

# *Basin Environmental Service Technologies, LLC*

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## **REMEDIATION SUMMARY & RISK-BASED SITE CLOSURE REQUEST**

**BOPCO, LP**  
**BASS 3 FEDERAL WELL #4 8-16-11**  
**Eddy County, New Mexico**  
**Unit Letter "I" (NE/SE), Section 3, Township 22 South, Range 28 East**  
**Latitude 32.419979° North, Longitude 104.070256° West**

Prepared For:

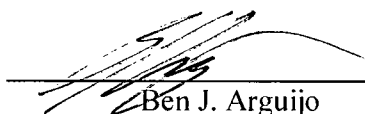
BOPCO, LP  
522 W. Mermod, Suite 704  
Carlsbad, New Mexico 88220



Prepared By:

Basin Environmental Service Technologies, LLC  
3100 Plains Highway  
Lovington, New Mexico 88260

**July 2012**

  
Ben J. Arguijo  
Project Manager

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## 1.0 INTRODUCTION & BACKGROUND INFORMATION

Basin Environmental Service Technologies, LLC (Basin), on behalf of BOPCO, LP (BOPCO), has prepared this *Remediation Summary & Risk-Based Site Closure Request* for the release site known as Bass 3 Federal Well #4 8-16-11. The legal description of the release site is Unit Letter "I" (NE/SE), Section 3, Township 22 South, Range 28 East, in Eddy County, New Mexico. The geographic coordinates of the release site are 32.419979° North latitude and 104.070256 West longitude. The property affected by the release is owned by The United States Department of the Interior - Bureau of Land Management (BLM). Please reference Figure 1 for a "Site Location Map".

On August 16, 2011, BOPCO discovered a release had occurred near the Bass 3 Federal Well #4 site. The flow line delivering produced fluid from the well to the tank battery developed a leak, resulting in a release of produced water and crude oil. During initial response activities, the well was shut in, and a temporary clamp was installed to mitigate the release.

The release was reported to the New Mexico Oil Conservation Division (NMOCD) Artesia District Office. The "Release Notification and Corrective Action" (Form C-141) indicated approximately fifteen barrels (15 bbls) of produced water and approximately ten barrels (10 bbls) of crude oil were released, with no recovery. The release affected an area of pasture land measuring approximately three thousand square feet (3,000 ft<sup>2</sup>). The Form C-141 is provided as Appendix A. General photographs of the release site are provided as Appendix B.

## 2.0 NMOCD SITE CLASSIFICATION

A search of the New Mexico Water Rights Reporting System (NMWRRS) database maintained by the New Mexico Office of the State Engineer (NMOSE) indicated information was unavailable for Section 3, Township 22 South, Range 28 East. A depth to groundwater reference map utilized by the NMOCD indicates groundwater should be encountered at approximately one hundred and fifteen feet (115') to one hundred and twenty feet (120') below ground surface (bgs). Based on the NMOCD ranking system, zero (0) points will be assigned to the site as a result of this criterion.

A search of the NMWRRS database indicated there are no water wells within 1,000 feet of the release. Based on the NMOCD ranking system, zero (0) points will be assigned to the site as a result of this criterion.

There are no surface water bodies within 1,000 feet of the release. Based on the NMOCD ranking system, zero (0) points will be assigned to the site as a result of this criterion.

NMOCD guidelines indicate the Bass 3 Federal Well #4 8-16-11 release site has an initial ranking score of zero (0) points. The soil remediation levels for a site with a ranking score of zero (0) points are as follows:

- Benzene – 10 mg/Kg (ppm)
- BTEX – 50 mg/Kg (ppm)
- TPH – 5,000 mg/Kg (ppm)
- 

The New Mexico Administrative Code (NMAC) does not currently specify a remediation level for chloride concentrations in soil. Chloride remediation levels are set by the NMOCD on a site-specific basis.

### 3.0 SUMMARY OF SOIL REMEDIATION ACTIVITIES

Following initial response activities, on September 6, 2011, delineation of the release site commenced. Two (2) delineation trenches (East Trench and West Trench) were advanced at the site to investigate the vertical and horizontal extent of hydrocarbon impact. Trench "East Trench" was advanced at the release point to a total depth of approximately twelve feet (12') bgs. Trench "West Trench" was advanced at the terminus of the flow path to a total depth of approximately fourteen feet (14') bgs.

Soil samples from the delineation trenches were field-screened using a chloride test kit and/or Photo-Ionization Detector (PID). Field-screening indicated that further vertical delineation would be required in the areas defined by delineation trenches East Trench and West Trench.

On October 4, 2011, three (3) soil borings (Background, SB-1, and SB-2) were advanced at the site to further delineate the vertical extent of hydrocarbon impact. Soil samples were collected at five-foot (5') drilling intervals and field screened using a chloride test kit and/or PID. Selected soil samples were submitted to Cardinal Laboratories (Hobbs, New Mexico) for analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX), total petroleum hydrocarbons (TPH), and/or chlorides using EPA methods SW-846 8021b, SW-846 8015M, and 4500 Cl-B, respectively. Table 1 summarizes the "Concentrations of Benzene, BTEX, TPH & Chlorides in Soil". A "Site & Sample Location Map" is provided as Figure 2. Soil boring logs are provided as Appendix C. Laboratory analytical reports are provided as Appendix D.

Soil boring "Background" was located to the southwest of the release site, upgradient of the release, in order to establish the baseline concentration of chlorides in the area. The soil boring was advanced to a total depth of approximately forty-one feet (41') bgs. Soil samples collected at drilling depths of five feet (5'), twenty feet (20'), and forty feet (40') were submitted to the laboratory for analysis of chloride concentrations. Laboratory analytical results indicated chloride concentrations ranged from 16.0 mg/Kg in soil sample Background @ 40' to 336 mg/Kg in soil sample Background @ 5'.

Soil boring "SB-1" was located at the release point, in the area defined by delineation trench "East Trench". The soil boring was advanced to a total depth of approximately one hundred feet (100'). Soil samples collected at drilling depths of five feet (5'), ten feet (10'), twenty feet (20'), forty feet (40'), sixty feet (60'), eighty feet (80'), ninety feet (90'), and ninety-five feet (95') were submitted to the laboratory for analysis of TPH and/or chloride concentrations. The soil sample collected at five feet (5') bgs was also analyzed for BTEX concentrations. Laboratory analytical results indicated TPH concentrations were less than the appropriate laboratory method detection limit (MDL) in all submitted soil samples. Chloride concentrations ranged from 128 mg/Kg in soil sample SB-1 @ 95' to 10,200 mg/Kg in soil sample SB-1 @ 60'. The benzene concentration in soil sample SB-1 @ 5' was less than the appropriate laboratory MDL, and the BTEX concentration was 0.260 mg/Kg.

Soil boring "SB-2" was located at the terminus of the flow path of the release, in the area defined by delineation trench "West Trench". The soil boring was advanced to a total depth of approximately ninety feet (90'). Soil samples collected at drilling depths of five feet (5'), ten feet (10'), twenty feet (20'), forty feet (40'), sixty feet (60'), eighty-five feet (85'), and ninety feet (90') were submitted to the laboratory for analysis of TPH and/or chloride concentrations. The soil sample collected at five feet (5') bgs was also analyzed for BTEX concentrations. Laboratory analytical results indicated TPH concentrations ranged from less than the appropriate laboratory MDL in soil sample SB-2 @ 10' to 53.4 mg/Kg in soil sample SB-2 @ 5'. Chloride concentrations ranged from 48.0 mg/Kg in soil sample SB-2 @ 90' to 10,600 mg/Kg in soil sample SB-2 @ 5'. The benzene concentration in soil

sample SB-2 @ 5' was less than the appropriate laboratory MDL, and the BTEX concentration was 0.235 mg/Kg.

On January 4, 2012, excavation of impacted soil commenced at the site. Hach Quantab Chloride Low Range (30-600 mg/Kg) Titrators were used to field-screen the horizontal extent of impacted soil and to guide the excavation. Excavated soil was stockpiled on-site, pending final disposition.

From January 4 through January 6, 2012, approximately one thousand, four hundred and twenty cubic yards (1,420 yd<sup>3</sup>) of impacted soil was excavated and stockpiled on-site, pending final disposition.

On January 5, 2012, four (4) soil samples (North Wall, South Wall, East Wall and West Wall) were collected from the sidewalls of the excavation. The soil samples were submitted to the laboratory for analysis of TPH and chloride concentrations. Laboratory analytical results indicated TPH concentrations were less than the appropriate laboratory MDL in all submitted soil samples. Chloride concentrations ranged from less than the laboratory MDL in soil sample West Wall to 752 mg/Kg in soil sample East Wall. Review of laboratory analytical results indicated TPH and chloride concentrations in all submitted soil samples were less than the regulatory remediation action levels (RRAL's) established for the site.

On January 18, 2012, a twenty (20) mil polyurethane liner was installed in the floor of the excavation at approximately five feet (5') bgs. Approximately six inches (6") of non-impacted pad sand was installed both above and below the liner to protect the liner from damage during installation and backfilling activities.

From January 18 through January 27, 2012, based on based on results of laboratory analyses and field screens, the excavation was backfilled in eighteen-inch (18") lifts, compacted, and contoured to fit the surrounding topography. Final dimensions of the excavation were approximately one hundred and thirty feet (130') in length, ranging in width from approximately thirty-five feet (35') to approximately forty-eight feet (48'), and approximately five feet (5') in depth. The stockpiled material on-site was transported to Lea Land, Inc. (NMOCDD Permit # WM-01-035), for disposal.

Reseeding of the Bass 3 Federal Well #4 8-16-11 release site with vegetation acceptable to the BLM will occur prior to the close of the 2012 calendar year.

#### **4.0 QA/QC PROCEDURES**

##### **4.1 Soil Sampling**

Soil samples were delivered to Cardinal Laboratories, Inc., in Hobbs, New Mexico, for TPH and/or chloride analyses using the methods described below:

- BTEX concentrations in accordance with EPA Method SW-846 8021b
- TPH concentrations in accordance with EPA Method SW-846 8015M
- Chloride concentrations in accordance with EPA Method 4500 Cl-B

## **4.2 Decontamination of Equipment**

Cleaning of the sampling equipment was the responsibility of the environmental technician. Prior to use, and between each sample, the sampling equipment was cleaned with Liqui-Nox® detergent and rinsed with distilled water.

## **4.3 Laboratory Protocol**

The laboratory was responsible for proper QA/QC procedures after signing the chain-of-custody form(s). These procedures were either transmitted with the laboratory reports or are on file at the laboratory.

## **5.0 SITE CLOSURE REQUEST**

Remediation activities conducted at the Bass 3 Federal Well #4 8-16-11 release site met the objectives set forth in the *Remediation Summary & Site Closure Proposal* dated November 2011. Soil samples collected from the sidewalls of the excavation were analyzed by an NMOCD-approved laboratory, and concentrations of BTEX, TPH, and chloride were below the regulatory remediation action levels established for the site. Based on these analytical results, Basin recommends BOPCO provide the NMOCD Artesia District Office and the BLM a copy of this *Remediation Summary & Risk-Based Site Closure Request* and request the NMOCD grant site closure to the Bass 3 Federal Well #4 8-16-11 release site.

## **6.0 LIMITATIONS**

Basin Environmental Service Technologies, LLC, has prepared this *Remediation Summary & Risk-Based Site Closure Request* to the best of its ability. No other warranty, expressed or implied, is made or intended. Basin has examined and relied upon documents referenced in the report and on oral statements made by certain individuals. Basin has not conducted an independent examination of the facts contained in referenced materials and statements. Basin has presumed the genuineness of these documents and statements and that the information provided therein is true and accurate. Basin has prepared this report in a professional manner, using the degree of skill and care exercised by similar environmental consultants. Basin notes that the facts and conditions referenced in this report may change over time, and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

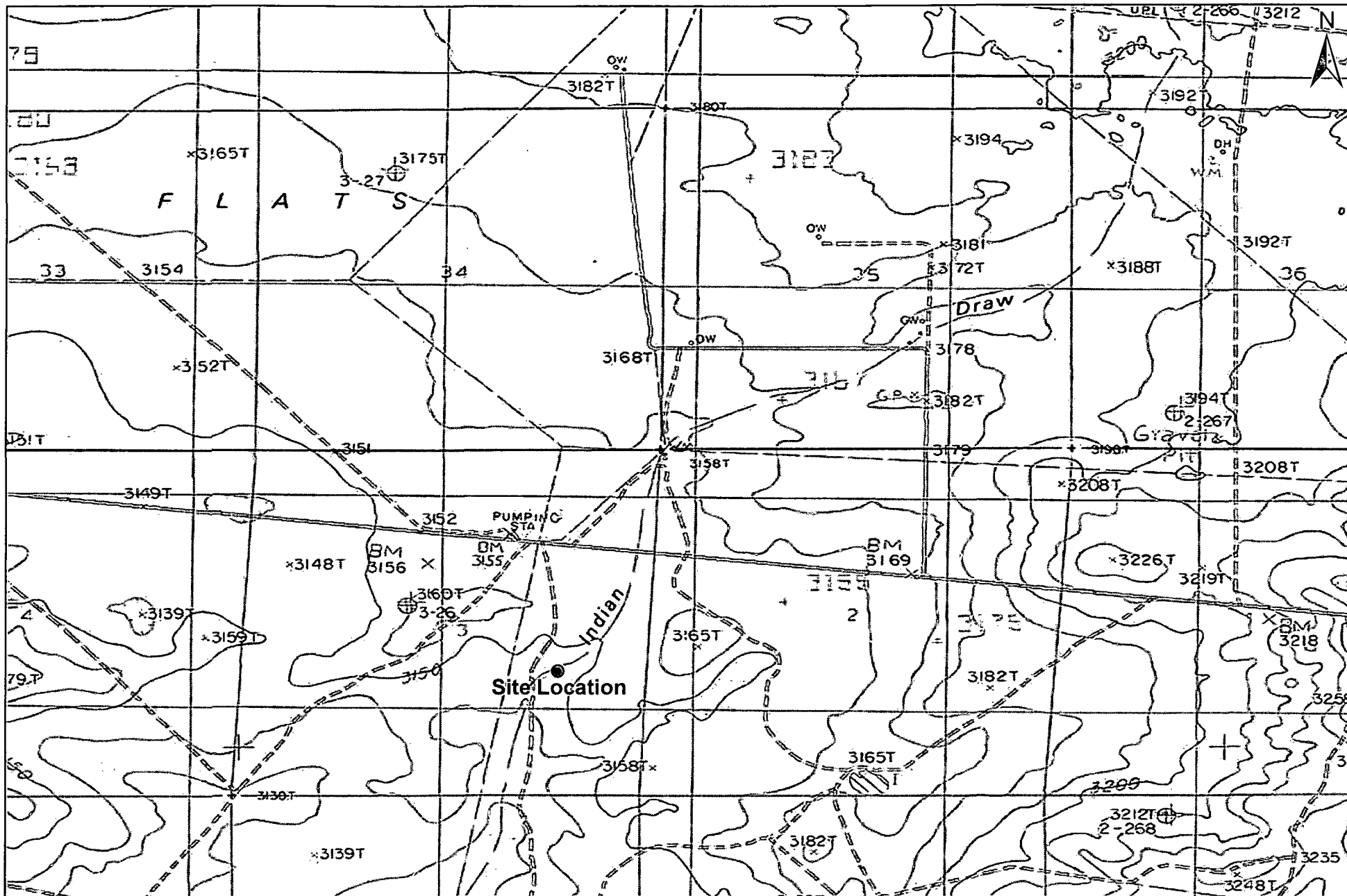
This report has been prepared for the benefit of BOPCO, LP. The information contained in this report, including all exhibits and attachments, may not be used by any other party without the express consent of Basin Environmental Service Technologies, LLC, and/or BOPCO, LP.

## **7.0 DISTRIBUTION:**

- Copy 1: Mike Bratcher  
New Mexico Energy, Minerals and Natural Resources Department  
Oil Conservation Division (District 2)  
1301 E. Grand Avenue  
Artesia, NM 88210
- Copy 2: James Amos  
Bureau of Land Management  
602 E. Greene Street  
Carlsbad, NM 88220
- Copy 3: Tony Savoie  
BOPCO, LP  
522 W. Mermod, Suite 704  
Carlsbad, NM 88220
- Copy 4: Basin Environmental Service Technologies, LLC  
P.O. Box 301  
Lovington, NM 88260

# Figures





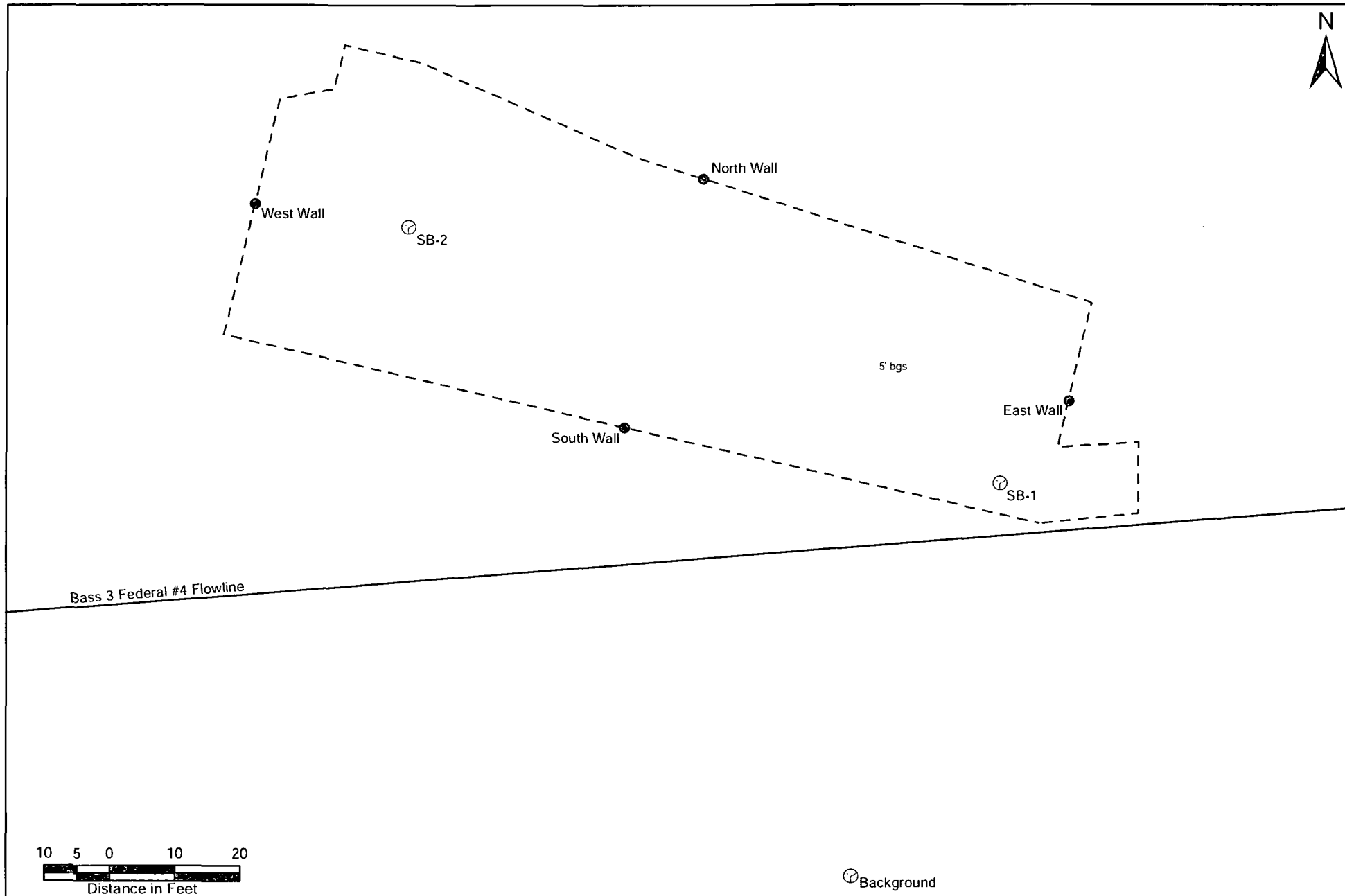
1,000 500 0 1,000 2,000  
Distance in Feet

**Figure 1**  
**Site Location Map**  
**BOPCO, LP**  
**Bass 3 Federal Well #4 8-16-11**  
**Eddy County, New Mexico**



Basin Environmental Service Technologies, LLC  
3100 Plains Hwy.  
Lovington, NM 88260

Drawn By: BJA	Checked By: BRB
April 13, 2012	Scale: 1" = 2000'



Legend:

--- Excavation Extent    ⊙ Soil Boring

— Pipeline    ● Sample Location

Figure 2  
Site & Sample Location Map  
BOPCO, LP  
Bass 3 Federal Well #4 8-16-11  
Eddy County, New Mexico

⊙ Background



Basin Environmental Service Technologies, LLC  
3100 Plains Hwy.  
Lovington, NM 88260

Drawn By: BJA	Checked By: BRB
April 13, 2012	Scale: 1" = 20'

# Tables

TABLE 1

## CONCENTRATIONS OF BENZENE, BTEX, TPH &amp; CHLORIDES IN SOIL

BOPCO, LP  
BASS 3 FEDERAL #4 8-16-11  
EDDY COUNTY, NEW MEXICO

SAMPLE LOCATION	SAMPLE DEPTH (BGS)	SAMPLE DATE	SOIL STATUS	METHOD: EPA SW 846-8021B, 5030					METHOD: 8015M			TOTAL TPH C <sub>6</sub> -C <sub>35</sub> (mg/Kg)	4500 Cl-B CHLORIDE (mg/Kg)
				BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL- BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)	TOTAL BTEX (mg/Kg)	GRO C <sub>6</sub> - C <sub>12</sub> (mg/Kg)	DRO C <sub>12</sub> -C <sub>28</sub> (mg/Kg)	ORO C <sub>28</sub> - C <sub>35</sub> (mg/Kg)		
SB 1 @ 5'	5'	10/4/2011	In-Situ	<0.050	<0.050	0.055	0.205	0.260	<10.0	<10.0	<10.0	<10.0	9,400
SB 1 @ 10'	10'	10/4/2011	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	6,000
SB 1 @ 20'	20'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	7,840
SB 1 @ 40'	40'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	7,600
SB 1 @ 60'	60'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	10,200
SB 1 @ 80'	80'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	4,960
SB 1 @ 90'	90'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	208
SB 1 @ 95'	95'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	128
SB 2 @ 5'	5'	10/4/2011	In-Situ	<0.050	<0.050	<0.050	0.235	0.235	<10.0	53.4	<10.0	53.4	10,600
SB 2 @ 10'	10'	10/4/2011	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	8,600
SB 2 @ 20'	20'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	5,000
SB 2 @ 40'	40'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	6,000
SB 2 @ 60'	60'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	7,600
SB 2 @ 85'	85'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	160
SB 2 @ 90'	90'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	48.0
Background @ 5'	5'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	336
Background @ 20'	20'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	192
Background @ 40'	40'	10/4/2011	In-Situ	-	-	-	-	-	-	-	-	-	16.0
North Wall	4.5'	1/5/2012	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	672
South Wall	5'	1/5/2012	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	16.0
East Wall	4.5'	1/5/2012	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	752
West Wall	5'	1/5/2012	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	<16.0
NMOCD Criteria				10				50				5,000	1,000

- = Not analyzed.

# **Appendices**

**Appendix A**  
**Release Notification &**  
**Corrective Action (Form C-141)**

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-141  
Revised October 10, 2003

Submit 2 Copies to appropriate  
District Office in accordance  
with Rule 116 on back  
side of form

**Release Notification and Corrective Action**

**OPERATOR**

☒ Initial Report ☐ Final Report

Name of Company BOPCO, L.P.	Contact Tony Savoie
Address 522 W. Mermod, Suite 704 Carlsbad, N.M. 88220	Telephone No. 432-556-8730
Facility Name Bass 3 Federal Well #4	Facility Type E&P

Surface Owner Federal	Mineral Owner Federal	Lease No.
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**LOCATION OF RELEASE**

Unit Letter I	Section 3	Township 22S	Range 28E	Feet from the	North/South Line	Feet from the	East/West Line	County Eddy
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Latitude N 32.419979 Longitude W 104.070256

**NATURE OF RELEASE**

Type of Release: Produced water and crude oil	Volume of Release: 15 Bbls of Produced water and 10 Bbls of Crude oil	Volume Recovered: none
Source of Release: Above ground 2 7/8" flow line	Date and Hour of Occurrence Unknown	Date and Hour of Discovery 8/16/11 3:00 p.m.
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Mike Bratcher NMOCD and Jim Amos BLM	
By Whom? Tony Savoie	Date and Hour 8/16/11 3:11 p.m.	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*	<b>RECEIVED</b> AUG 22 2011 NMOCD-ARTESIA
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Describe Cause of Problem and Remedial Action Taken.\* The flow line delivering produced fluid from the well to the tank battery developed a leak and the well was shut in and a temporary repair clamp was placed on the affected area. 3 sections of the flow were replaced on 8/17/11.

Describe Area Affected and Cleanup Action Taken.\* The released fluid affected an area of approximately 3000 sq. ft of pasture land. All of the fluid had soaked into the ground.  
The Site remediation for the produced water and crude oil spill will follow the NMOCD guidelines for leaks and spills.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

<b>OIL CONSERVATION DIVISION</b>	
Signature: <i>Tony Savoie</i>	Approved by District Supervisor:
Printed Name: Tony Savoie	
Title: Waste Mgmt. & Remediation Specialist	Approval Date: Expiration Date:
E-mail Address: TASavoie@BassPet.com	Conditions of Approval: Attached <input type="checkbox"/>
Date: 8/22/11 Phone: 432-556-8730	

\* Attach Additional Sheets If Necessary

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-141  
Revised October 10, 2003

Submit 2 Copies to appropriate  
District Office in accordance  
with Rule 116 on back  
side of form

**Release Notification and Corrective Action**

**OPERATOR**

☐ Initial Report    ☒ Final Report

Name of Company	BOPCO, LP	Contact	Tony Savoie
Address	522 W. Mermod, Suite 704 Carlsbad, NM 88220	Telephone No.	(432) 556-8730
Facility Name	Bass 3 Federal Well #4 8-16-11	Facility Type	E & P

Surface Owner Federal	Mineral Owner: Federal	Lease No.
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**LOCATION OF RELEASE**

Unit Letter I	Section 3	Township 22S	Range 28E	Feet from the	North/South Line	Feet from the	East/West Line	County Eddy
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Latitude N 32.419979      Longitude W 104.070256

**NATURE OF RELEASE**

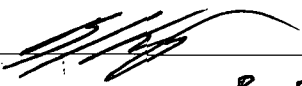
Type of Release	Produced water and crude oil	Volume of Release: 15 bbls of Produced water and 10 bbls of Crude oil.	Volume Recovered: none
Source of Release: Above ground 2 7/8" flow line	Date and Hour of Occurrence Unknown	Date and Hour of Discovery 8/16/11 3:00 p.m.	
Was Immediate Notice Given? X Yes    No    Not Required	If YES, To Whom? Mike Bratcher NMOCD and Jim Amos BLM		
By Whom? Tony Savoie	Date and Hour: 8/16/11 3:11 p.m.		
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.		

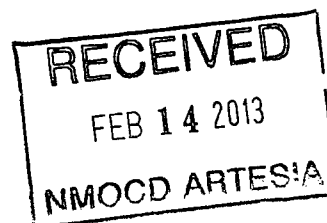
If a Watercourse was Impacted, Describe Fully.\*

Describe Cause of Problem and Remedial Action Taken.\* The flow line delivering produced fluid from the well to the tank battery developed a leak. The well was shut in, and a temporary repair clamp was placed on the affected area. 3 sections of the flow line were replaced on 8/17/11.

Describe Area Affected and Cleanup Action Taken.\* The released fluid affected an area of approximately 3000 sq. ft of pasture land. All of the fluid soaked into the ground. The release was remediated as per NMOCD guidelines. Please see the attached *Remediation Summary & Risk-Based Site Closure Request*, dated July 2012, for details of remediation activities and laboratory analytical results from confirmation soil samples.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases, which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

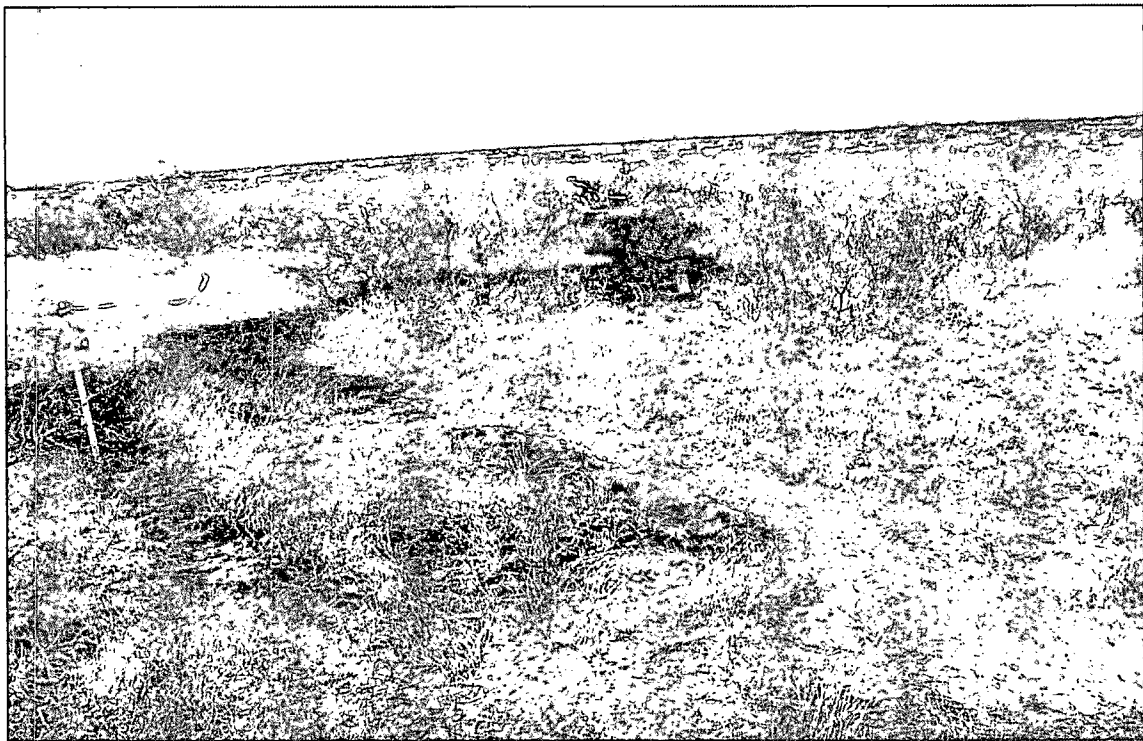
Signature: 		<b>OIL CONSERVATION DIVISION</b>	
Printed Name: <u>Ben J. Arguijo</u> (Agent for BOPCO, LP)		Approved by District Supervisor:	
Title: <u>Project Manager - Basin Environmental</u>		Approval Date:	Expiration Date:
E-mail Address: <u>tasavoie@basspet.com</u>		Conditions of Approval:	
Date: <u>2/14/13</u> Phone: (432) 556-8730 <u>(306) 549-9597</u>		Attached <input type="checkbox"/>	





# **Appendix B**

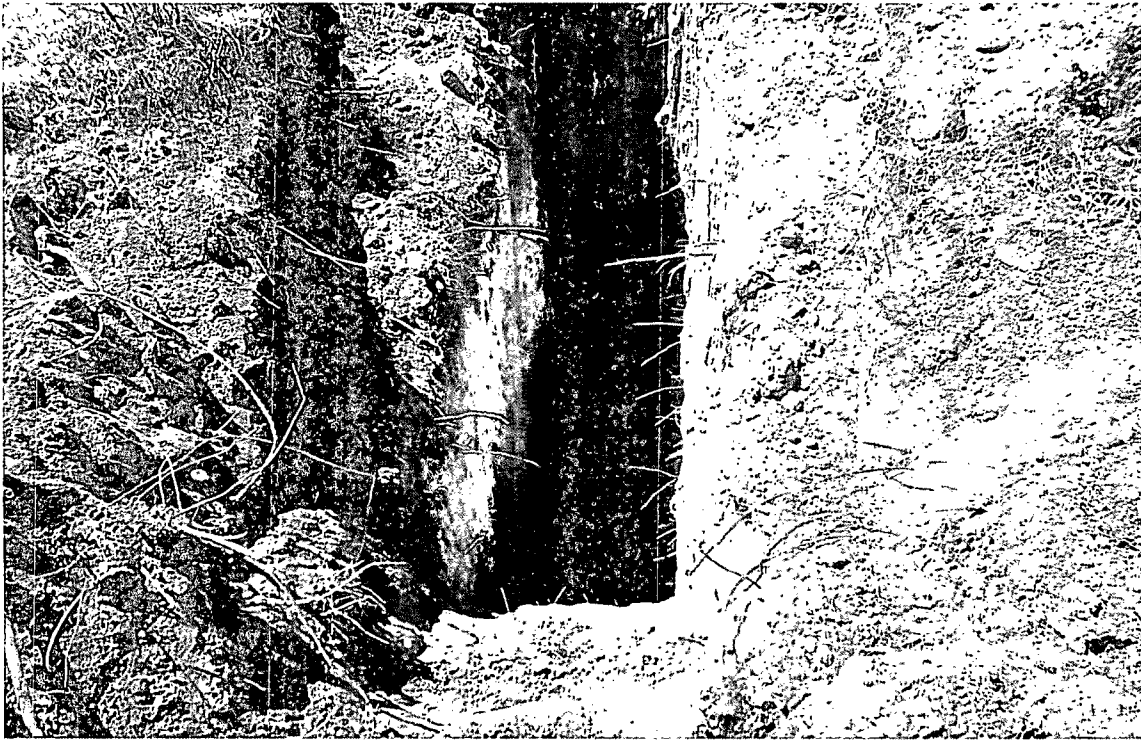
## **Photographs**



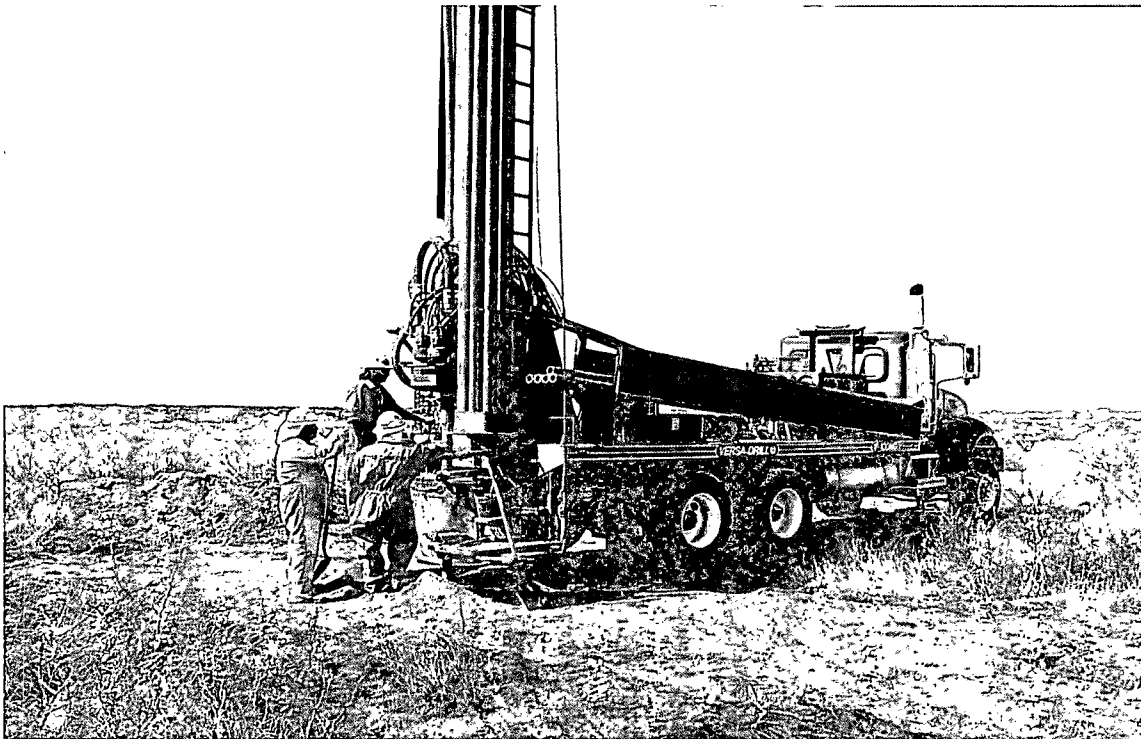
Bass 3 Federal Well #4 8-16-11 - Release Site



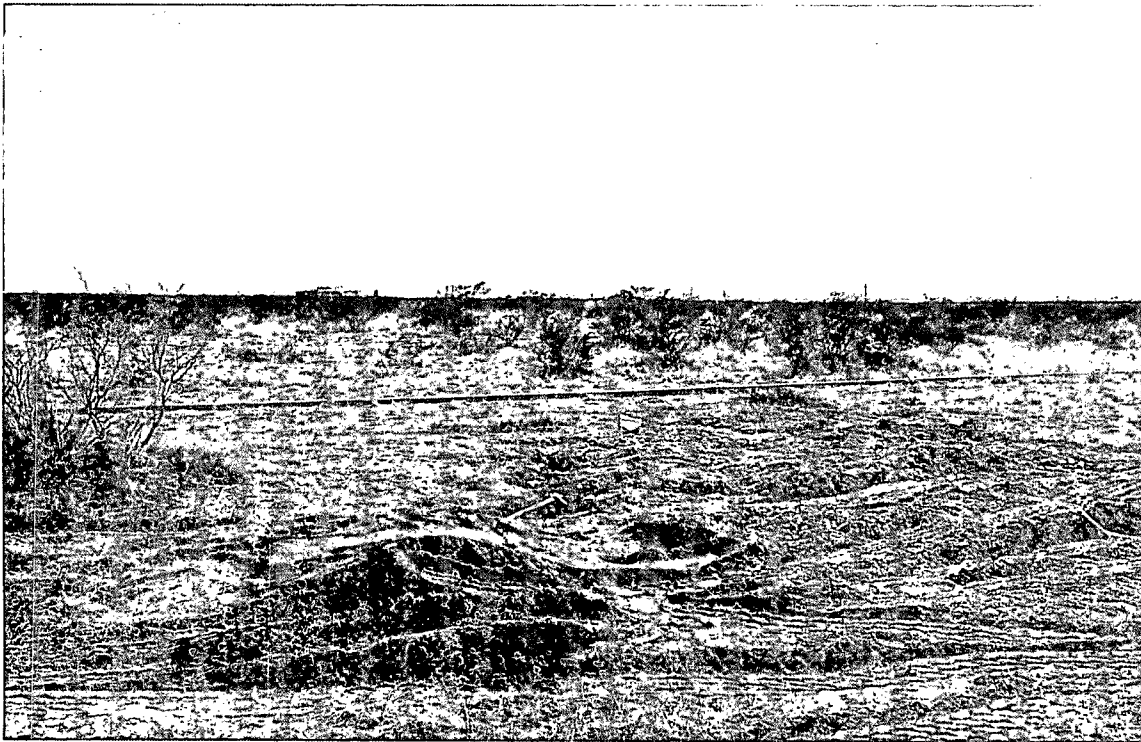
Bass 3 Federal Well #4 8-16-11 - Release Site



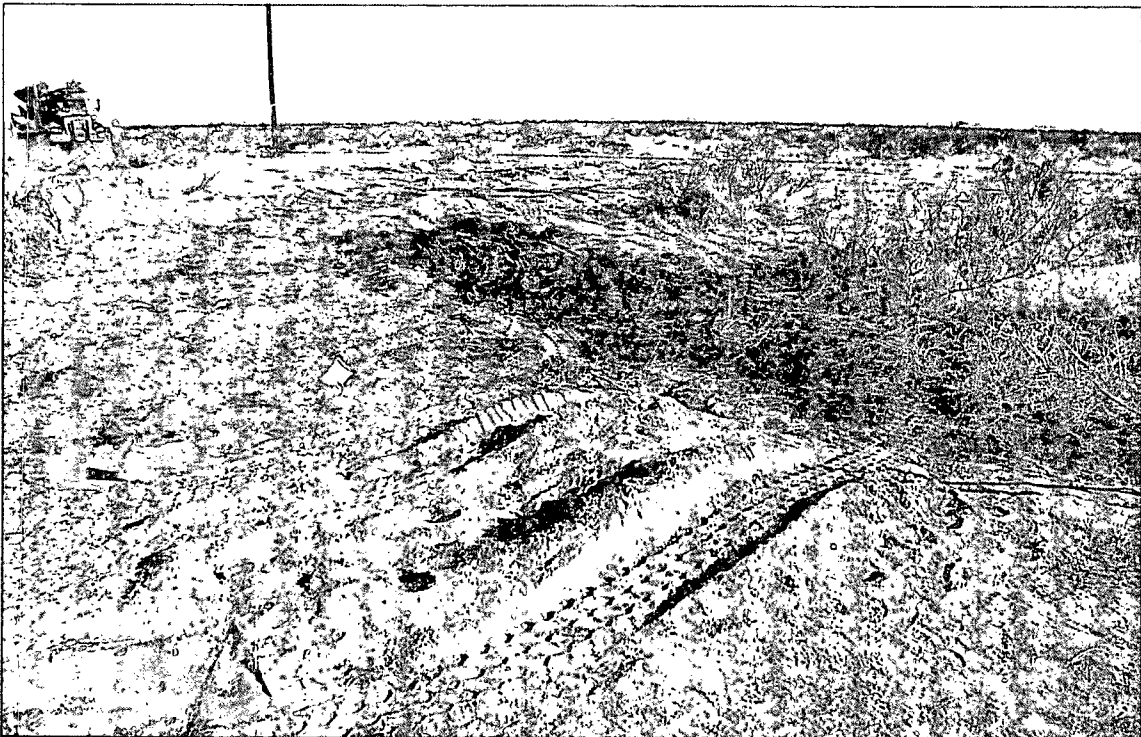
Bass 3 Federal Well #4 8-16-11 - Delineation Trench



Bass 3 Federal Well #4 8-16-11 - Advancement of Soil Boring SB-2



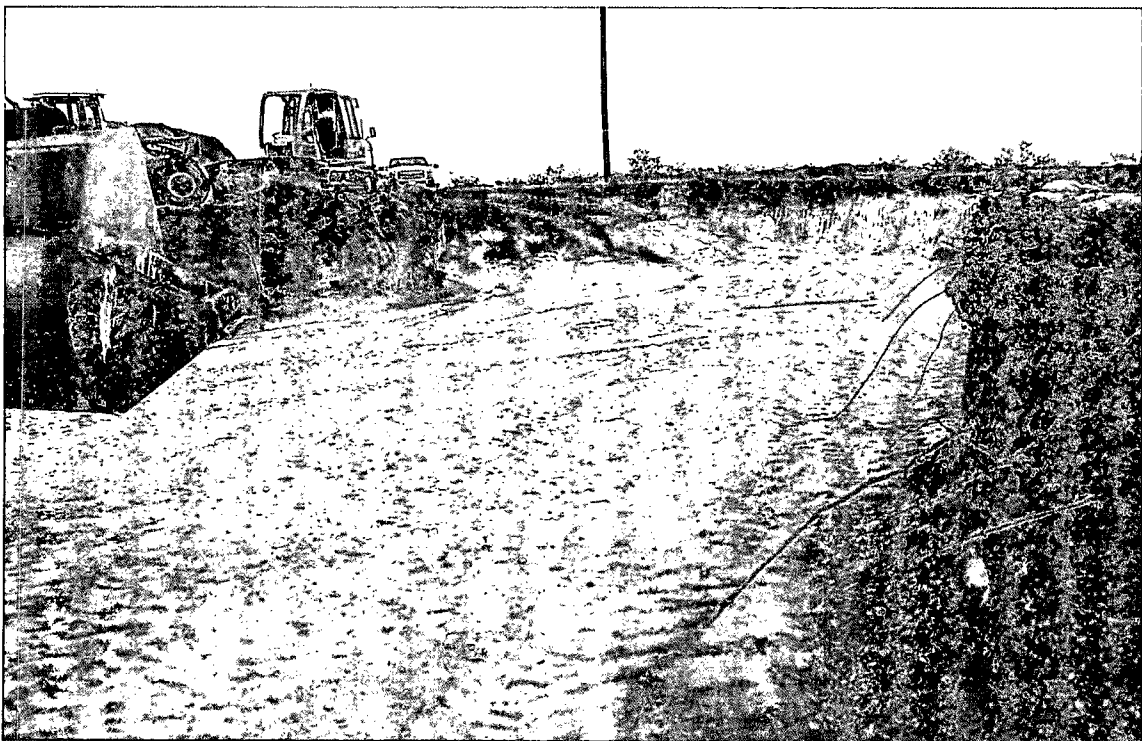
Bass 3 Federal Well #4 8-16-11 - Soil Boring SB-1 (following P&A; bore hole flagged)



Bass 3 Federal Well #4 8-16-11 - Soil Boring SB-2 (following P&A; bore hole flagged)

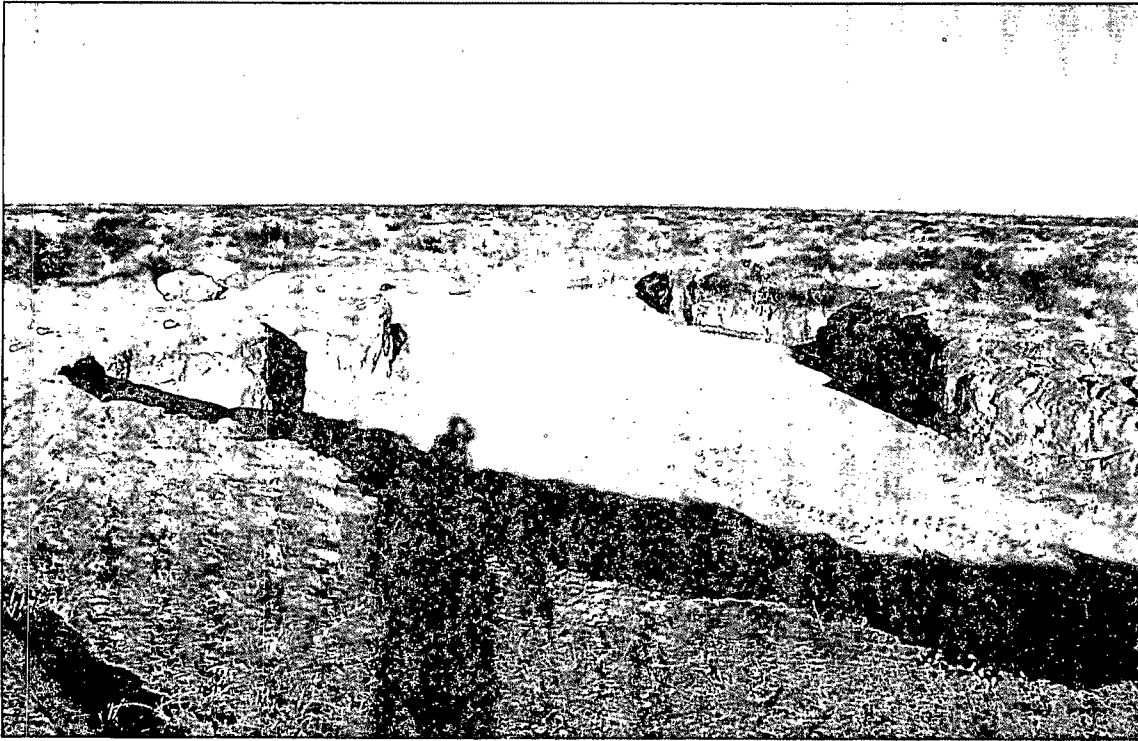


Bass 3 Federal Well #4 8-16-11 - Excavation

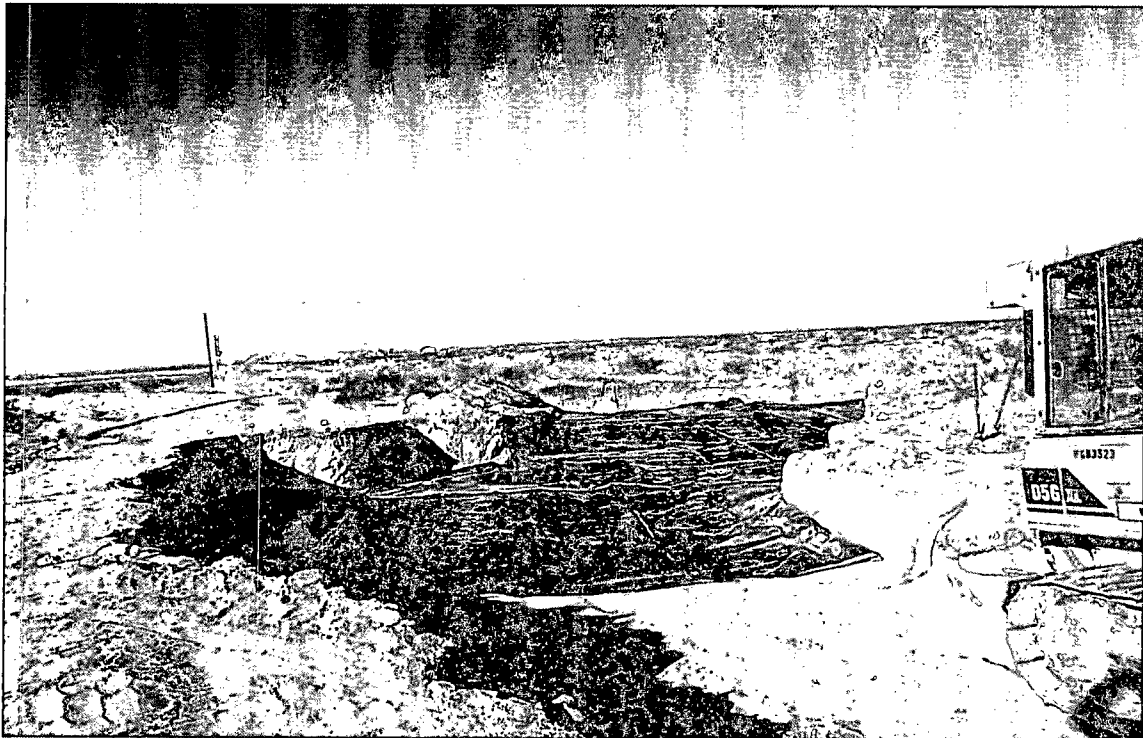


Bass 3 Federal Well #4 8-16-11 - Excavation (sample location marked in orange)

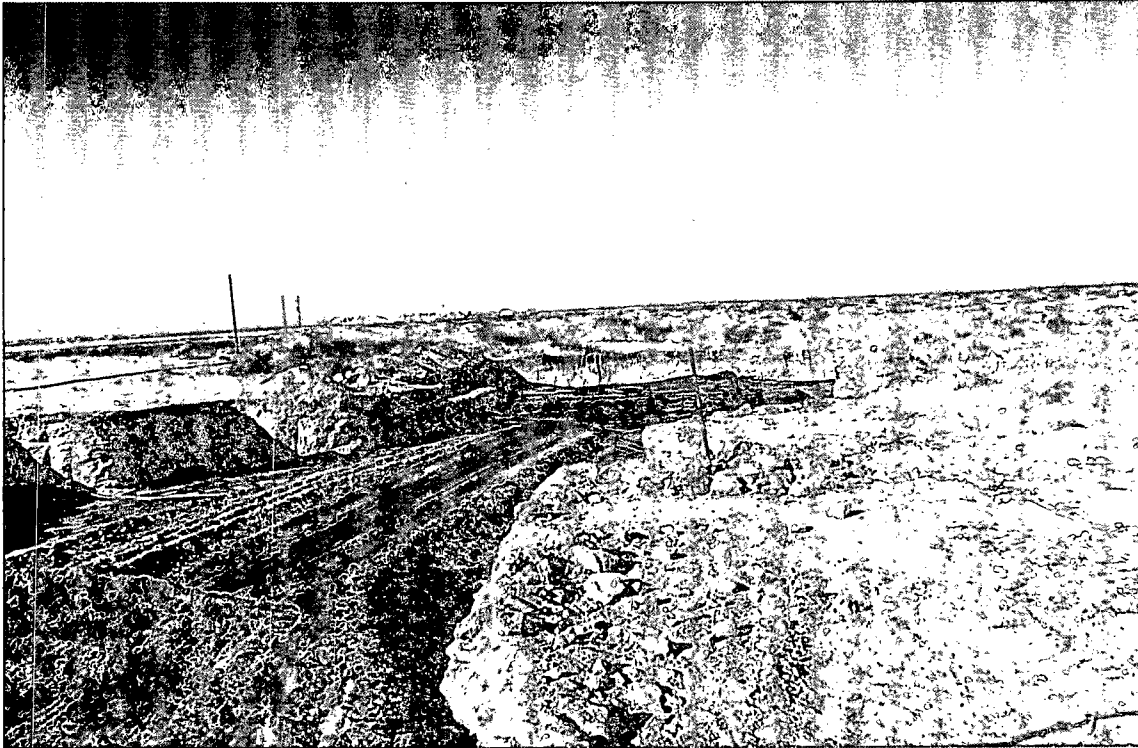




Bass 3 Federal Well #4 8-16-11 - Excavation (looking northwest)



Bass 3 Federal Well #4 8-16-11 - Liner Installation



Bass 3 Federal Well #4 8-16-11 - Installation of Pad Sand



Bass 3 Federal Well #4 8-16-11 - Excavation (during backfilling)




# **Appendix C**

## **Soil Boring & Monitor Well Logs**



# Soil Boring SB-1

Depth Below Ground Surface	Soil Column	Chloride Field Test	PID Reading	Petroleum Odor	Petroleum Stain	Soil Description	Boring SB-1
0						0' - 3' - Tan fine sand with clay	Date Drilled <u>October 4, 2011</u>
5			2.0	None	None		Thickness of Bentonite Seal <u>100 Ft</u>
10				None	None	3' - 12' - Caliche - Tan fine sand	Depth of Exploratory Boring <u>100 Ft bgs</u>
15				None	None		Depth to Groundwater _____
20		9,232		None	None	12' - 18' - Red fine sand	Ground Water Elevation _____
25			2.1	None	None		
30				None	None	18' - 36' - Red fine sand - sandstone	
35				None	None		
40		9,232		None	None		
45				None	None		
50				None	None	36' - 60' - Red fine - very fine sand - with clay	
55				None	None		
60		7,224		None	None		
65				None	None		
70				None	None	60' - 80' - Red fine sand - clay	
75				None	None		
80		4,824		None	None		
85				None	None		
90				None	None	80' - 100' - Light red silty clay - silty sand	
95		120		None	None		
100		1,284		None	None		

 Indicates the PSH level measured on \_\_\_\_\_  
 Indicates the groundwater level measured on \_\_\_\_\_  
 Indicates samples selected for Laboratory Analysis.  
 PID Head-space reading in ppm obtained with a photo-ionization detector.

## Completion Notes

- 1.) The soil boring was advanced on date using air rotary drilling techniques.
- 2.) The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
- 3.) The walls of soil bore SB-1 began to collapse at approximately 90' bgs. The non-cohesive nature of the soil at lower depths precluded the collection of a "core" sample. The high chloride field reading at 100' bgs was attributed to slough from higher levels that had collected at the bottom of the bore hole. Therefore, no confirmation sample was submitted for laboratory analysis.

**Soil Boring SB-1**

BOPCO, LP  
 Bass 3 Federal Well #4 8-16-11  
 Eddy County, New Mexico



Basin Environmental Service Technologies, LLC  
 3100 Plains Hwy.  
 Lovington, NM 88260

Prep By: BJA	Checked By: BRB
November 30, 2011	

# Soil Boring SB-2

Depth Below Ground Surface	Soil Column	Chloride Field Test	PID Reading	Petroleum Odor	Petroleum Stain	Soil Description
0						0' - 3' - Tan fine sand with clay
5			23.4	Slight	None	
10			2.2	None	None	3' - 8' - Tan fine sand - caliche
15				None	None	8' - 12' - Light red fine sand - sandstone
20		5,232		None	None	
25				None	None	
30				None	None	
35				None	None	
40		5,672		None	None	12' - 60' - Red fine sand - with clay
45				None	None	
50				None	None	
55				None	None	
60		6,664		None	None	
65				None	None	60' - 74' Red silty clay - silty sand
70				None	None	
75				None	None	
80		3,164		None	None	74' - 90' - Red fine sand - with clay
85		168		None	None	
90		<120		None	None	

**Boring SB-2**  
 Date Drilled October 4, 2011  
 Thickness of Bentonite Seal 90 Ft  
 Depth of Exploratory Boring 90 Ft bgs  
 Depth to Groundwater \_\_\_\_\_  
 Ground Water Elevation \_\_\_\_\_

▼ Indicates the PSH level measured on \_\_\_\_\_  
 ▼ Indicates the groundwater level measured on \_\_\_\_\_  
 ○ Indicates samples selected for Laboratory Analysis.  
 PID Head-space reading in ppm obtained with a photo-ionization detector.

## Completion Notes

- 1.) The soil boring was advanced on date using air rotary drilling techniques.
- 2.) The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.

**Soil Boring SB-2**


**BOPCO, LP**  
 Bass 3 Federal Well #4 8-16-11  
 Eddy County, New Mexico



Basin Environmental Service Technologies, LLC  
 3100 Plains Hwy.  
 Lovington, NM 88260

Prep By: BJA	Checked By: BRB
November 30, 2011	

# Soil Boring Background

Depth Below Ground Surface	Soil Column	Chloride Field Test	PID Reading	Petroleum Odor	Petroleum Stain	Soil Description
0				None	None	0' - 2' - Tan fine sand with clay
5				None	None	2' - 14' - Tan fine sand - caliche
10				None	None	
15				None	None	
20		(156)		None	None	
25				None	None	
30				None	None	14' - 40' - Red fine sand - sandstone
35				None	None	
40		(<120)		None	None	

## Boring Background

Date Drilled October 4, 2011  
 Thickness of Bentonite Seal 40 Ft  
 Depth of Exploratory Boring 40 Ft bgs  
 Depth to Groundwater \_\_\_\_\_  
 Ground Water Elevation \_\_\_\_\_

▼ Indicates the PSH level measured on \_\_\_\_\_  
 ▼ Indicates the groundwater level measured on \_\_\_\_\_  
 ○ Indicates samples selected for Laboratory Analysis.  
 PID Head-space reading in ppm obtained with a photo-ionization detector.

## Completion Notes

- 1.) The soil boring was advanced on date using air rotary drilling techniques.
- 2.) The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.

## Soil Boring Background

BOPCO, LP  
 Bass 3 Federal Well #4 8-16-11  
 Eddy County, New Mexico



Basin Environmental Service Technologies, LLC  
 3100 Plains Hwy.  
 Lovington, NM 88260

Prep By: BJA	Checked By: BRB
November 30, 2011	

# **Appendix D**

## **Laboratory Analytical Reports**

October 12, 2011

BEN J. ARGUIJO

Basin Environmental Service

P.O. Box 301

Lovington, NM 88260

RE: BASS 3 FEDERAL #4

Enclosed are the results of analyses for samples received by the laboratory on 10/06/11 13:45.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydrocarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

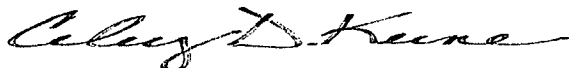
Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 Basin Environmental Service  
 BEN J. ARGUIJO  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

 Received: 10/06/2011  
 Reported: 10/12/2011  
 Project Name: BASS 3 FEDERAL #4  
 Project Number: NONE GIVEN  
 Project Location: EDDY CO, NM

 Sampling Date: 10/04/2011  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB 2 @ 5' (H102154-01)**

BTEX 8021B		mg/kg	Analyzed By: CMS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/10/2011	ND	2.12	106	2.00	3.37	
Toluene*	<0.050	0.050	10/10/2011	ND	2.02	101	2.00	3.11	
Ethylbenzene*	<0.050	0.050	10/10/2011	ND	2.05	103	2.00	2.45	
<b>Total Xylenes*</b>	<b>0.235</b>	0.150	10/10/2011	ND	6.10	102	6.00	3.21	

Surrogate: 4-Bromofluorobenzene (PIE) 117 % 64.4-134

Chloride, SM4500Cl-B		mg/kg	Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>10600</b>	16.0	10/07/2011	ND	384	96.0	400	4.26	

TPH 8015M		mg/kg	Analyzed By: AB						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/10/2011	ND	181	90.5	200	0.778	
<b>DRO &gt;C10-C28</b>	<b>53.4</b>	10.0	10/10/2011	ND	171	85.4	200	2.40	
EXT DRO >C28-C35	<10.0	10.0	10/10/2011	ND					

Surrogate: 1-Chlorooctane 91.4 % 55.5-154

Surrogate: 1-Chlorooctadecane 111 % 57.6-158

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Basin Environmental Service  
 BEN J. ARGUIJO  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

 Received: 10/06/2011  
 Reported: 10/12/2011  
 Project Name: BASS 3 FEDERAL #4  
 Project Number: NONE GIVEN  
 Project Location: EDDY CO, NM

 Sampling Date: 10/04/2011  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB 2 @ 10' (H102154-02)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>8600</b>	16.0	10/07/2011	ND	384	96.0	400	4.26	
TPH 8015M			mg/kg		Analyzed By: AB				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/11/2011	ND	181	90.5	200	0.778	
DRO >C10-C28	<10.0	10.0	10/11/2011	ND	171	85.4	200	2.40	
EXT DRO >C28-C35	<10.0	10.0	10/11/2011	ND					
<hr/>									
Surrogate: 1-Chlorooctane	100 %	55.5-154							
Surrogate: 1-Chlorooctadecane	126 %	57.6-158							

**Sample ID: SB 2 @ 20' (H102154-03)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>5000</b>	16.0	10/07/2011	ND	384	96.0	400	4.26	

**Sample ID: SB 2 @ 40' (H102154-04)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>6000</b>	16.0	10/07/2011	ND	384	96.0	400	4.26	

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\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Basin Environmental Service  
 BEN J. ARGUIJO  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

 Received: 10/06/2011  
 Reported: 10/12/2011  
 Project Name: BASS 3 FEDERAL #4  
 Project Number: NONE GIVEN  
 Project Location: EDDY CO, NM

 Sampling Date: 10/04/2011  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB 2 @ 60' (H102154-05)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	7600	16.0	10/07/2011	ND	384	96.0	400	4.26	

**Sample ID: SB 2 @ 85' (H102154-06)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	10/07/2011	ND	384	96.0	400	4.26	

**Sample ID: SB 2 @ 90' (H102154-07)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	10/07/2011	ND	400	100	400	4.08	

**Sample ID: BACKGROUND @ 5' (H102154-08)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	336	16.0	10/07/2011	ND	400	100	400	4.08	

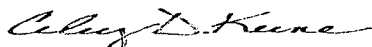
**Sample ID: BACKGROUND @ 20' (H102154-09)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	10/07/2011	ND	400	100	400	4.08	

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

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 BEN J. ARGUIJO  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

 Received: 10/06/2011  
 Reported: 10/12/2011  
 Project Name: BASS 3 FEDERAL #4  
 Project Number: NONE GIVEN  
 Project Location: EDDY CO, NM

 Sampling Date: 10/04/2011  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: BACKGROUND @ 40' (H102154-10)**

Chloride, SM4500Cl-B		mg/kg	Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	10/07/2011	ND	400	100	400	4.08	

**Sample ID: SB 1 @ 5' (H102154-11)**

BTEX 8021B		mg/kg	Analyzed By: CMS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/10/2011	ND	2.12	106	2.00	3.37	
Toluene*	<0.050	0.050	10/10/2011	ND	2.02	101	2.00	3.11	
Ethylbenzene*	0.055	0.050	10/10/2011	ND	2.05	103	2.00	2.45	
Total Xylenes*	0.205	0.150	10/10/2011	ND	6.10	102	6.00	3.21	

Surrogate: 4-Bromofluorobenzene (PIL) 123 % 64.4-134

Chloride, SM4500Cl-B		mg/kg	Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9400	16.0	10/07/2011	ND	400	100	400	4.08	

TPH 8015M		mg/kg	Analyzed By: AB						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/11/2011	ND	181	90.5	200	0.778	
DRO >C10-C28	<10.0	10.0	10/11/2011	ND	171	85.4	200	2.40	
EXT DRO >C28-C35	<10.0	10.0	10/11/2011	ND					

Surrogate: 1-Chlorooctane 85.2 % 55.5-154

Surrogate: 1-Chlorooctadecane 111 % 57.6-158

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Basin Environmental Service  
 BEN J. ARGUIJO  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

 Received: 10/06/2011  
 Reported: 10/12/2011  
 Project Name: BASS 3 FEDERAL #4  
 Project Number: NONE GIVEN  
 Project Location: EDDY CO, NM

 Sampling Date: 10/04/2011  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB 1 @ 10' (H102154-12)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>6000</b>	16.0	10/07/2011	ND	400	100	400	4.08	
TPH 8015M			mg/kg		Analyzed By: AB				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/11/2011	ND	181	90.5	200	0.778	
DRO >C10-C28	<10.0	10.0	10/11/2011	ND	171	85.4	200	2.40	
EXT DRO >C28-C35	<10.0	10.0	10/11/2011	ND					
<hr/>									
Surrogate: 1-Chlorooctane	95.3 %	55.5-154							
Surrogate: 1-Chlorooctadecane	121 %	57.6-158							

**Sample ID: SB 1 @ 20' (H102154-13)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>7840</b>	16.0	10/07/2011	ND	400	100	400	4.08	

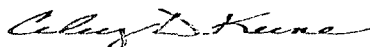
**Sample ID: SB 1 @ 40' (H102154-14)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>7600</b>	16.0	10/07/2011	ND	400	100	400	4.08	

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\*=Accredited Analyte

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Celest D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

Basin Environmental Service  
BEN J. ARGUIJO  
P.O. Box 301  
Lovington NM, 88260  
Fax To: (575) 396-1429

Received: 10/06/2011  
Reported: 10/12/2011  
Project Name: BASS 3 FEDERAL #4  
Project Number: NONE GIVEN  
Project Location: EDDY CO, NM

Sampling Date: 10/04/2011  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SB 1 @ 60' (H102154-15)**

Chloride, SM4500Cl-B		mg/kg	Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	10200	16.0	10/07/2011	ND	400	100	400	4.08	

**Sample ID: SB 1 @ 80' (H102154-16)**

Chloride, SM4500Cl-B		mg/kg	Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4960	16.0	10/07/2011	ND	400	100	400	4.08	

**Sample ID: SB 1 @ 90' (H102154-17)**

Chloride, SM4500Cl-B		mg/kg	Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	10/07/2011	ND	400	100	400	4.08	

**Sample ID: SB 1 @ 95' (H102154-18)**

Chloride, SM4500Cl-B		mg/kg	Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	10/07/2011	ND	400	100	400	4.08	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

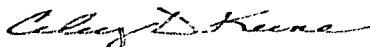
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Cardinal Laboratories

\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

Company Name: Basin Environmental Service Technologies, LLC		BILL TO		ANALYSIS REQUEST																										
Project Manager: Ben J. Arguijo		P.O. #:																												
Address: P.O. Box 301		Company: BOPCO, LP																												
City: Lovington State: NM Zip: 88260		Attn: Tony Savoie																												
Phone #: (575) 396-2378 Fax #: (575) 396-1429		Address: 522 w. Mermod																												
Project #: Project Owner: BOPCO, LP		City: Carlsbad																												
Project Name: Bass 3 Federal #4		State: NM Zip: 88220																												
Project Location: Elly Co., NM		Phone #: (432) 556-8730																												
Sampler Name: B. Arguijo		Fax #:																												
FOR LAB USE ONLY	Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX					PRESERV.			SAMPLING																	
					GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME	Chloride	DO/SA	BTEX												
	H1D2154																													
	1	SB-2 @ 5'	G				X					X		10/4/11	1430	X	X	X												
	2	SB-2 @ 10'													1435		X													
	3	SB-2 @ 20'													1445															
	4	SB-2 @ 40'													1505															
	5	SB-2 @ 60'													1525															
	6	SB-2 @ 85'													1550															
	7	SB-2 @ 90'													1555															
	8	Background @ 5'													1345															
	9	Background @ 20'													1400															
	10	Background @ 40'													1410															

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Relinquished By:	Date: 10/6/11 Time: 1130	Received By:	Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No REMARKS:
Relinquished By:	Date: 10/6/11 Time: 1:45	Received By:	Add'l Phone #: Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No	CHECKED BY:	

† Cardinal cannot accept verbal changes. Please fax written changes to 505.393.2476



# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

Company Name: Basin Environmental Service Technologies, LLC				BILL TO				ANALYSIS REQUEST																			
Project Manager: Ben J. Arguijo				P.O. #:																							
Address: P.O. Box 301				Company: BOPCO, LP																							
City: Lovington State: NM Zip: 88260				Attn: Tony Savoie																							
Phone #: (575) 396-2378 Fax #: (575) 396-1429				Address: 522 w. Mermod																							
Project #: Project Owner: BOPCO, LP				City: Carlsbad																							
Project Name: Bass 3 Federal #4				State: NM Zip: 88220																							
Project Location: Elly Co., NM				Phone #: (432) 556-8730																							
Sampler Name: B. Arguijo				Fax #:																							
FOR LAB USE ONLY																											
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX					PRESERV.		SAMPLING																
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME													
H102154																											
11	SB-1 @ 5'	G	1			X					X		10/4/11	1000	X	X	X										
12	SB-1 @ 10'					X					X			1005		X											
13	SB-1 @ 20'													1015													
14	SB-1 @ 40'													1035													
15	SB-1 @ 60'													1055													
16	SB-1 @ 80'													1115													
17	SB-1 @ 90'													1125													
18	SB-1 @ 95'													1130													

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Relinquished By:	Date: 10/4/11 Time: 1130	Received By:	Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No Add'l Phone #:
Relinquished By:	Date: 10/4/11 Time: 1:45	Received By:	Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool Intact <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No	CHECKED BY:	REMARKS:

Please email results to pm@basinenv.com & TSavoie@BassPet.com



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

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January 10, 2012

BEN J. ARGUIJO

Basin Environmental Service

P.O. Box 301

Lovington, NM 88260

RE: BASS 3 FEDERAL #4

Enclosed are the results of analyses for samples received by the laboratory on 01/05/12 17:18.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

Basin Environmental Service  
BEN J. ARGUIJO  
P.O. Box 301  
Lovington NM, 88260  
Fax To: (575) 396-1429

Received: 01/05/2012  
Reported: 01/10/2012  
Project Name: BASS 3 FEDERAL #4  
Project Number: NONE GIVEN  
Project Location: EDDY CO, NM

Sampling Date: 01/05/2012  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: WEST WALL @ 5' BGS (H200018-01)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	01/06/2012	ND	432	108	400	0.00		
TPH 8015M			mg/kg		Analyzed By: MS					S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	01/09/2012	ND	190	95.0	200	8.67		
DRO >C10-C28	<10.0	10.0	01/09/2012	ND	172	86.2	200	11.2		
EXT DRO >C28-C35	<10.0	10.0	01/09/2012	ND						
Surrogate: 1-Chlorooctane	141 %	55.5-154								
Surrogate: 1-Chlorooctadecane	161 %	57.6-158								


**Sample ID: SOUTH WALL @ 5' BGS (H200018-02)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	01/06/2012	ND	432	108	400	0.00		
TPH 8015M			mg/kg		Analyzed By: MS					S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	01/09/2012	ND	190	95.0	200	8.67		
DRO >C10-C28	<10.0	10.0	01/09/2012	ND	172	86.2	200	11.2		
EXT DRO >C28-C35	<10.0	10.0	01/09/2012	ND						
Surrogate: 1-Chlorooctane	144 %	55.5-154								
Surrogate: 1-Chlorooctadecane	170 %	57.6-158								

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

 Basin Environmental Service  
 BEN J. ARGUIJO  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	01/05/2012	Sampling Date:	01/05/2012
Reported:	01/10/2012	Sampling Type:	Soil
Project Name:	BASS 3 FEDERAL #4	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EDDY CO, NM		

**Sample ID: NORTH WALL @ 4.5' BGS (H200018-03)**

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>672</b>	16.0	01/06/2012	ND	432	108	400	0.00	
TPH 8015M		mg/kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/09/2012	ND	190	95.0	200	8.67	
DRO >C10-C28	<10.0	10.0	01/09/2012	ND	172	86.2	200	11.2	
EXT DRO >C28-C35	<10.0	10.0	01/09/2012	ND					
<i>Surrogate: 1-Chlorooctane</i>									
	138 %	55.5-154							
<i>Surrogate: 1-Chlorooctadecane</i>									
	159 %	57.6-158							

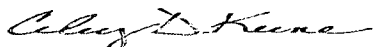
**Sample ID: EAST WALL @ 4.5' BGS (H200018-04)**

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>752</b>	16.0	01/06/2012	ND	432	108	400	0.00	
TPH 8015M		mg/kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/09/2012	ND	190	95.0	200	8.67	
DRO >C10-C28	<10.0	10.0	01/09/2012	ND	172	86.2	200	11.2	
EXT DRO >C28-C35	<10.0	10.0	01/09/2012	ND					
<i>Surrogate: 1-Chlorooctane</i>									
	137 %	55.5-154							
<i>Surrogate: 1-Chlorooctadecane</i>									
	166 %	57.6-158							

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

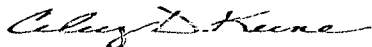
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

Company Name: Basin Environmental Service Technologies, LLC				BILL TO				ANALYSIS REQUEST																																			
Project Manager: Ben J. Arquijo				P.O. #:																																							
Address: P.O. Box 301				Company: BOPCO, LP																																							
City: Lovington		State: NM		Zip: 88260		Attn: Tony Savioe																																					
Phone #: (575) 396-2378		Fax #: (575) 396-1429		Address: 522 W. Mermod																																							
Project #:		Project Owner: BOPCO, LP		City: Carlsbad																																							
Project Name: Bass3 Federal 4				State: NM		Zip: 88220																																					
Project Location: Eddy Co., NM				Phone #: (432) 556-8730																																							
Sampler Name: Tony Nelson				Fax #:																																							
FOR LAB USE ONLY																																											
Lab I.D.		Sample I.D.		GRAB OR (COMB.)		# CONTAINERS		MATRIX		PRESERV.		SAMPLING																															
								GROUNDWATER		WASTEWATER		SOIL		OIL		SLUDGE		OTHER:		ACID/BASE:		ICE / COOL		OTHER:		DATE		TIME															
H2000018																																											
1		West Wall @ 54 BGS		G		1																																					
2		South Wall @ 54 BGS		G		1																																					
3		North Wall @ 4.54 BGS		G		1																																					
4		East Wall @ 4.54 BGS		G		1																																					