	25		02/23/00 12:57		198888
Ethylbenzene	ND	25	25		02/23/00 12:57		198888
Toluene	ND	25	25		02/23/00 12:57		198888
m,p-Xylene	ND	25	25		02/23/00 12:57		198888
o-Xylene	ND	25	25		02/23/00 12:57		198888
Xylenes, Total	ND	25	25		02/23/00 12:57		198888
Surr: 1,4-Difluorobenzene	97.3	% 59-127	25		02/23/00 12:57		198888
Surr: 4-Bromofluorobenzene	96.6	% 48-156	25		02/23/00 12:57		198888

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



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Client Sample ID BH-1 (20-21) Collected: 2/15/00 10:20:00 SPL Sample ID: 00020581-10

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	ND	10.0	1		03/01/00 12:00		206004

**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, TEXAS 77054  
 (713) 660-0901

Client Sample ID BH-2(5-6)

Collected: 2/15/00 11:30:00 SPL Sample ID: 00020581-18

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	ND	10.0	1		02/28/00 15:00		203545
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	29	5.0	1		02/24/00 13:22		202718
Surr: Pentacosane	155.8	% 55-155	1	*	02/24/00 13:22		202718
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	1.3	0.10	1		02/23/00 12:05		199251
Surr: 1,4-Difluorobenzene	79.8	% 63-122	1		02/23/00 12:05		199251
Surr: 4-Bromofluorobenzene	527.7	% 39-150	1	*	02/23/00 12:05		199251
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/23/00 12:56		215602
Ethylbenzene	ND	1.0	1		02/23/00 12:56		215602
Toluene	ND	1.0	1		02/23/00 12:56		215602
m,p-Xylene	8.9	1.0	1		02/23/00 12:56		215602
o-Xylene	9.3	1.0	1		02/23/00 12:56		215602
Xylenes, Total	18.2	1.0	1		02/23/00 12:56		215602
Surr: 1,4-Difluorobenzene	91.4	% 59-127	1		02/23/00 12:56		215602
Surr: 4-Bromofluorobenzene	175.3	% 48-156	1	*	02/23/00 12:56		215602

**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(15-16) Collected: 2/15/00 1:05:00 SPL Sample ID: 00020581-23

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	ND	10.0	1		02/28/00 15:00		203546
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	13	5.0	1		02/24/00 21:48		202725
Surr: Pentacosane	144.0	% 55-155	1		02/24/00 21:48		202725
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/22/00 23:28		199283
Surr: 1,4-Difluorobenzene	88.0	% 63-122	1		02/22/00 23:28		199283
Surr: 4-Bromofluorobenzene	109.6	% 39-150	1		02/22/00 23:28		199283
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/22/00 23:28		215515
Ethylbenzene	ND	1.0	1		02/22/00 23:28		215515
Toluene	ND	1.0	1		02/22/00 23:28		215515
m,p-Xylene	ND	1.0	1		02/22/00 23:28		215515
o-Xylene	ND	1.0	1		02/22/00 23:28		215515
Xylenes, Total	ND	1.0	1		02/22/00 23:28		215515
Surr: 1,4-Difluorobenzene	101.2	% 59-127	1		02/22/00 23:28		215515
Surr: 4-Bromofluorobenzene	99.0	% 48-156	1		02/22/00 23:28		215515

**Qualifiers:** ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)  
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Client Sample ID BH-3(15-16) Collected: 2/15/00 2:20:00 SPL Sample ID: 00020581-35

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>				<b>MCL</b>	<b>E325.3</b>		<b>Units: mg/Kg</b>
Chloride	86.1	10.0	1		02/28/00 15:00		203547
<b>DIESEL RANGE ORGANICS</b>				<b>MCL</b>	<b>SW8015B</b>		<b>Units: mg/Kg</b>
Diesel Range Organics	ND	5.0	1		02/24/00 20:31		202727
Surr: Pentacosane	107.9	% 55-155	1		02/24/00 20:31		202727
<b>GASOLINE RANGE ORGANICS</b>				<b>MCL</b>	<b>SW8015B</b>		<b>Units: mg/Kg</b>
Gasoline Range Organics	ND	0.10	1		02/23/00 1:19		198908
Surr: 1,4-Difluorobenzene	87.6	% 63-122	1		02/23/00 1:19		198908
Surr: 4-Bromofluorobenzene	111.8	% 39-150	1		02/23/00 1:19		198908
<b>PURGEABLE AROMATICS</b>				<b>MCL</b>	<b>SW8020A</b>		<b>Units: ug/Kg</b>
Benzene	ND	1.0	1		02/23/00 1:19		215518
Ethylbenzene	ND	1.0	1		02/23/00 1:19		215518
Toluene	ND	1.0	1		02/23/00 1:19		215518
m,p-Xylene	ND	1.0	1		02/23/00 1:19		215518
o-Xylene	ND	1.0	1		02/23/00 1:19		215518
Xylenes, Total	ND	1.0	1		02/23/00 1:19		215518
Surr: 1,4-Difluorobenzene	100.6	% 59-127	1		02/23/00 1:19		215518
Surr: 4-Bromofluorobenzene	101.9	% 48-156	1		02/23/00 1:19		215518

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



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Client Sample ID BH-3(20-21) Collected: 2/15/00 2:30:00 SPL Sample ID: 00020581-36

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	155	10.0	1		02/28/00 15:00		203548
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	46	5.0	1		02/24/00 19:53		202726
Surr: Pentacosane	146.8	% 55-155	1		02/24/00 19:53		202726
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	0.32	0.10	1		02/23/00 1:47		198909
Surr: 1,4-Difluorobenzene	87.2	% 63-122	1		02/23/00 1:47		198909
Surr: 4-Bromofluorobenzene	133.2	% 39-150	1		02/23/00 1:47		198909
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/23/00 1:47		215521
Ethylbenzene	ND	1.0	1		02/23/00 1:47		215521
Toluene	ND	1.0	1		02/23/00 1:47		215521
m,p-Xylene	ND	1.0	1		02/23/00 1:47		215521
o-Xylene	1.9	1.0	1		02/23/00 1:47		215521
Xylenes, Total	1.9	1.0	1		02/23/00 1:47		215521
Surr: 1,4-Difluorobenzene	101.6	% 59-127	1		02/23/00 1:47		215521
Surr: 4-Bromofluorobenzene	103.0	% 48-156	1		02/23/00 1:47		215521

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



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Client Sample ID BH-4(1-2) Collected: 2/16/00 9:25:00 SPL Sample ID: 00020581-39

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	103	10.0	1		02/28/00 15:00		203549
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	200	25	5		02/26/00 0:10		202728
Surr: Pentacosane	475.5	% 55-155	5	*	02/26/00 0:10		202728
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/23/00 2:14		198910
Surr: 1,4-Difluorobenzene	86.1	% 63-122	1		02/23/00 2:14		198910
Surr: 4-Bromofluorobenzene	115.3	% 39-150	1		02/23/00 2:14		198910
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/23/00 2:14		215524
Ethylbenzene	ND	1.0	1		02/23/00 2:14		215524
Toluene	ND	1.0	1		02/23/00 2:14		215524
m,p-Xylene	ND	1.0	1		02/23/00 2:14		215524
o-Xylene	ND	1.0	1		02/23/00 2:14		215524
Xylenes, Total	ND	1.0	1		02/23/00 2:14		215524
Surr: 1,4-Difluorobenzene	100.0	% 59-127	1		02/23/00 2:14		215524
Surr: 4-Bromofluorobenzene	103.0	% 48-156	1		02/23/00 2:14		215524

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-4(10-11)

Collected: 2/16/00 9:35:00

SPL Sample ID: 00020581-41

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	51.7	10.0	1		02/28/00 15:00		203550
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	ND	5.0	1		02/25/00 19:41		202759
Surr: Pentacosane	72.4	% 55-155	1		02/25/00 19:41		202759
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/22/00 18:39		199114
Surr: 1,4-Difluorobenzene	89.7	% 63-122	1		02/22/00 18:39		199114
Surr: 4-Bromofluorobenzene	87.2	% 39-150	1		02/22/00 18:39		199114
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/22/00 18:39		215548
Ethylbenzene	ND	1.0	1		02/22/00 18:39		215548
Toluene	ND	1.0	1		02/22/00 18:39		215548
m,p-Xylene	ND	1.0	1		02/22/00 18:39		215548
o-Xylene	ND	1.0	1		02/22/00 18:39		215548
Xylenes, Total	ND	1.0	1		02/22/00 18:39		215548
Surr: 1,4-Difluorobenzene	88.8	% 59-127	1		02/22/00 18:39		215548
Surr: 4-Bromofluorobenzene	111.3	% 48-156	1		02/22/00 18:39		215548

**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(1-2)

Collected: 2/16/00 9:55:00

SPL Sample ID: 00020581-43

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	ND	10.0	1		02/28/00 15:00		203552
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	ND	5.0	1		02/25/00 21:36		202762
Surr: Pentacosane	91.4	% 55-155	1		02/25/00 21:36		202762
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/22/00 19:37		199116
Surr: 1,4-Difluorobenzene	129.5	% 63-122	1	*	02/22/00 19:37		199116
Surr: 4-Bromofluorobenzene	86.4	% 39-150	1		02/22/00 19:37		199116
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/22/00 19:37		215550
Ethylbenzene	ND	1.0	1		02/22/00 19:37		215550
Toluene	ND	1.0	1		02/22/00 19:37		215550
m,p-Xylene	ND	1.0	1		02/22/00 19:37		215550
o-Xylene	ND	1.0	1		02/22/00 19:37		215550
Xylenes, Total	ND	1.0	1		02/22/00 19:37		215550
Surr: 1,4-Difluorobenzene	89.5	% 59-127	1		02/22/00 19:37		215550
Surr: 4-Bromofluorobenzene	111.6	% 48-156	1		02/22/00 19:37		215550

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



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Client Sample ID BH-5(5-6)

Collected: 2/16/00 10:00:00 SPL Sample ID: 00020581-44

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	68.9	10.0	1		02/28/00 15:00		203553
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	ND	5.0	1		02/25/00 22:15		202763
Surr: Pentacosane	94.2	% 55-155	1		02/25/00 22:15		202763
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/22/00 20:06		199117
Surr: 1,4-Difluorobenzene	89.3	% 63-122	1		02/22/00 20:06		199117
Surr: 4-Bromofluorobenzene	90.2	% 39-150	1		02/22/00 20:06		199117
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/22/00 20:06		215574
Ethylbenzene	ND	1.0	1		02/22/00 20:06		215574
Toluene	ND	1.0	1		02/22/00 20:06		215574
m,p-Xylene	ND	1.0	1		02/22/00 20:06		215574
o-Xylene	ND	1.0	1		02/22/00 20:06		215574
Xylenes, Total	ND	1.0	1		02/22/00 20:06		215574
Surr: 1,4-Difluorobenzene	89.2	% 59-127	1		02/22/00 20:06		215574
Surr: 4-Bromofluorobenzene	115.8	% 48-156	1		02/22/00 20:06		215574

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit  
 B - Analyte detected in the associated Method Blank  
 \* - Surrogate Recovery Outside Advisable QC Limits  
 J - Estimated Value between MDL and PQL

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



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Client Sample ID BH-6(1-2)

Collected: 2/16/00 10:25:00 SPL Sample ID: 00020581-47

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	551	10.0	1		02/28/00 15:00		203554
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	18	5.0	1		02/25/00 22:53		202764
Surr: Pentacosane	134.2	% 55-155	1		02/25/00 22:53		202764
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/22/00 23:28		199119
Surr: 1,4-Difluorobenzene	134.7	% 63-122	1	*	02/22/00 23:28		199119
Surr: 4-Bromofluorobenzene	88.6	% 39-150	1		02/22/00 23:28		199119
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/22/00 23:28		215570
Ethylbenzene	ND	1.0	1		02/22/00 23:28		215570
Toluene	ND	1.0	1		02/22/00 23:28		215570
m,p-Xylene	ND	1.0	1		02/22/00 23:28		215570
o-Xylene	1.1	1.0	1		02/22/00 23:28		215570
Xylenes, Total	1.1	1.0	1		02/22/00 23:28		215570
Surr: 1,4-Difluorobenzene	91.4	% 59-127	1		02/22/00 23:28		215570
Surr: 4-Bromofluorobenzene	113.5	% 48-156	1		02/22/00 23:28		215570

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



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Client Sample ID BH-6(5-6) Collected: 2/16/00 10:30:00 SPL Sample ID: 00020581-48

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	465	10.0	1		02/28/00 15:00		203557
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	ND	5.0	1		02/25/00 23:31		202765
Surr: Pentacosane	80.3	% 55-155	1		02/25/00 23:31		202765
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/22/00 23:57		199120
Surr: 1,4-Difluorobenzene	88.1	% 63-122	1		02/22/00 23:57		199120
Surr: 4-Bromofluorobenzene	127.0	% 39-150	1		02/22/00 23:57		199120
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/22/00 23:57		215571
Ethylbenzene	ND	1.0	1		02/22/00 23:57		215571
Toluene	ND	1.0	1		02/22/00 23:57		215571
m,p-Xylene	ND	1.0	1		02/22/00 23:57		215571
o-Xylene	2.2	1.0	1		02/22/00 23:57		215571
Xylenes,Total	2.2	1.0	1		02/22/00 23:57		215571
Surr: 1,4-Difluorobenzene	88.5	% 59-127	1		02/22/00 23:57		215571
Surr: 4-Bromofluorobenzene	126.1	% 48-156	1		02/22/00 23:57		215571

**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-7(1-2)

Collected: 2/16/00 11:00:00 SPL Sample ID: 00020581-51

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	1030	10.0	1	E	02/28/00 15:00		203558
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	ND	5.0	1		02/26/00 0:10		202766
Surr: Pentacosane	97.4	% 55-155	1		02/26/00 0:10		202766
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/23/00 1:24		199121
Surr: 1,4-Difluorobenzene	87.1	% 63-122	1		02/23/00 1:24		199121
Surr: 4-Bromofluorobenzene	80.8	% 39-150	1		02/23/00 1:24		199121
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/23/00 1:24		199197
Ethylbenzene	ND	1.0	1		02/23/00 1:24		199197
Toluene	ND	1.0	1		02/23/00 1:24		199197
m,p-Xylene	5.3	1.0	1		02/23/00 1:24		199197
o-Xylene	ND	1.0	1		02/23/00 1:24		199197
Xylenes, Total	5.3	1.0	1		02/23/00 1:24		199197
Surr: 1,4-Difluorobenzene	89.2	% 59-127	1		02/23/00 1:24		199197
Surr: 4-Bromofluorobenzene	104.3	% 48-156	1		02/23/00 1:24		199197

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



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Client Sample ID BH-7(5-6)

Collected: 2/16/00 11:05:00 SPL Sample ID: 00020581-52

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	569	10.0	1		02/28/00 15:00		203559
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	ND	5.0	1		02/26/00 0:48		202767
Surr: Pentacosane	106.2	% 55-155	1		02/26/00 0:48		202767
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/23/00 1:52		199122
Surr: 1,4-Difluorobenzene	89.9	% 63-122	1		02/23/00 1:52		199122
Surr: 4-Bromofluorobenzene	85.3	% 39-150	1		02/23/00 1:52		199122
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/23/00 1:52		199198
Ethylbenzene	ND	1.0	1		02/23/00 1:52		199198
Toluene	ND	1.0	1		02/23/00 1:52		199198
m,p-Xylene	ND	1.0	1		02/23/00 1:52		199198
o-Xylene	ND	1.0	1		02/23/00 1:52		199198
Xylenes, Total	ND	1.0	1		02/23/00 1:52		199198
Surr: 1,4-Difluorobenzene	89.4	% 59-127	1		02/23/00 1:52		199198
Surr: 4-Bromofluorobenzene	111.3	% 48-156	1		02/23/00 1:52		199198

**Qualifiers:**  
 ND/U - Not Detected at the Reporting Limit  
 B - Analyte detected in the associated Method Blank  
 \* - Surrogate Recovery Outside Advisable QC Limits  
 J - Estimated Value between MDL and PQL

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



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

Client Sample ID BH-8(1-2) Collected: 2/16/00 11:40:00 SPL Sample ID: 00020581-55

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	1360	10.0	1	E	02/28/00 15:00		203560
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	550	100	20		02/26/00 1:27		202768
Surr: Pentacosane	1636.9	% 55-155	20	*	02/26/00 1:27		202768
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	6.4	0.10	1		02/23/00 3:18		199123
Surr: 1,4-Difluorobenzene	90.6	% 63-122	1		02/23/00 3:18		199123
Surr: 4-Bromofluorobenzene	321.8	% 39-150	1	*	02/23/00 3:18		199123
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	43	1.0	1		02/23/00 3:18		199199
Ethylbenzene	42	1.0	1		02/23/00 3:18		199199
Toluene	92	1.0	1		02/23/00 3:18		199199
m,p-Xylene	110	1.0	1		02/23/00 3:18		199199
o-Xylene	65	1.0	1		02/23/00 3:18		199199
Xylenes, Total	175	1.0	1		02/23/00 3:18		199199
Surr: 1,4-Difluorobenzene	109.1	% 59-127	1		02/23/00 3:18		199199
Surr: 4-Bromofluorobenzene	140.0	% 48-156	1		02/23/00 3:18		199199

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



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Client Sample ID BH-8(5-6)

Collected: 2/16/00 11:45:00 SPL Sample ID: 00020581-56

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	379	10.0	1		02/28/00 15:00		203561
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	6.1	5.0	1		02/26/00 3:22		202873
Surr: Pentacosane	121.1	% 55-155	1		02/26/00 3:22		202873
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/23/00 9:00		199247
Surr: 1,4-Difluorobenzene	105.7	% 63-122	1		02/23/00 9:00		199247
Surr: 4-Bromofluorobenzene	82.3	% 39-150	1		02/23/00 9:00		199247
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/23/00 9:06		199279
Ethylbenzene	ND	1.0	1		02/23/00 9:06		199279
Toluene	ND	1.0	1		02/23/00 9:06		199279
m,p-Xylene	ND	1.0	1		02/23/00 9:06		199279
o-Xylene	ND	1.0	1		02/23/00 9:06		199279
Xylenes, Total	ND	1.0	1		02/23/00 9:06		199279
Surr: 1,4-Difluorobenzene	89.6	% 59-127	1		02/23/00 9:06		199279
Surr: 4-Bromofluorobenzene	107.9	% 48-156	1		02/23/00 9:06		199279

**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, TEXAS 77054  
 (713) 660-0901

Client Sample ID BH-9(1-2) Collected: 2/16/00 1:20:00 SPL Sample ID: 00020581-59

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	310	10.0	1		02/28/00 15:00		203563
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	52	5.0	1		02/26/00 4:01		202844
Surr: Pentacosane	276.6	% 55-155	1	*	02/26/00 4:01		202844
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/23/00 16:16		199789
Surr: 1,4-Difluorobenzene	92.2	% 63-122	1		02/23/00 16:16		199789
Surr: 4-Bromofluorobenzene	81.4	% 39-150	1		02/23/00 16:16		199789
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/23/00 16:16		200086
Ethylbenzene	ND	1.0	1		02/23/00 16:16		200086
Toluene	ND	1.0	1		02/23/00 16:16		200086
m,p-Xylene	ND	1.0	1		02/23/00 16:16		200086
o-Xylene	ND	1.0	1		02/23/00 16:16		200086
Xylenes, Total	ND	1.0	1		02/23/00 16:16		200086
Surr: 1,4-Difluorobenzene	98.1	% 59-127	1		02/23/00 16:16		200086
Surr: 4-Bromofluorobenzene	102.2	% 48-156	1		02/23/00 16:16		200086

**Qualifiers:**

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 B - Analyte detected in the associated Method Blank  
 \* - Surrogate Recovery Outside Advisable QC Limits  
 J - Estimated Value between MDL and PQL

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Client Sample ID BH-9(10-11) Collected: 2/16/00 1:30:00 SPL Sample ID: 00020581-61

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	138	10.0	1		02/28/00 15:00		203564
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	ND	10	1		02/24/00 5:41		204073
Surr: Pentacosane	114.1	% 55-155	1		02/24/00 5:41		204073
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/23/00 10:00		199248
Surr: 1,4-Difluorobenzene	146.5	% 63-122	1	*	02/23/00 10:00		199248
Surr: 4-Bromofluorobenzene	87.8	% 39-150	1		02/23/00 10:00		199248
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/23/00 10:04		199280
Ethylbenzene	ND	1.0	1		02/23/00 10:04		199280
Toluene	ND	1.0	1		02/23/00 10:04		199280
m,p-Xylene	ND	1.0	1		02/23/00 10:04		199280
o-Xylene	ND	1.0	1		02/23/00 10:04		199280
Xylenes, Total	ND	1.0	1		02/23/00 10:04		199280
Surr: 1,4-Difluorobenzene	88.5	% 59-127	1		02/23/00 10:04		199280
Surr: 4-Bromofluorobenzene	110.2	% 48-156	1		02/23/00 10:04		199280

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



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Client Sample ID BH-10(1-2) Collected: 2/16/00 2:00:00 SPL Sample ID: 00020581-63

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	982	10.0	1		02/28/00 15:00		203565
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	ND	5.0	1		02/24/00 6:19		201297
Surr: Pentacosane	101.6	% 55-155	1		02/24/00 6:19		201297
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/23/00 11:00		199249
Surr: 1,4-Difluorobenzene	134.0	% 63-122	1	*	02/23/00 11:00		199249
Surr: 4-Bromofluorobenzene	82.4	% 39-150	1		02/23/00 11:00		199249
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/23/00 11:07		199281
Ethylbenzene	ND	1.0	1		02/23/00 11:07		199281
Toluene	ND	1.0	1		02/23/00 11:07		199281
m,p-Xylene	ND	1.0	1		02/23/00 11:07		199281
o-Xylene	ND	1.0	1		02/23/00 11:07		199281
Xylenes, Total	ND	1.0	1		02/23/00 11:07		199281
Surr: 1,4-Difluorobenzene	88.4	% 59-127	1		02/23/00 11:07		199281
Surr: 4-Bromofluorobenzene	108.9	% 48-156	1		02/23/00 11:07		199281

**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-10(10-11) Collected: 2/16/00 2:05:00 SPL Sample ID: 00020581-65

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>				<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>	
Chloride	ND	10.0	1		02/28/00 15:00		203566
<b>DIESEL RANGE ORGANICS</b>				<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>	
Diesel Range Organics	ND	5.0	1		02/24/00 10:10		201301
Surr: Pentacosane	105.5	% 55-155	1		02/24/00 10:10		201301
<b>GASOLINE RANGE ORGANICS</b>				<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>	
Gasoline Range Organics	ND	0.10	1		02/23/00 11:03		199250
Surr: 1,4-Difluorobenzene	130.4	% 63-122	1	*	02/23/00 11:03		199250
Surr: 4-Bromofluorobenzene	80.5	% 39-150	1		02/23/00 11:03		199250
<b>PURGEABLE AROMATICS</b>				<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>	
Benzene	ND	1.0	1		02/23/00 11:36		199282
Ethylbenzene	ND	1.0	1		02/23/00 11:36		199282
Toluene	ND	1.0	1		02/23/00 11:36		199282
m,p-Xylene	ND	1.0	1		02/23/00 11:36		199282
o-Xylene	ND	1.0	1		02/23/00 11:36		199282
Xylenes, Total	ND	1.0	1		02/23/00 11:36		199282
Surr: 1,4-Difluorobenzene	88.2	% 59-127	1		02/23/00 11:36		199282
Surr: 4-Bromofluorobenzene	107.7	% 48-156	1		02/23/00 11:36		199282

**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

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 D - Surrogate Recovery Unreportable due to Dilution  
 MI - Matrix Interference



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Client Sample ID BH-11(1-2) Collected: 2/16/00 2:25:00 SPL Sample ID: 00020581-67

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	ND	10.0	1		02/28/00 15:00		203569
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	ND	5.0	1		02/24/00 11:27		201303
Surr: Pentacosane	132.5	% 55-155	1		02/24/00 11:27		201303
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/23/00 4:33		198912
Surr: 1,4-Difluorobenzene	89.3	% 63-122	1		02/23/00 4:33		198912
Surr: 4-Bromofluorobenzene	114.4	% 39-150	1		02/23/00 4:33		198912
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/23/00 11:31		198887
Ethylbenzene	ND	1.0	1		02/23/00 11:31		198887
Toluene	ND	1.0	1		02/23/00 11:31		198887
m,p-Xylene	ND	1.0	1		02/23/00 11:31		198887
o-Xylene	ND	1.0	1		02/23/00 11:31		198887
Xylenes, Total	ND	1.0	1		02/23/00 11:31		198887
Surr: 1,4-Difluorobenzene	104.2	% 59-127	1		02/23/00 11:31		198887
Surr: 4-Bromofluorobenzene	102.4	% 48-156	1		02/23/00 11:31		198887

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



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Client Sample ID BH-11(5-6) Collected: 2/16/00 2:30:00 SPL Sample ID: 00020581-68

Site: Pogo/Ec. Hill "B" (SE of #6)

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
<b>CHLORIDE, TOTAL</b>			<b>MCL</b>	<b>E325.3</b>	<b>Units: mg/Kg</b>		
Chloride	ND	10.0	1		02/28/00 15:00		203570
<b>DIESEL RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Diesel Range Organics	ND	5.0	1		02/24/00 12:05		201304
Surr: Pentacosane	107.9	% 55-155	1		02/24/00 12:05		201304
<b>GASOLINE RANGE ORGANICS</b>			<b>MCL</b>	<b>SW8015B</b>	<b>Units: mg/Kg</b>		
Gasoline Range Organics	ND	0.10	1		02/22/00 20:44		198503
Surr: 1,4-Difluorobenzene	91.4	% 63-122	1		02/22/00 20:44		198503
Surr: 4-Bromofluorobenzene	81.5	% 39-150	1		02/22/00 20:44		198503
<b>PURGEABLE AROMATICS</b>			<b>MCL</b>	<b>SW8020A</b>	<b>Units: ug/Kg</b>		
Benzene	ND	1.0	1		02/22/00 20:44		198472
Ethylbenzene	ND	1.0	1		02/22/00 20:44		198472
Toluene	ND	1.0	1		02/22/00 20:44		198472
m,p-Xylene	ND	1.0	1		02/22/00 20:44		198472
o-Xylene	ND	1.0	1		02/22/00 20:44		198472
Xylenes, Total	ND	1.0	1		02/22/00 20:44		198472
Surr: 1,4-Difluorobenzene	93.1	% 59-127	1		02/22/00 20:44		198472
Surr: 4-Bromofluorobenzene	104.1	% 48-156	1		02/22/00 20:44		198472

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

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 D - Surrogate Recovery Unreportable due to Dilution  
 MI - Matrix Interference

# Analysis Request and Chain of Custody Record

## HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.  
Midland, Texas 79705

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

CLIENT NAME: Poly Producing Co. SITE MANAGER: Mike Lavarez

PROJECT NO.: 1345 PROJECT NAME: Log/ Ec. Well "B" (SE of C)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD				
									HCL	HNO3	ICE	NONE	
	8/15/00	935	S			BH-1 (2-3)	1						
		940	S			BH-1 (3-4)	1						
		945	S			BH-1 (4-5)	1						
		948	S			BH-1 (5-6)	1						
		957	S			BH-1 (6-7) • Lun 2/21/00 pickup	1						
		1000	S			BH-1 (7-8)	1						
		1005	S			BH-1 (8-9)	1						
		1010	S			BH-1 (9-10)	1						
		1015	S			BH-1 (15-16) • Lun 2/21/00 pickup	1						
		1020	S			BH-1 (20-21)	1						

RELINQUISHED BY: (Signature) [Signature] Date: 2/21/00 Time: 12:00  
 RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

RECEIVING LABORATORY: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_  
 CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_  
 CONTACT: \_\_\_\_\_ PHONE: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_  
 MATRIX: W-Water A-Air S-Solid S-Soil SL-Sludge O-Other  
 REMARKS: \_\_\_\_\_

ANALYSIS REQUEST  
(Circle or Specify Method No.)

<input type="checkbox"/>	BTEX 8020/808
<input type="checkbox"/>	MTH 8080/808
<input type="checkbox"/>	TPH 416.1 8018 MOD. 110106
<input type="checkbox"/>	PAH 8870
<input type="checkbox"/>	PCRA Metals Ag As Ba Cd Cr Pb Hg Se
<input type="checkbox"/>	TCIP Metals Ag As Ba Cd Cr Pd Hg Se
<input type="checkbox"/>	TCIP Volatiles
<input type="checkbox"/>	TCIP Semi Volatiles
<input type="checkbox"/>	RCM
<input type="checkbox"/>	GCMS Vol. 8240/8260/824
<input type="checkbox"/>	GCMS Semi Vol. 8270/825
<input type="checkbox"/>	PCB's 8080/808
<input type="checkbox"/>	Post. 808/808
<input type="checkbox"/>	BOD, TSS, pH, TDS, Chloride
<input type="checkbox"/>	Gamma Spec
<input type="checkbox"/>	Alpha Beta (Air)
<input type="checkbox"/>	PLM (Asbestos)

SAMPLED BY: (Print & Sign) [Signature] Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL # \_\_\_\_\_  
 HAND DELIVERED UPS OTHER: \_\_\_\_\_  
 HIGHLANDER CONTACT PERSON: Mike Lavarez  
 Remits by: \_\_\_\_\_  
 RUSH Charges Authorized: Yes  No

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MW 2-200

# Analysis Request and Chain of Custody Record

## HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.  
Midland, Texas 79705

(915) 682-4558 Fax (915) 682-3946

CLIENT NAME: Pope Producing Co. SITE MANAGER: 1/KE Tower

PROJECT NO.: 1345 PROJECT NAME: Pop/E.C. Hill # (SE of #6)

LAB I.D. NUMBER: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ MATRIX: \_\_\_\_\_ COMP. GRAB: \_\_\_\_\_

SAMPLE IDENTIFICATION: Lea County Am.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD						
								HCL	HNO3	ICE	NONE			
215/001025			S		1	1								
		1030	S		1	1								
		1040	S		1	1								
		1110	S		1	1								
		1013	S		1	1								
		1113	S		1	1								
		1125	S		1	1								
		1130	S		1	1								
		1135	S		1	1								
		1140	S		1	1								

RELINQUISHED BY: (Signature) \_\_\_\_\_ DATE: 2/17/00 TIME: 3:16 RECEIVED BY: (Signature) \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

RELINQUISHED BY: (Signature) \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ RECEIVED BY: (Signature) \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

RELINQUISHED BY: (Signature) \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ RECEIVED BY: (Signature) \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

RECEIVING LABORATORY: SLC ADDRESS: \_\_\_\_\_ CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

SAMPLE CONDITION WHEN RECEIVED: \_\_\_\_\_ MATRIX: W-Water A-Air SD-Solid B-Soil SL-Sludge O-Other

HIGHLANDER CONTACT PERSON: 1/KE Tower

RESULTS BY: \_\_\_\_\_

RUSH CHARGE AUTHORIZED: Yes  No

PAGE: 2 OF: 7

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8020/808	PCB's 8080/808	GCMS Vol. 8240/8260/824	GCMS Seml. Vol. 8270/825	PCB's 8080/808	BOD, TSS, pH, TDS Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
MTEB 8020/808	TPH 418.1 8016 MOD. 7X1006	PAH 8270	RCA Metals Ag As Ba Cd Cr Pb Hg Se	TCIP Metals Ag As Ba Cd Cr Pb Hg Se	TCIP Volatiles	TCIP Semi Volatiles	RCI	

00070581

Analysis Request and Chain of Custody Record

**HIGHLANDER ENVIRONMENTAL CORP.**

1910 N. Big Spring St.  
Midland, Texas 79705

(915) 682-4558 Fax (915) 682-3946

CLIENT NAME: Pogo Rodriguez Co. SITE MANAGER: KE Tawarz

PROJECT NO.: 1345 PROJECT NAME: Pogo/E.C. Hill B. (set #6)

SAMPLE IDENTIFICATION: Sea County N.M.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION	FILTERED (Y/N)	PRESERVATIVE METHOD					
								HCL	HNO3	ICE	NONE		
	2/15/00	1145	S			BH-2 (8-9')							
		1150	S			BH-2 (9-10')							
		1305	S			BH-2 (15-16') • Run per I.e. 2/10/00							
		1310	S			BH-2 (20-21')							
		1320	S			BH-2 (25-26')							
		1348	S			BH-3 (1-2')							
		1352	S			BH-3 (2-3')							
		1355	S			BH-3 (3-4')							
		1400	S			BH-3 (4-5')							
		1405	S			BH-3 (5-6')							

RELINQUISHED BY: (Signature) [Signature] Date: 2/17/00 Time: 1:20

RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

RECEIVING LABORATORY: SPC

ADDRESS: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

CITY: \_\_\_\_\_ PHONE: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

SAMPLE CONDITION WHEN RECEIVED: \_\_\_\_\_

MATRIX: W-Water A-Air S-Solid S-S-Solids O-Other

REMARKS: \_\_\_\_\_

PAGE: 3 OF: 7

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 0080/008	RCI	GCMS Vol. 8240/8280/824	GCMS Semi. Vol. 8270/825	PCB's 8080/808	Post. 808/808	BOD, TSS, PH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
MTBE 0080/008	TPH 418.1	TPH 8016 MOD	TPH 71006	PAH 6870	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCIP Metals Ag As Ba Cd Cr Pd Hg Se	TCIP Volatiles	TCIP Semi Volatiles	

SAMPLED BY: (Print & Sign) KE Tawarz Date: \_\_\_\_\_ Time: \_\_\_\_\_

SAMPLE SHIPPED BY: (Circle) \_\_\_\_\_ AIRBILL # \_\_\_\_\_

FEDEX \_\_\_\_\_ HAND DELIVERED \_\_\_\_\_ UPS \_\_\_\_\_ OTHER: \_\_\_\_\_

HIGHLANDER CONTACT PERSON: KE Tawarz

Remits by: \_\_\_\_\_

RUSH Charges Authorized: Yes \_\_\_\_\_ No \_\_\_\_\_

90-22-2-8

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# Analysis Request and Chain of Custody Record

## HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.  
Midland, Texas 79705

(915) 682-4558

Fax (915) 682-3946

CLIENT NAME: <i>Pogo Producing Co</i>	SITE MANAGER: <i>HE Wagner</i>
PROJECT NO.: <i>345</i>	PROJECT NAME: <i>E.C. Hill "B" (SE of #6)</i>
LAB I.D. NUMBER	SAMPLE IDENTIFICATION
DATE	DATE
TIME	TIME
MATRIX	MATRIX
COMP.	COMP.
GRAB	GRAB
1407	BH-3 (6-7)
1410	BH-3 (7-8)
1413	BH-3 (8-9)
1415	BH-3 (9-10)
1420	BH-3 (15-16) • Run per site 2/21/05
1430	BH-3 (20-21) • Run "
1435	BH-3 (25-26)
1440	BH-3 (30-31)
2/16/05 925	BH-4 (1-2) • Run "
2/16/05 930	BH-4 (5-6)

RELINQUISHED BY: (Signature) *HE Wagner* Date: *2/17/05* Time: *4:50*

RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

RECEIVING LABORATORY: *SPL*

ADDRESS: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

CITY: \_\_\_\_\_ PHONE: \_\_\_\_\_

CONTACT: \_\_\_\_\_

MATRIX: W-Water B-Sol A-Air SI-Sludge SD-Solid O-Other

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

REMARKS: \_\_\_\_\_

### ANALYSIS REQUEST

(Circle or Specify Method No.)

RTX 8080/808	
MTE 8080/808	
TPH 418.1	8015 MOD
PAH 8870	
RCA Metals Ag As Ba Cd Cr Pb Hg Se	
TCP Metals Ag As Ba Cd Cr Pb Hg Se	
TCP Volatiles	
TCP Semi Volatiles	
RCI	
GCMS Vol. B240/B280/B24	
GCMS Semi Vol. B270/B25	
PCB # 8080/808	
Post. 808/808	
BOD, TSS, PH, TDS, Chloride	
Gamma Spec.	
Alpha Beta (Air)	
PLM (Asbestos)	

DATE:	
TIME:	
SAMPLED BY: (Print & Sign)	<i>HE Wagner</i>
DATE:	
TIME:	
SAMPLE SHIPPED BY: (Circle)	FUS
FEEDEX	UPS
HAND DELIVERED	
OTHER:	
RESULTS BY:	
RUSH Charges Authorized:	Yes
No	

HIGHLANDER CONTACT PERSON: *HE Wagner*

PAGE: *7*

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00-00-210





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Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.  
Midland, Texas 79705

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

CLIENT NAME: Pogo Producing Co. SITE MANAGER: IKE Kwaer  
 PROJECT NO.: 1345 PROJECT NAME: Pogo/E.C. Hill "B" (SE of #6)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION	PRESERVATIVE METHOD				NUMBER OF CONTAINERS	FILTERED (Y/N)
							HCL	HNO3	ICE	NONE		
	2/16/00	1330	S			BH-9 (10-11) • RUN per the 2/10/00					1	
		1335	S			BH-9 (15-16)					1	
		1400	S			BH-10 (1-2) • RUN per the 2/10/00					1	
		1403	S			BH-10 (5-6)					1	
		1405	S			BH-10 (10-11) • RUN per the 2/10/00					1	
		1410	S			BH-10 (15-16)					1	
		1425	S			BH-11 (1-2) • RUN per the 2/10/00					1	
		1430	S			BH-11 (5-6) • RUN per the 2/10/00					1	
		1433	S			BH-11 (10-11)					1	
		1435	S			BH-11 (15-16)					1	

RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: 2/17/00 Time: 3:00  
 RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RELINQUISHED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 RECEIVING LABORATORY: SFC RECEIVED BY: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_  
 CONTACT: \_\_\_\_\_ PHONE: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

SAMPLE CONDITION WHEN RECEIVED: \_\_\_\_\_ MATRIX: W-Water A-Air S-Solid  
 S-Solid O-Other  
 REMARKS: \_\_\_\_\_

ANALYSIS REQUEST (Circle or Specify Method No.)

<input type="checkbox"/>	BTEX 8020/808
<input type="checkbox"/>	OTHER 8080/808 (Protein)
<input type="checkbox"/>	TPH 418.1 8018 MOD. TX1005
<input type="checkbox"/>	PAH 8870
<input type="checkbox"/>	RCRA Metals Ag As Ba Cd Cr Pb Hg Se
<input type="checkbox"/>	TCIP Metals Ag As Ba Cd Cr Pd Hg Se
<input type="checkbox"/>	TCIP Volatiles
<input type="checkbox"/>	TCIP Semi Volatiles
<input type="checkbox"/>	RCI
<input type="checkbox"/>	GCMS Vol. 8240/8280/824
<input type="checkbox"/>	GCMS Semi Vol. 8270/825
<input type="checkbox"/>	PCB# 8080/808
<input type="checkbox"/>	Part. 808/808
<input type="checkbox"/>	BOD, TSS, PH, TDS, Chloride
<input type="checkbox"/>	Gamma Spec.
<input type="checkbox"/>	Alpha Beta (Air)
<input type="checkbox"/>	PLM (Asbestos)

SAMPLED BY: IKE Kwaer Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 SAMPLE SHIPPED BY: (Circle) FEDEx AIRBILL # \_\_\_\_\_  
 HAND DELIVERED \_\_\_\_\_ UPS \_\_\_\_\_ OTHER: \_\_\_\_\_  
 HIGHLANDER CONTACT PERSON: IKE Kwaer Results by: \_\_\_\_\_  
 FUSEE Charges Authorized: Yes \_\_\_\_\_ No \_\_\_\_\_

REMARKS: \_\_\_\_\_

00-00-200