

1RP-2915

## Denton No. 3 SWD Injection Line

Spill date – 4/29/2013

Spill & Volume: 20 barrels spilled, 0 barrels recovered

Spill notes: Spill occurred on existing historical spill area resulting in larger clean up.

Delineation or remediation: Assessed and remediated 2013 and 2014 by Basin Environmental.

Photos: see attached reports

Additional notes: Approx 3,340 yards of soil removed and disposed. Liner installed and backfilled.

Boring completed in August 2014

Documents Attached:

NM C-141

Basin Environmental Assessment Report

Basin Environmental Final Report

**FASKEN STATUS: CLOSED**



6101 Holiday Hill Road  
Midland, TX 79707  
(432) 687-1777  
(432) 687-1570 (FAX)

February 28, 2019

Mr. Bradford Billings  
New Mexico Energy, Mineral, and Natural Resources Department  
Oil Conservation Division  
1220 South St. Francis Street  
Santa Fe, NM 87505

RE: 1RP-2915

Mr. Billings,

Thank you for meeting with me on February 21<sup>st</sup> to discuss spills that have been reported to the OCD and remain in an "open" status.

As we discussed this spill was originally reported to the OCD by Fasken in April 29, 2013.

The depth to water in this area is approximately 61 to 65 feet below ground surface. Fasken has three monitoring wells within 400 feet of the remediated area that were installed in 2010. The wells are located at:

33.022895°, -103.160338°

33.022897°, -103.159714°

33.023230°, -103.160813°

Fasken Oil and Ranch, Ltd. respectfully requests to **CLOSE** this spill.

Thank you very much,

Aaron Pachlhofer  
Environmental Coordinator  
Fasken Oil and Ranch, Ltd.

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

HOBBS OCD

State of New Mexico  
Energy Minerals and Natural Resources

MAY 03 2013

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

Form C-141  
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

RECEIVED

## Release Notification and Corrective Action

## OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Fasken Oil and Ranch, Ltd.	Contact	Jimmy D. Carlile
Address	6101 Holiday Hill Rd., Midland, TX	Telephone No.	432-687-1777
Facility Name	Denton SWD No. 3	79707	Facility Type SWD Injection Line

Surface Owner	Darr Angell	Mineral Owner	Fee	API No.	30.025.05306
---------------	-------------	---------------	-----	---------	--------------

## LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	12	15S	37E	660'	South	330'	West	Lea

Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

## NATURE OF RELEASE

Type of Release	Produced Water	Volume of Release	20	Volume Recovered	0
Source of Release	Injection Line	Date and Hour of Occurrence		Date and Hour of Discovery	4-29-13
Was Immediate Notice Given?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Fax report upon receiving data.		
By Whom?		Date and Hour			
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.\*

N/A

DTW = 52'

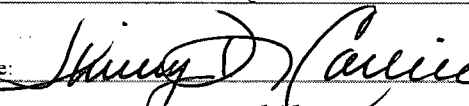

Describe Cause of Problem and Remedial Action Taken.\*

4" vietaulic clamp corroded and broke. Pump shut down immediately due to low pressure. Site dug out and clamp replaced.

Describe Area Affected and Cleanup Action Taken.\*

Pasture area approximately 100' X 75' affected. Plan will be proposed to OCD to dig out to hard caliche layer, line and backfill with clean material.

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: 	OIL CONSERVATION DIVISION	
Printed Name: Jimmy D. Carlile	Approved by Environmental Specialist:  Environmental Specialist	
Title: Regulatory Affairs Coordinator	Approval Date: 5-06-2013	Expiration Date: 07-08-2013
E-mail Address: jimnyc@for1.com	Conditions of Approval: SUBMIT FINAL	Attached <input type="checkbox"/>
Date: 5-1-2013 Phone: 432-687-1777	C-141 BY 07-08-2013.	IRP-05-13-2915

\* Attach Additional Sheets If Necessary

DELINATE AND REMEDIATE  
PER NMOCD RULES.

MAY 20 2013

## Basin Environmental Service Technologies, LLC

3100 Plains Highway  
P. O. Box 301  
Lovington, New Mexico 88260

[jwlowry@basinenv.com](mailto:jwlowry@basinenv.com)

Office: (575) 396-2378

Fax: (575) 396-1429



### REMEDIATION SUMMARY & RISK-BASED SITE CLOSURE PROPOSAL

FASKEN OIL AND RANCH, Ltd.

DENTON SWD #3

Lea County, New Mexico

Unit Letter "M" (SW/SW), Section 12, Township 15 South, Range 37 East

Latitude 33.023724° North, Longitude -103.159774° West

NMOCD Reference #1RP-N/A

Prepared For:

Fasken Oil and Ranch, Ltd.  
303 West Wall, Suite 1800  
Midland, TX 79701

*approved w/condition*

*Jeffrey Sekim*  
Environmental Specialist

6/19/13

Prepared By:

Basin Environmental Service Technologies, LLC  
3100 Plains Highway  
Lovington, NM 88260

*- Perform boring to define vertical contamination*

June 2013

*Joel Lowry*  
Joel W. Lowry  
Project Manager

HOBBS OCD

JUN 19 2013

RECEIVED

2915



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## INTRODUCTION & BACKGROUND INFORMATION

Basin Environmental Service Technologies, LLC (Basin), on behalf of Fasken Oil and Ranch, Ltd. (Fasken), has prepared this *Remediation Summary & Risk-Based Site Closure Proposal* for the release site known as Denton SWD #3. The legal description of the release site is Unit Letter "M" (SW/SW), Section 12, Township 15 South, Range 37 East in Lea County, New Mexico. The geographic coordinates of the release site are 33.023724° North latitude and -103.159774° West longitude. The property affected by the release is owned by Mr. Darr Angel.

On April 29, 2013, Fasken discovered a release had occurred at the Denton SWD #3. The release was attributed to the failure of a four inch (4") vietaulic clamp. The pump shut down immediately due to low pressure. The site was dug out, and the clamp was replaced. The "Release Notification and Corrective Action" (Form C-141) indicated approximately twenty (20) barrels of produced water were released. The release impacted an area of pasture measuring approximately one hundred feet (100') in length and seventy-five (75') in width.

Please reference Figure 1 for a "Site Location Map". The Form C-141 is provided as Appendix A. General photographs of the release site are provided as Appendix B.

## 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) indicates groundwater should be encountered at approximately fifty-nine feet (59') below ground surface (bgs). Based on the NMOCD ranking system, ten (10) points will be assigned to the site as a result of this criterion.

A search of the NMWRRS database indicated there are no domestic 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 Denton SWD #3 release site has an initial ranking score of ten (10) points. The soil remediation levels for a site with a ranking score of ten (10) points are as follows:

- Benzene – 10 mg/Kg (ppm)
- Benzene, Toluene, Ethylbenzene and Xylene (BTEX) – 50 mg/Kg (ppm)
- Total Petroleum Hydrocarbons (TPH) – 1,000 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.



## SUMMARY OF SOIL REMEDIATION ACTIVITIES

On May 13, 2013, Basin responded to the release site. A series of test trenches (TT-1 and TT-2) were advanced in an effort to determine the vertical and horizontal extent of soil impact. TT-1 was advanced south western portion of the release flowpath within an inferred pooling area. TT-1 was advanced to approximately three and one-half feet (3.5') bgs. During the advancement of the test trench, (2) soil samples (TT-1 @ Surface and TT-1 @ 3.5') were collected and submitted to the laboratory for analysis of BTEX, TPH and chloride concentrations. Laboratory analytical results indicated BTEX concentrations were less than the laboratory method detection limit (MDL) for each of the submitted soil samples. TPH concentrations ranged from 23.6 mg/kg for soil sample TT-1 @ Surface to less than the laboratory MDL for soil sample TT-1 @ 3.5'. Chloride concentrations ranged from 6,400 mg/kg for soil sample TT-1 @ Surface to 3,960 mg/kg for soil sample TT-1 @ 3.5'. Further advancement of TT-1 was impracticable due to the presence of an impenetrable rock layer encountered at three and one-half feet (3.5') bgs.

Table 1 summarizes the "Concentrations of Benzene, BTEX, TPH & Chlorides in Soil". A "Site & Sample Location Map" is provided as Figure 2. Laboratory analytical reports are provided as Appendix C.

TT-2 was advanced approximately ninety-five feet (95') to the northeast of TT-1 within an inferred pooling area. TT-2 was advanced to approximately two feet (2') bgs. During the advancement of the test trench, (2) soil samples (TT-2 @ Surface and TT-2 @ 2) were collected and submitted to the laboratory for analysis of BTEX, TPH and chloride concentrations. Laboratory analytical results indicated BTEX and TPH concentrations were less than the appropriate laboratory MDL for each of the submitted soil samples. Chloride concentrations ranged from 64.0 mg/kg for soil sample TT-2 @ Surface to 3,000 mg/kg for soil sample TT-1 @ 3.5'. Further advancement of TT-2 was impracticable due to the presence of an impenetrable rock layer at two feet (2') bgs.

## PROPOSED ACTIVITIES

Fasken proposes the following risk-based strategy to progress the Denton SWD #3 release site toward an NMOCD-approved closure:

- The floor of the excavation will be advanced to the hard rock layer commonly encountered between two feet (2') to five feet (5') bgs. The excavation sidewalls will be advanced until laboratory analytical results from confirmation soil samples indicate concentrations of BTEX, TPH and chloride are below NMOCD Regulatory Standards. Confirmation soil samples will be collected at approximately fifty foot (50') intervals from the excavation floor and sidewalls. Collected soil samples will be submitted to Cardinal Laboratories for analysis of BTEX, TPH, and chlorides using EPA methods SW-846 8021b, SW-846 8015M, and 4500 Cl-B, respectively. Excavation will continue until laboratory analytical results indicate BTEX concentrations are less than 50 mg/Kg, TPH concentrations are less than 1,000 mg/Kg, and chloride concentrations are less than 500 mg/Kg.

- Excavated soil exhibiting concentrations of BTEX, TPH and chloride above NMOCD Regulatory Standards will be transported to Gandy Marley, Inc. (NMOCD Permit # DP-1041), for disposal.
- Once laboratory analytical results from confirmation sidewall soil samples have confirmed that concentrations of BTEX, TPH and chloride are below NMOCD Regulatory Standards, the floor of the excavation will be lined with an approximate one foot (1') layer of clay. The remaining portion of the excavation will be backfilled with locally purchased, non-impacted material and graded to match the surrounding topography.
- Reseeding of the site with vegetation acceptable to the landowner will take place at the conclusion of the proposed remediation activities.

## REPORTING

On review and approval of this proposal by the NMOCD, Fasken is prepared to begin field activities and perform the corrective actions summarized in this *Remediation Summary & Risk-Based Site Closure Proposal*. Upon completion of the corrective actions, Fasken will submit a *Remediation Summary & Risk-Based Site Closure Request* to the NMOCD, documenting remediation activities and results of confirmation soil samples.

## LIMITATIONS

Basin Environmental Service Technologies, LLC, has prepared this *Remediation Summary & Risk-Based Site Closure Proposal* 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 Fasken Oil and Ranch, Ltd. 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 Fasken Oil and Ranch, Ltd.



**DISTRIBUTION:**

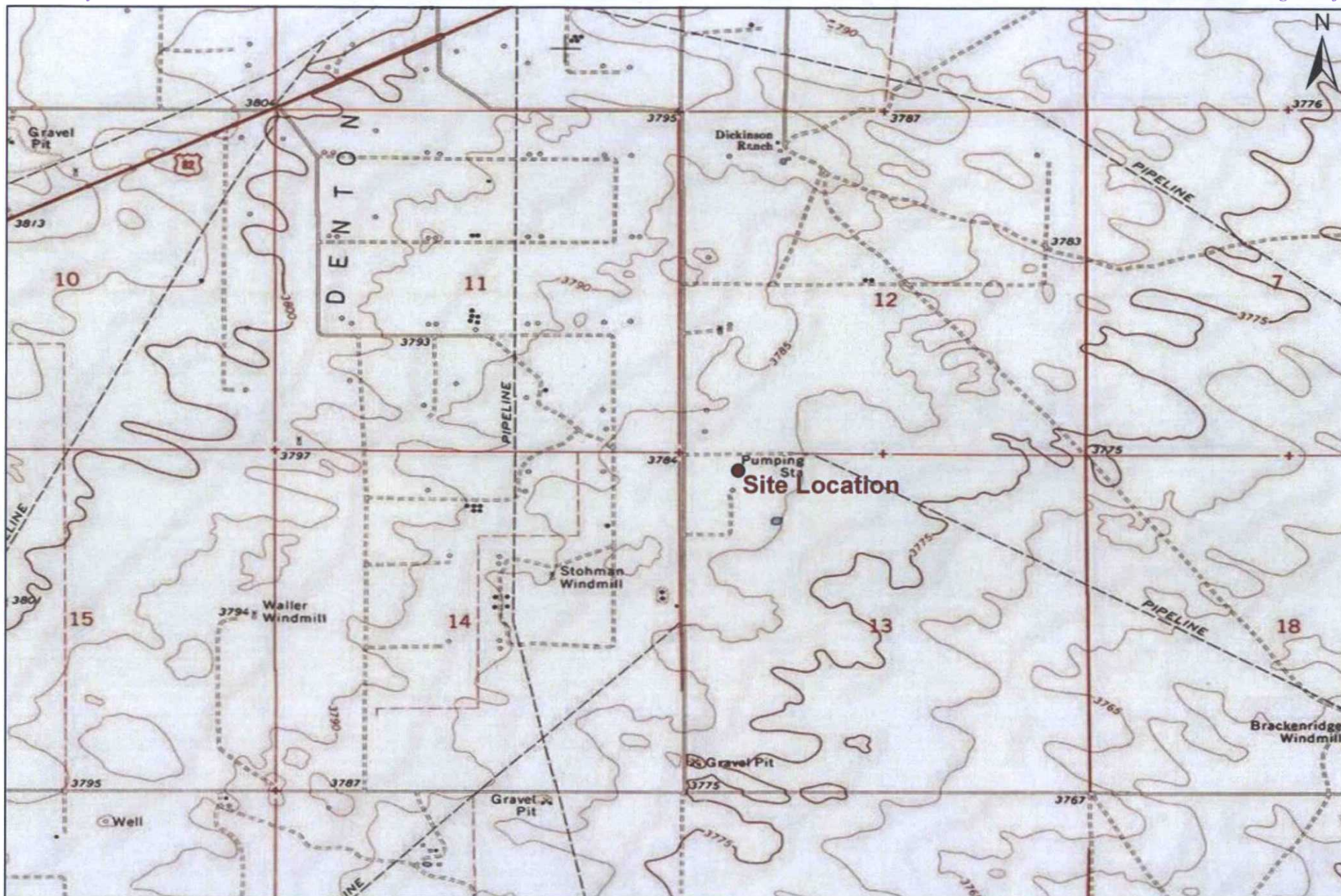
Copy 1: Geoffrey Leking  
New Mexico Energy, Minerals and Natural Resources Department  
Oil Conservation Division (District 1)  
1625 N. French Dr.  
Hobbs, NM 88240

Copy 2: Jimmy Carlile  
Fasken Oil and Ranch, Ltd.  
303 West Wall, Suite 1800  
Midland, TX 79701

Copy 3: Basin Environmental Service Technologies, LLC  
P.O. Box 301  
Lovington, NM 88260

## FIGURES





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

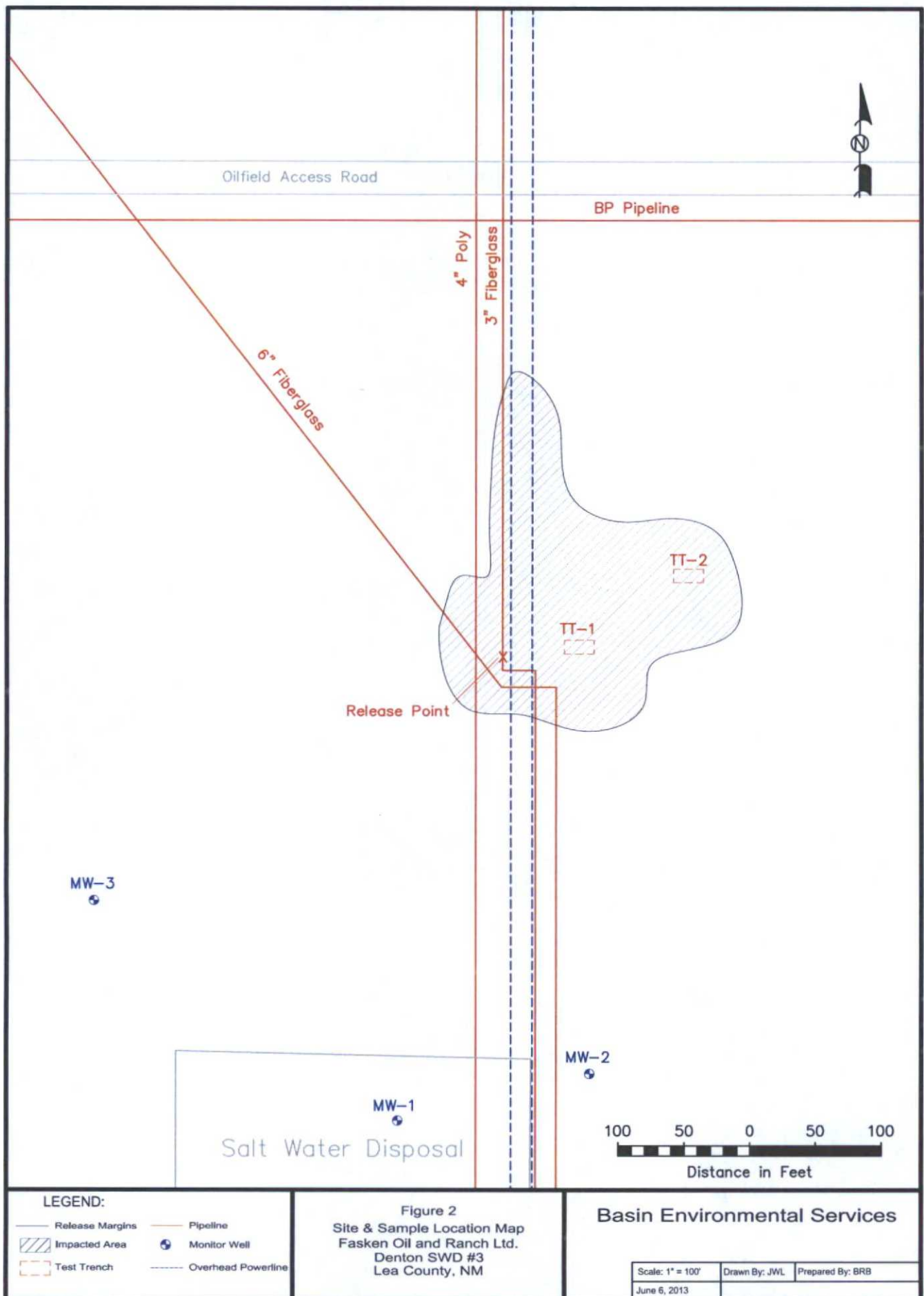
**Figure 1**  
**Site Location Map**  
**Fasken Oil & Ranch, Ltd.**  
**Denton SWD #3**  
**Lea County, New Mexico**



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

Drawn By: BJA	Checked By: JWL
June 6, 2013	Scale: 1" = 2000'





## TABLES

TABLE 1  
CONCENTRATIONS OF BENZENE, BTEX, TPH & CHLORIDE IN SOIL  
FASKEN OIL AND RANCH  
DENTON SWD #3  
LEA COUNTY, NEW MEXICO  
NMOCD REF# 1RP-N/A

SAMPLE LOCATION	SAMPLE DEPTH (BGS)	SAMPLE DATE	SOIL STATUS	METHOD: EPA SW 846-8021B, 5030				METHOD: 8015M				TOTAL TPH C <sub>9</sub> -C <sub>28</sub> (mg/Kg)	EPA: 300 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>13</sub> -C <sub>28</sub> (mg/Kg)	ORO C <sub>29</sub> -C <sub>35</sub> (mg/Kg)		
TT-1 @ Surface	Surface	5/13/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	23.6	<10.0	<10.0	23.6	6,400
TT-1 @ 3.5'	3.5'	5/13/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	3,960
TT-2 @ Surface	Surface	5/13/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	64.0
TT-2 @ 2'	2'	5/13/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	3,000
NMOCD Standard				10				50				1,000	250

== Not analyzed.

## APPENDICES



## **Appendix A**

### **Release Notification and Corrective Action (Form C-141)**



District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., 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 August 8, 2011

Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

### Release Notification and Corrective Action

#### OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Fasken Oil and Ranch, Ltd.	Contact	Jimmy D. Carlile
Address	6101 Holiday Hill Rd., Midland, TX	Telephone No.	432-687-1777
Facility Name	Denton SWD No. 3	Facility Type	SWD Injection Line
Surface Owner	Darr Angell	Mineral Owner	Fee
		API No.	

#### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	12	15S	37E	660'	South	330'	West	Lea

Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

#### NATURE OF RELEASE

Type of Release	Produced Water	Volume of Release	20	Volume Recovered	0
Source of Release	Injection Line	Date and Hour of Occurrence	Date and Hour of Discovery 4-29-13		
Was Immediate Notice Given?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Fax report upon receiving data.		
By Whom?		Date and Hour			
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.\*

N/A

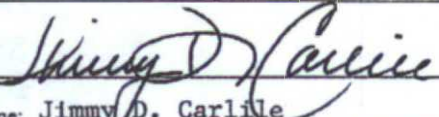
Describe Cause of Problem and Remedial Action Taken.\*

4" vietaulic clamp corroded and broke. Pump shut down immediately due to low pressure. Site dug out and clamp replaced.

Describe Area Affected and Cleanup Action Taken.\*

Pasture area approximately 100' X 75' affected. Plan will be proposed to OCD to dig out to hard caliche layer, line and backfill with clean material.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOC 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 NMOC 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, NMOC 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: Jimmy D. Carlile	Approved by Environmental Specialist:	
Title: Regulatory Affairs Coordinator	Approval Date:	Expiration Date:
E-mail Address: jimmyc@for1.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 5-1-2013	Phone: 432-687-1777	

\* Attach Additional Sheets If Necessary

# **Appendix B**

## **Photographs**





Photograph of the release at the Denton SWD #3 Environmental Remediation Site.

# **Appendix C**

## **Laboratory Analytical Reports**



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

May 15, 2013

BEN J. ARGUJO

Basin Environmental Service

P.O. Box 301

Lovington, NM 88260

RE: DENTON SWD #3

Enclosed are the results of analyses for samples received by the laboratory on 05/14/13 9:25.

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,

Caley D. Keene

Lab Director/Quality Manager





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

**Analytical Results For:**

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

Received: 05/14/2013  
 Reported: 05/15/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 05/13/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-1 @ SURFACE (H301149-01)****BTEX 8021B****mg/kg****Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/15/2013	ND	2.03	101	2.00	6.60	
Toluene*	<0.050	0.050	05/15/2013	ND	1.84	92.2	2.00	6.17	
Ethylbenzene*	<0.050	0.050	05/15/2013	ND	1.98	99.1	2.00	5.16	
Total Xylenes*	<0.150	0.150	05/15/2013	ND	5.91	98.5	6.00	5.31	
Total BTEX	<0.300	0.300	05/15/2013	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 110 % 89.4-126

**Chloride, SM4500Cl-B****mg/kg****Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>6400</b>	16.0	05/14/2013	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	05/14/2013	ND	211	106	200	1.96	
<b>DRO &gt;C10-C28</b>	<b>23.6</b>	10.0	05/14/2013	ND	208	104	200	1.47	
EXT DRO >C28-C35	<10.0	10.0	05/14/2013	ND					

Surrogate: 1-Chlorooctane 111 % 65.2-140

Surrogate: 1-Chlorooctadecane 120 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager





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

**Analytical Results For:**

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

Received: 05/14/2013  
 Reported: 05/15/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 05/13/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-1 @ 3.5' (H301149-02)**

BTEX 8021B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/15/2013	ND	2.03	101	2.00	6.60	
Toluene*	<0.050	0.050	05/15/2013	ND	1.84	92.2	2.00	6.17	
Ethylbenzene*	<0.050	0.050	05/15/2013	ND	1.98	99.1	2.00	5.16	
Total Xylenes*	<0.150	0.150	05/15/2013	ND	5.91	98.5	6.00	5.31	
Total BTEX	<0.300	0.300	05/15/2013	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 109 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3960	16.0	05/14/2013	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	05/14/2013	ND	211	106	200	1.96	
DRO >C10-C28	<10.0	10.0	05/14/2013	ND	208	104	200	1.47	
EXT DRO >C28-C35	<10.0	10.0	05/14/2013	ND					

Surrogate: 1-Chlorooctane 113 % 65.2-140

Surrogate: 1-Chlorooctadecane 121 % 63.6-154

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

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

Received: 05/14/2013  
 Reported: 05/15/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 05/13/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-2 @ SURFACE (H301149-03)**

BTEX 8021B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/15/2013	ND	2.03	101	2.00	6.60	
Toluene*	<0.050	0.050	05/15/2013	ND	1.84	92.2	2.00	6.17	
Ethylbenzene*	<0.050	0.050	05/15/2013	ND	1.98	99.1	2.00	5.16	
Total Xylenes*	<0.150	0.150	05/15/2013	ND	5.91	98.5	6.00	5.31	
Total BTEX	<0.300	0.300	05/15/2013	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 109 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	05/14/2013	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	05/14/2013	ND	211	106	200	1.96	
DRO >C10-C28	<10.0	10.0	05/14/2013	ND	208	104	200	1.47	
EXT DRO >C28-C35	<10.0	10.0	05/14/2013	ND					

Surrogate: 1-Chlorooctane 111 % 65.2-140

Surrogate: 1-Chlorooctadecane 120 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

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

Received: 05/14/2013  
 Reported: 05/15/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 05/13/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-2 @ 2' (H301149-04)**

BTX 8021B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/15/2013	ND	2.03	101	2.00	6.60	
Toluene*	<0.050	0.050	05/15/2013	ND	1.84	92.2	2.00	6.17	
Ethylbenzene*	<0.050	0.050	05/15/2013	ND	1.98	99.1	2.00	5.16	
Total Xylenes*	<0.150	0.150	05/15/2013	ND	5.91	98.5	6.00	5.31	
Total BTX	<0.300	0.300	05/15/2013	ND					

Surrogate: 4-Bromofluorobenzene (PIB) 109 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3000	16.0	05/14/2013	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	05/14/2013	ND	211	106	200	1.96	
DRO >C10-C28	<10.0	10.0	05/14/2013	ND	208	104	200	1.47	
EXT DRO >C28-C35	<10.0	10.0	05/14/2013	ND					

Surrogate: 1-Chlorooctane 107 % 65.2-140

Surrogate: 1-Chlorooctadecane 114 % 63.6-154

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**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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A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager

101 East Marland  
Hobbs, NM 88240  
Tel (575) 393-2326  
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# Cardinal Laboratories

Company Name: Basin Environmental Service Technologies, LLC Phone #: (575)396-2378

Address: P.O. Box 301  
Lovington, NM 88260 Fax #: (575)396-1429

Contact Person: E-mail: [pm@basinenvironment.com](mailto:pm@basinenvironment.com)

Invoice to: Basin Environmental Service Technologies, LLC

Project #: Fasken Project Name: Denton SWD #3

Project Location: (include state) Lea Co., NM Sampler Signature:

LAB ID	SAMPLE ID	(G)RAB or (C)OMP	# CONTAINERS	MATRIX				PRESERVATIVE METHOD						SAMPLING		THP	Chloride	BTEX																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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1	TT-1 @ Surface	G	1	X								X		6/13/13	1105
2	TT-1 @ 3.5'	G	1	X								X		6/13/13	1120
3	TT-2 @ Surface	G	1	X								X		6/13/13	1130
4	TT-2 @ 2'	G	1	X								X		6/13/13	1145

## ANALYSIS REQUEST (Circle or Specify Method No.)

Turn Around Time if different from standard  
Hold

Shipped by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST	OBS	°C
Shipped by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST	OBS	°C

Shipped by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST	OBS	°C
Shipped by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST	OBS	°C

LAB USE ONLY

Intact Y/N

Headspace Y/N/NA

Log-In Review

Carrier #

REMARKS:

☐ Dry Weight Basis Required

☐ TRRP Report Required

☐ Check if Special Reporting Units Are Needed

## *Basin Environmental Service Technologies, LLC*

3100 Plains Highway  
P. O. Box 301  
Lovington, New Mexico 88260

**[bjarguijo@basinenv.com](mailto:bjarguijo@basinenv.com)**

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

**FASKEN OIL & RANCH, LTD.  
DENTON SWD #3  
Lea County, New Mexico  
Unit Letter "M" (SW/SW), Section 12, Township 15 South, Range 37 East  
Latitude 33.023724° North, Longitude 103.159774° West  
NMOCD Reference #1RP-2915**

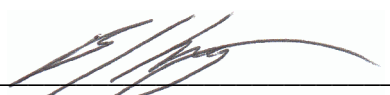
Prepared For:

Fasken Oil & Ranch, Ltd.  
303 West Wall, Suite 1800  
Midland, TX 79701

Prepared By:

Basin Environmental Service Technologies, LLC  
3100 Plains Highway  
Lovington, NM 88260

**July 2015**

  
Ben J. Arguijo  
Project Manager



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## FIGURES

Figure 1 – Site Location Map

Figure 2 – Site & Sample Location Map

## TABLES

Table 1 – Concentrations of BTEX, TPH & Chloride in Soil

## APPENDICES

Appendix A – Release Notification and Corrective Action (Form C-141)

Appendix B – Photographs

Appendix C – Soil Boring Logs

Appendix D – Laboratory Analytical Reports

## 1.0 INTRODUCTION & BACKGROUND INFORMATION

Basin Environmental Service Technologies, LLC (Basin Environmental), on behalf of Fasken Oil & Ranch, Ltd. (Fasken), has prepared this *Remediation Summary & Risk-Based Site Closure Proposal* for the release site known as Denton SWD #3. The legal description of the release site is Unit Letter "M" (SW/SW), Section 12, Township 15 South, Range 37 East in Lea County, New Mexico. The geographic coordinates of the release site are 33.023724° North latitude and -103.159774° West longitude. The property affected by the release is owned by Mr. Darr Angel.

On April 29, 2013, Fasken discovered a release had occurred at the Denton #3 Salt Water Disposal (SWD). The release was attributed to the failure of a victaulic clamp on a four-inch (4") injection line. During initial response activities, the pump connected to the injection line was shut down, and the damaged clamp was replaced. The "Release Notification and Corrective Action" (Form C-141) indicated approximately twenty barrels (20 bbls) of produced water were released. The release impacted an area of pastureland measuring approximately one hundred feet (100') in length and seventy-five (75') in width.

Please reference Figure 1 for a "Site Location Map". 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) indicates groundwater in Section 12, Township 15 South, Range 37 East should be encountered at approximately fifty-nine feet (59') below ground surface (bgs). Based on the NMOCD ranking system, ten (10) points will be assigned to the site as a result of this criterion.

A search of the NMWRRS database indicated there are no domestic water wells within one thousand feet (1,000') 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 one thousand feet (1,000') 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 Denton SWD #3 release site has an initial ranking score of ten (10) points. The soil remediation levels for a site with a ranking score of ten (10) points are as follows:

- Benzene – 10 mg/kg (ppm)
- Benzene, toluene, ethylbenzene, and total xylene (BTEX) – 50 mg/kg (ppm)
- Total petroleum hydrocarbons (TPH) – 1,000 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

On May 13, 2013, Basin Environmental responded to the release site. Two (2) test trenches (TT-1 and TT-2) were advanced to investigate the horizontal and vertical extent of impacted soil. Trench TT-1 was located approximately sixty-five feet (65') east of the release point, in an inferred pooling area of the release. The trench was advanced to approximately three and one-half feet (3.5') bgs, and soil samples collected from the trench floors were field-screened with a chloride field test kit. Two (2) confirmation samples (TT-1 @ Surface and TT-1 @ 3.5') were submitted to Cardinal Laboratories in Hobbs, New Mexico, for analysis of BTEX, TPH, and chloride concentrations in accordance with the analytical methods listed in Section 4.0, "Quality Assurance/Quality Control (QA/QC) Procedures", below. Laboratory analytical results indicated BTEX constituent concentrations were less than the appropriate laboratory method detection limit (MDL) in each of the submitted samples. TPH concentrations ranged from less than the laboratory MDL in sample TT-1 @ 3.5' to 23.6 mg/kg in sample TT-1 @ Surface. Chloride concentrations ranged from 3,960 mg/kg in sample TT-1 @ 3.5' to 6,400 mg/kg in sample TT-1 @ Surface.

TT-2 was located approximately ninety-five feet (95') northeast of TT-1, in an inferred pooling area of the release. The trench was advanced to approximately two feet (2') bgs, and soil samples collected from the trench floors were field-screened with a chloride field test kit. Two (2) confirmation samples (TT-2 @ Surface and TT-2 @ 2) were submitted to the laboratory for analysis of BTEX, TPH, and chloride concentrations. Laboratory analytical results indicated BTEX and TPH concentrations were less than the appropriate laboratory MDL in each of the submitted samples. Chloride concentrations ranged from 64.0 mg/kg in sample TT-2 @ Surface to 3,000 mg/kg in sample TT-1 @ 3.5'.

Laboratory analytical results and field-screens indicated additional delineation of the release site was required. However, further vertical advancement of the test trenches was deemed to be impracticable due to the presence of a hard rock layer running underneath the site at depths ranging from approximately two feet (2') to four feet (4') bgs.

Table 1 summarizes the "Concentrations of Benzene, BTEX, TPH & Chloride in Soil". A "Site & Sample Location Map" is provided as Figure 2. Laboratory analytical reports are provided in Appendix E.

From October 7 through October 8, 2013, a series of fourteen (14) test trenches (TT-3 through TT-17) were advanced at the site to further investigate the extent of impacted soil. The trenches were spaced approximately fifty feet (50') apart and were advanced vertically to the hard rock layer underneath the site and in ten-foot (10') horizontal increments. Soil samples collected from the trench floors were field-screened with a chloride field test kit, and a selection of representative soil samples were submitted to the laboratory for confirmatory analyses of chloride, TPH, and/or BTEX.

Trenches TT-3 through TT-6 and TT-10 were advanced east-to-west across the inferred eastern boundary of the impacted area, beginning with trench TT-3 approximately one hundred ten feet (110') east of the release point and ending with trench TT-6 approximately one hundred sixty-five feet (165') north-northeast of the release point. Trenches TT-7 through TT-9 were advanced south-to-north across the inferred northern boundary of the impacted area, beginning with trench



TT-7 approximately one hundred ten feet (150') northeast of the release point and ending with trench TT-9 approximately one hundred twenty feet (120') north-northeast of the release point. Trenches TT-11 and TT-17 were advanced diagonally northwest-to-southeast along the inferred southern boundary of the impacted area, with trench TT-11 located approximately eighty-five feet (85') southeast of the release point and trench TT-17 located approximately forty-five feet (45') southeast of the release point. Trench TT-13 was advanced diagonally northwest-to-southeast across the inferred northern boundary of the impacted area and intersected trenches TT-9 and TT-10. Trench TT-12 was advanced diagonally southwest-to-northeast in the impacted area, approximately sixty feet (60') northeast of the release point. Trenches TT-14 through TT-16 were advanced in the pastureland west of the four-inch (4") injection line.

A total of fourteen (14) confirmation samples (TT-3, TT-4, TT-5, TT-6, TT-7, TT-8, TT-9, TT-10, TT-11, TT-13, TT-14, TT-15, TT-16, and TT-17) were submitted to the laboratory for analysis of BTEX, TPH, and/or chloride concentrations. Laboratory analytical results indicated TPH and BTEX constituent concentrations were less than the appropriate laboratory MDL in all submitted samples. Chloride concentrations ranged from less than the laboratory MDL in samples TT-6, TT-7, and TT-9 to 1,720 mg/kg in sample TT-5.

Delineation (and, subsequently, excavation) along the western boundary of the impacted area was deemed impracticable due to the presence of three (3) active, high-pressure, fiberglass pipelines running north-to-south adjacent to, and through, the release site.

On October 9, 2013, excavation of impacted soil commenced at the site. From October 9 through October 24, 2013, excavated soil was stockpiled on-site, pending final disposition.

From October 10 through October 25, 2013, approximately three thousand, three hundred forty cubic yards (3,340 yd<sup>3</sup>) of impacted material was transported to Gandy Marley, Inc. (NMOCD Permit # DP-1041), for disposal.

On October 23, 2013, one (1) soil sample (TT-5b) was collected from the sidewall of the excavation in the area represented by delineation trench TT-5 and submitted to the laboratory for analysis of BTEX, TPH, and chloride concentrations. Laboratory analytical results indicated BTEX, TPH, and chloride concentrations in sample TT-5b were less than the appropriate laboratory MDL.

On October 24, 2013, six (6) soil samples (Floor #1, Floor #2, Floor #3, Floor #4, Floor #5, and Floor #6) were collected from the floor of the excavation and submitted to the laboratory for analysis of TPH and chloride concentrations. Samples Floor #1 and Floor #3 were also analyzed for concentrations of BTEX. Laboratory analytical results indicated TPH concentrations were less than the laboratory MDL in all submitted samples, with the exception of sample Floor #2, which exhibited a TPH concentration of 12.7 mg/kg. Chloride concentrations ranged from 96.0 mg/kg in soil sample Floor #1 to 4,320 mg/kg in soil sample Floor #5. BTEX constituent concentrations in samples Floor #1 and Floor #3 were less than the appropriate laboratory MDL.

Delineation trenches TT-3, TT-4, and TT-5 were also advanced an additional twenty feet (20') to the east, and three (3) confirmation samples (TT-3b, TT-4b, and TT-5c) were submitted to the laboratory for analysis of TPH and chloride concentrations. Laboratory analytical results indicated TPH concentrations were less than the laboratory MDL in all submitted samples.

Chloride concentrations ranged from less than the laboratory MDL in samples TT-4b and TT-5c to 288 mg/kg in sample TT-3b.

Based on laboratory analytical results, and with NMOCD approval, from October 24 through October 29, 2013, an impermeable clay liner was installed on the floor of the excavation, compacted, and leveled. Following installation of the clay liner, the excavation was backfilled with locally purchased, non-impacted material, compacted, and contoured to fit the surrounding topography. Final dimensions of the excavation were approximately two hundred seventy-eight feet (278') in length, ranging in width from approximately thirty-three feet (33') to approximately one hundred ninety-seven feet (197'), and ranging in depth from approximately two feet (2') to approximately three feet (3') bgs.

On July 25, 2014, a representative of Basin Environmental met with a representative of the NMOCD Hobbs District Office to determine the appropriate number and locations of soil borings required to achieve vertical delineation of the release. The locations of three (3) proposed soil borings (SB-1 through SB-3) were approved by the NMOCD representative.

On, August 1, 2014, with NMOCD and landowner approval, three (3) soil borings (SB-1 through SB-3) were advanced at the site to investigate the vertical extent of impacted soil. Samples were collected at five-foot (5') drilling intervals and field-screened with a chloride field test kit. Selected soil samples were submitted to the laboratory for analysis of BTEX, TPH, and/or chloride concentrations. Soil boring locations are depicted in Figure 2. Soil boring logs are provided as Appendix C.

Soil boring SB-1 was advanced near the release point, in the area represented by samples Floor #2 and TT-1. The soil boring was advanced to a total depth of approximately thirty feet (30') bgs. Soil samples collected at five (5), twenty (20), twenty-five (25), and thirty feet (30') bgs were submitted to the laboratory for analysis of BTEX, TPH, and/or chloride concentrations. Laboratory analytical results indicated BTEX and TPH concentrations were less than the appropriate laboratory MDL in all submitted samples. Chloride concentrations ranged from 160 mg/kg in soil sample SB-1 @ 30' to 400 mg/kg in soil sample SB-1 @ 20'.

Soil boring SB-2 was advanced in the area represented by soil sample Floor #6, approximately two hundred twenty-five feet (225') to the north of soil boring SB-1. The soil boring was advanced to a total depth of approximately thirty-five feet (35') bgs. Soil samples collected at five (5), fifteen (15), twenty-five (25), thirty (30), and thirty-five feet (35') bgs were submitted to the laboratory for analysis of BTEX, TPH, and/or chloride concentrations. Laboratory analytical results indicated BTEX and TPH concentrations were less than the appropriate laboratory MDL in all submitted samples. Chloride concentrations ranged from 80.0 mg/kg in soil sample SB-2 @ 35' to 368 mg/kg in soil sample SB-2 @ 15'.

Soil boring SB-3 was advanced in the pooling area of the release, approximately one hundred twelve feet (112') to the northeast of soil boring SB-1. The soil boring was advanced to a total depth of approximately twenty feet (20') bgs. Soil samples collected at five (5), ten (10), fifteen (15), and twenty feet (20') bgs were submitted to the laboratory for analysis of BTEX, TPH, and/or chloride concentrations. Laboratory analytical results indicated BTEX and TPH concentrations were less than the appropriate laboratory MDL in all submitted samples. Chloride

concentrations ranged from 96.0 mg/kg in soil sample SB-3 @ 20' to 704 mg/kg in soil sample SB-3 @ 10'.

On October 17, 2014, the Denton SWD #3 release site was seeded with a landowner-approved seed mixture. The site will be seeded a second time in 2015 at a time conducive to germination.

#### **4.0 QUALITY ASSURANCE/QUALITY COTROL (QA/QC) PROCEDURES**

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

Soil samples were delivered to Cardinal Laboratories, Inc., of Hobbs, New Mexico, for BTEX, 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 modified EPA Method SW-846 8015M
- Chloride concentrations in accordance with EPA Method SM 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 Denton SWD #3 release site met the objectives set forth in the *Remediation Summary & Risk-Based Site Closure Proposal*, dated June 2013. Soil samples collected from the floor and sidewalls of the Denton SWD #3 excavation were analyzed by an NMOCD-approved laboratory, and concentrations of benzene, BTEX, and TPH were below the recommended remediation action levels (RRALs) established for the site by the NMOCD.

A clay liner was installed on the floor of the excavation prior to backfilling. This engineered control will help mitigate potential releases and effectively inhibit vertical migration of contaminants left in-situ both downward to the underlying groundwater and upward to the vegetative zone. In-situ soil exhibiting chloride concentrations above the RRAL established for the site will be remediated upon decommission and/or abandonment of the currently active pipelines adjacent to the excavation.



Basin Environmental recommends Fasken provide the NMOCD Hobbs District Office a copy of this *Remediation Summary & Risk-Based Site Closure Request* and request the NMOCD grant site closure to the Denton SWD #3 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 Environmental has examined and relied upon documents referenced in the report and on oral statements made by certain individuals. Basin Environmental has not conducted an independent examination of the facts contained in referenced materials and statements. Basin Environmental has presumed the genuineness of these documents and statements and that the information provided therein is true and accurate. Basin Environmental has prepared this report in a professional manner, using the degree of skill and care exercised by similar environmental consultants. Basin Environmental 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 Fasken Oil & Ranch, Ltd.. 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 Fasken Oil & Ranch, Ltd.

**DISTRIBUTION:**

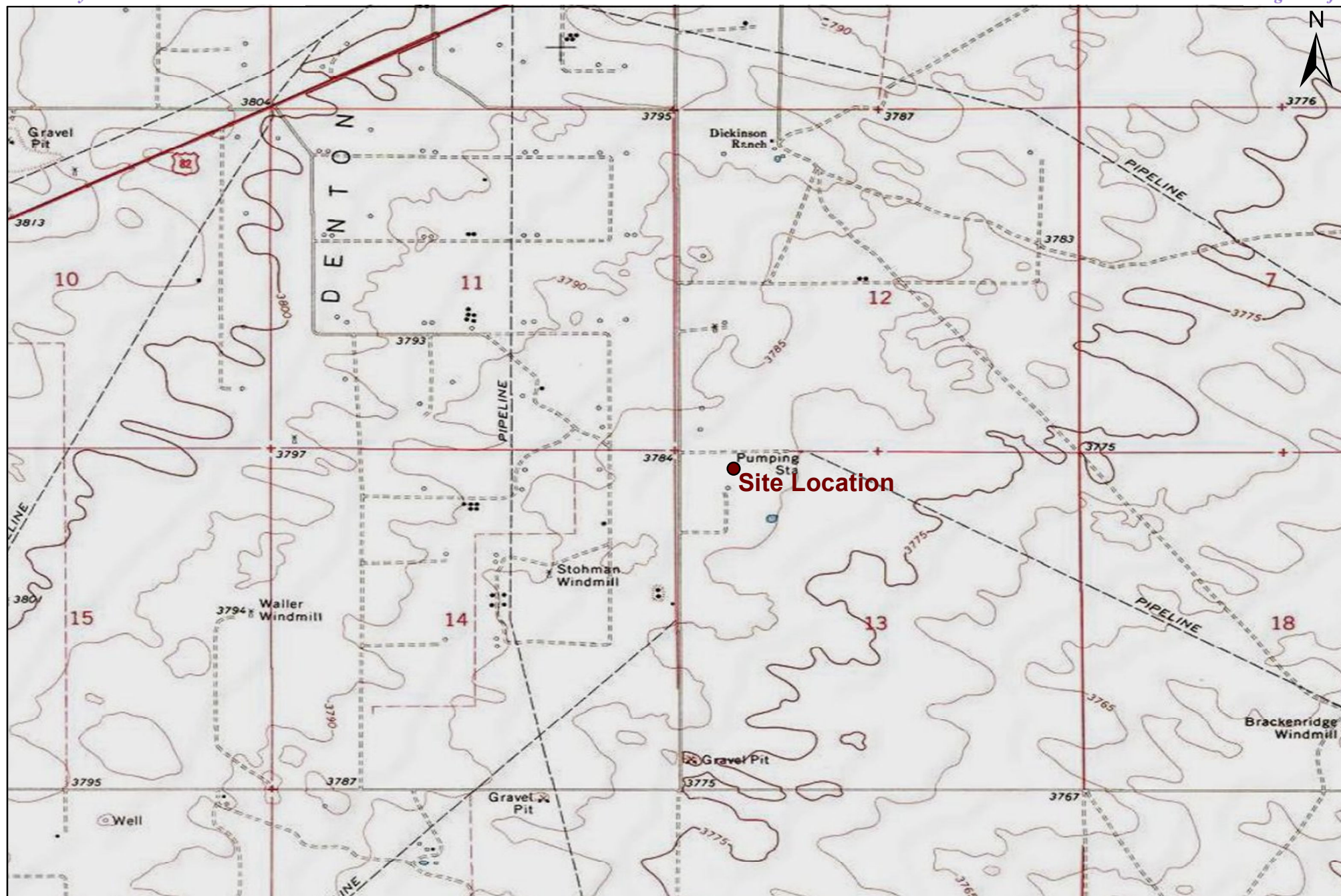
Copy 1: Geoffrey Leking  
New Mexico Energy, Minerals and Natural Resources Department  
Oil Conservation Division (District 1)  
1625 N. French Dr.  
Hobbs, NM 88240

Copy 2: Jimmy Carlile  
Fasken Oil & Ranch, Ltd.  
303 West Wall, Suite 1800  
Midland, TX 79701

Copy 3: Basin Environmental Service Technologies, LLC  
P.O. Box 301  
Lovington, NM 88260

# Figures





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

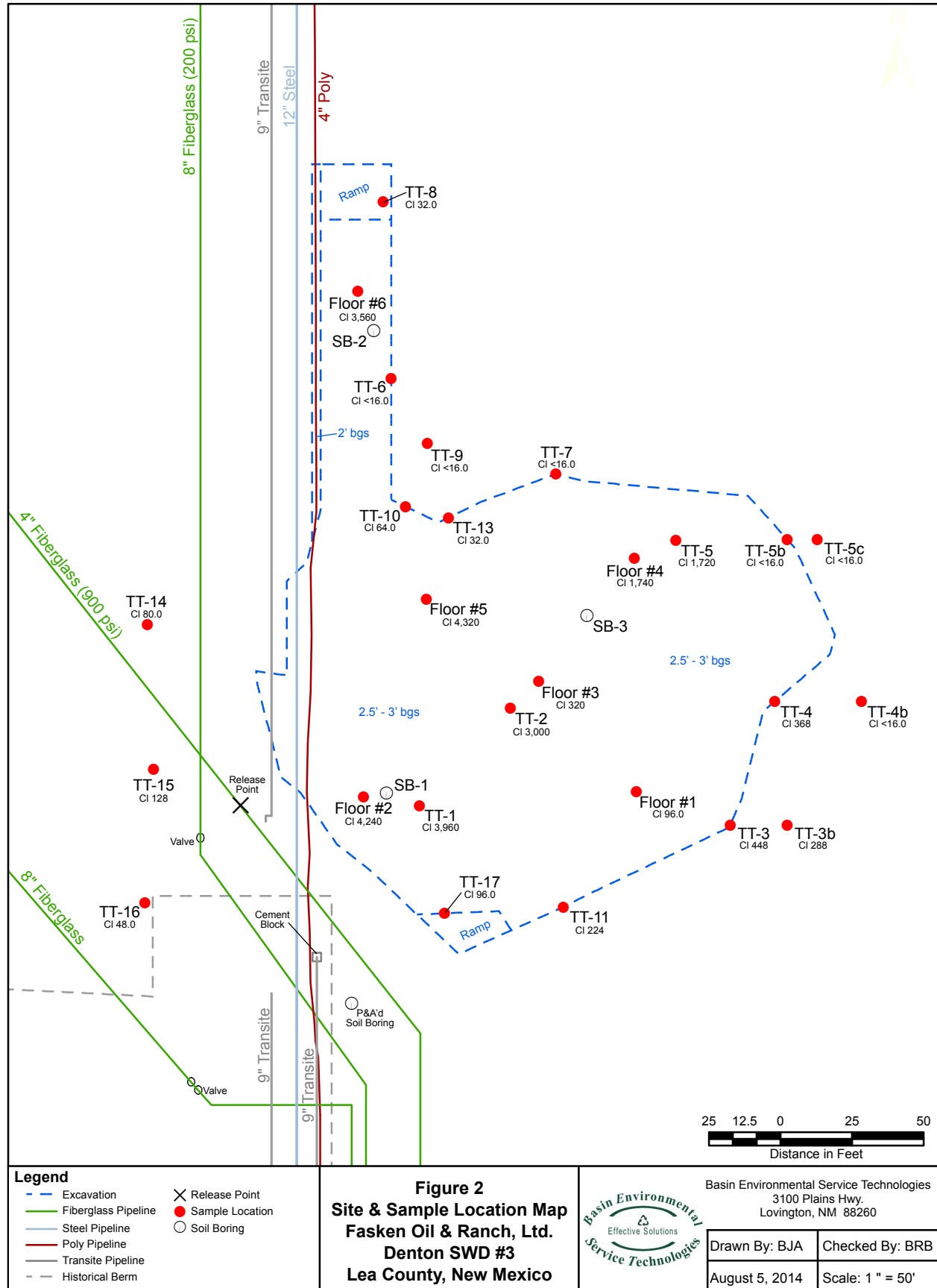
**Figure 1**  
**Site Location Map**  
**Fasken Oil & Ranch, Ltd.**  
**Denton SWD #3**  
**Lea County, New Mexico**



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

Drawn By: BJA      Checked By: JWL

June 6, 2013      Scale: 1" = 2000'



# Tables



TABLE 1

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

FASKEN OIL &amp; RANCH, LTD.

DENTON SWD #3

LEA 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>28</sub> (mg/Kg)	EPA: 300 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)		
TT-1 @ Surface	Surface	5/13/2013	Excavated	<0.050	<0.050	<0.050	<0.150	<0.300	23.6	<10.0	<10.0	23.6	6,400
TT-1 @ 3.5'	3.5'	5/13/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	3,960
TT-2 @ Surface	Surface	5/13/2013	Excavated	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	64.0
TT-2 @ 2'	2'	5/13/2013	Excavated	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	3,000
TT-3	2.5'	10/7/2013	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	448
TT-4	2.5'	10/7/2013	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	368
TT-5	2.5'	10/7/2013	Excavated	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	1,720
TT-6	2.5'	10/7/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
TT-7	2.5'	10/7/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
TT-8	2.5'	10/8/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	32.0
TT-9	2.5'	10/8/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
TT-10	2.5'	10/8/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	64.0
TT-11	2.5'	10/8/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	224
TT-13	2.5'	10/8/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	32.0
TT-14	2.5'	10/8/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	80.0
TT-15	2.5'	10/8/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	128
TT-16	2.5'	10/8/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	48.0
TT-17	2.5'	10/8/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	96.0
TT-5b	2.5'	10/23/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
Floor #1	2.5'	10/24/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	96.0
Floor #2	2.5'	10/24/2013	In-Situ	-	-	-	-	-	<10.0	12.7	<10.0	12.7	4,240
Floor #3	2.5'	10/24/2013	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	320
Floor #4	2.5'	10/24/2013	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	1,740
Floor #5	2.5'	10/24/2013	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	4,320
Floor #6	2.5'	10/24/2013	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	3,560
TT-3b	2.5'	10/24/2013	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	288
TT-4b	2.5'	10/24/2013	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	<16.0
TT-5c	2.5'	10/24/2013	In-Situ	-	-	-	-	-	<10.0	<10.0	<10.0	<10.0	<16.0

TABLE 1

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

FASKEN OIL &amp; RANCH, LTD.

DENTON SWD #3

LEA 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>28</sub> (mg/Kg)	EPA: 300 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'	8/1/2014	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	288
SB-1 @ 20'	20'	8/1/2014	In-Situ	-	-	-	-	-	-	-	-	-	400
SB-1 @ 25'	25'	8/1/2014	In-Situ	-	-	-	-	-	-	-	-	-	304
SB-1 @ 30'	30'	8/1/2014	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	160
SB-2 @ 5'	5'	8/1/2014	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	112
SB-2 @ 15'	15'	8/1/2014	In-Situ	-	-	-	-	-	-	-	-	-	368
SB-2 @ 25'	25'	8/1/2014	In-Situ	-	-	-	-	-	-	-	-	-	288
SB-2 @ 30'	30'	8/1/2014	In-Situ	-	-	-	-	-	-	-	-	-	208
SB-2 @ 35'	35'	8/1/2014	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	80.0
SB-3 @ 5'	5'	8/1/2014	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	288
SB-3 @ 10'	10'	8/1/2014	In-Situ	-	-	-	-	-	-	-	-	-	704
SB-3 @ 15'	15'	8/1/2014	In-Situ	-	-	-	-	-	-	-	-	-	144
SB-3 @ 20'	20'	8/1/2014	In-Situ	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<10.0	<10.0	96.0
NMOCD Recommended Remediation Action Level				10				50				1,000	500

- = Not analyzed.

# Appendices

# **Appendix A**

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



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

HOBBS OCD

State of New Mexico  
Energy Minerals and Natural Resources

MAY 03 2013

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

Form C-141  
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

RECEIVED

## Release Notification and Corrective Action

## OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Fasken Oil and Ranch, Ltd.	Contact	Jimmy D. Carlile
Address	6101 Holiday Hill Rd., Midland, TX	Telephone No.	432-687-1777
Facility Name	Denton SWD No. 3	79707	Facility Type SWD Injection Line

Surface Owner	Darr Angell	Mineral Owner	Fee	API No.	30.025.05306
---------------	-------------	---------------	-----	---------	--------------

## LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	12	15S	37E	660'	South	330'	West	Lea

Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

## NATURE OF RELEASE

Type of Release	Produced Water	Volume of Release	20	Volume Recovered	0
Source of Release	Injection Line	Date and Hour of Occurrence		Date and Hour of Discovery	4-29-13
Was Immediate Notice Given?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Fax report upon receiving data.		
By Whom?		Date and Hour			
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.\*

N/A

DTW = 52'



Describe Cause of Problem and Remedial Action Taken.\*

4" vietaulic clamp corroded and broke. Pump shut down immediately due to low pressure. Site dug out and clamp replaced.

Describe Area Affected and Cleanup Action Taken.\*

Pasture area approximately 100' X 75' affected. Plan will be proposed to OCD to dig out to hard caliche layer, line and backfill with clean material.

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: 	OIL CONSERVATION DIVISION	
Printed Name: Jimmy D. Carlile	Approved by Environmental Specialist:  Environmental Specialist	
Title: Regulatory Affairs Coordinator	Approval Date: 5-06-2013	Expiration Date: 07-08-2013
E-mail Address: jimnyc@for1.com	Conditions of Approval: SUBMIT FINAL	Attached <input type="checkbox"/>
Date: 5-1-2013 Phone: 432-687-1777	C-141 BY 07-08-2013.	IRP-05-13-2915

\* Attach Additional Sheets If Necessary

DELINATE AND REMEDIATE  
PER NMOCD RULES.

MAY 20 2013

# **Appendix B**

# **Photographs**

# **Appendix C**

## **Soil Boring Logs**

# **Appendix D**

## **Laboratory Analytical Reports**





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

---

May 15, 2013

BEN J. ARGUIJO

Basin Environmental Service

P.O. Box 301

Lovington, NM 88260

RE: DENTON SWD #3

Enclosed are the results of analyses for samples received by the laboratory on 05/14/13 9:25.

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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is fluid and cursive, with the first name "Celey" and last name "Keene" clearly distinguishable.

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

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

Received: 05/14/2013  
 Reported: 05/15/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 05/13/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-1 @ SURFACE (H301149-01)**

BTX 8021B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/15/2013	ND	2.03	101	2.00	6.60	
Toluene*	<0.050	0.050	05/15/2013	ND	1.84	92.2	2.00	6.17	
Ethylbenzene*	<0.050	0.050	05/15/2013	ND	1.98	99.1	2.00	5.16	
Total Xylenes*	<0.150	0.150	05/15/2013	ND	5.91	98.5	6.00	5.31	
Total BTX	<0.300	0.300	05/15/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID) 110 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6400	16.0	05/14/2013	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	05/14/2013	ND	211	106	200	1.96	
DRO >C10-C28	23.6	10.0	05/14/2013	ND	208	104	200	1.47	
EXT DRO >C28-C35	<10.0	10.0	05/14/2013	ND					

Surrogate: 1-Chlorooctane 111 % 65.2-140

Surrogate: 1-Chlorooctadecane 120 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



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

**Analytical Results For:**

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

Received: 05/14/2013  
 Reported: 05/15/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 05/13/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-1 @ 3.5' (H301149-02)**

BTEx 8021B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	05/15/2013	ND	2.03	101	2.00	6.60		
Toluene*	<0.050	0.050	05/15/2013	ND	1.84	92.2	2.00	6.17		
Ethylbenzene*	<0.050	0.050	05/15/2013	ND	1.98	99.1	2.00	5.16		
Total Xylenes*	<0.150	0.150	05/15/2013	ND	5.91	98.5	6.00	5.31		
Total BTEx	<0.300	0.300	05/15/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 109 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	3960	16.0	05/14/2013	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	05/14/2013	ND	211	106	200	1.96	
DRO >C10-C28	<10.0	10.0	05/14/2013	ND	208	104	200	1.47	
EXT DRO >C28-C35	<10.0	10.0	05/14/2013	ND					

Surrogate: 1-Chlorooctane 113 % 65.2-140

Surrogate: 1-Chlorooctadecane 121 % 63.6-154

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

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

Received: 05/14/2013  
 Reported: 05/15/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 05/13/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-2 @ SURFACE (H301149-03)**

BTX 8021B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	05/15/2013	ND	2.03	101	2.00	6.60		
Toluene*	<0.050	0.050	05/15/2013	ND	1.84	92.2	2.00	6.17		
Ethylbenzene*	<0.050	0.050	05/15/2013	ND	1.98	99.1	2.00	5.16		
Total Xylenes*	<0.150	0.150	05/15/2013	ND	5.91	98.5	6.00	5.31		
Total BTX	<0.300	0.300	05/15/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 109 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	64.0	16.0	05/14/2013	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	05/14/2013	ND	211	106	200	1.96	
DRO >C10-C28	<10.0	10.0	05/14/2013	ND	208	104	200	1.47	
EXT DRO >C28-C35	<10.0	10.0	05/14/2013	ND					

Surrogate: 1-Chlorooctane 111 % 65.2-140

Surrogate: 1-Chlorooctadecane 120 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

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

Received: 05/14/2013  
 Reported: 05/15/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 05/13/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-2 @ 2' (H301149-04)**

BTEx 8021B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	05/15/2013	ND	2.03	101	2.00	6.60		
Toluene*	<0.050	0.050	05/15/2013	ND	1.84	92.2	2.00	6.17		
Ethylbenzene*	<0.050	0.050	05/15/2013	ND	1.98	99.1	2.00	5.16		
Total Xylenes*	<0.150	0.150	05/15/2013	ND	5.91	98.5	6.00	5.31		
Total BTEx	<0.300	0.300	05/15/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 109 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	3000	16.0	05/14/2013	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	05/14/2013	ND	211	106	200	1.96	
DRO >C10-C28	<10.0	10.0	05/14/2013	ND	208	104	200	1.47	
EXT DRO >C28-C35	<10.0	10.0	05/14/2013	ND					

Surrogate: 1-Chlorooctane 107 % 65.2-140

Surrogate: 1-Chlorooctadecane 114 % 63.6-154

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---

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---

### 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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A handwritten signature in black ink that reads "Celey D. Keene".

---

Celey D. Keene, Lab Director/Quality Manager

Carrier #



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---

October 16, 2013

BEN J. ARGUIJO

Basin Environmental Service

P.O. Box 301

Lovington, NM 88260

RE: DENTON SWD #3

Enclosed are the results of analyses for samples received by the laboratory on 10/09/13 8:30.

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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager





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**Analytical Results For:**

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

Received: 10/09/2013  
 Reported: 10/16/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/07/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-3 (H302439-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	448	16.0	10/09/2013	ND	416	104	400	3.77	
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	10/12/2013	ND	188	94.1	200	0.921	
DRO >C10-C28	<10.0	10.0	10/12/2013	ND	187	93.4	200	0.907	
EXT DRO >C28-C35	<10.0	10.0	10/12/2013	ND					
Surrogate: 1-Chlorooctane		94.1 %	65.2-140						
Surrogate: 1-Chlorooctadecane		96.9 %	63.6-154						

**Sample ID: TT-4 (H302439-02)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	368	16.0	10/09/2013	ND	416	104	400	3.77	
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	10/10/2013	ND	188	94.1	200	0.921	
DRO >C10-C28	<10.0	10.0	10/10/2013	ND	187	93.4	200	0.907	
EXT DRO >C28-C35	<10.0	10.0	10/10/2013	ND					
Surrogate: 1-Chlorooctane	94.5 %	65.2-140							
Surrogate: 1-Chlorooctadecane	101 %	63.6-154							

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

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

Received: 10/09/2013  
 Reported: 10/16/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/07/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-5 (H302439-03)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1720	16.0	10/09/2013	ND	416	104	400	3.77	
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	10/10/2013	ND	188	94.1	200	0.921	
DRO >C10-C28	<10.0	10.0	10/10/2013	ND	187	93.4	200	0.907	
EXT DRO >C28-C35	<10.0	10.0	10/10/2013	ND					
Surrogate: 1-Chlorooctane	97.2 %	65.2-140							
Surrogate: 1-Chlorooctadecane	100 %	63.6-154							

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**Analytical Results For:**

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

Received: 10/09/2013  
 Reported: 10/16/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/07/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-6 (H302439-04)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/14/2013	ND	1.85	92.5	2.00	4.76		
Toluene*	<0.050	0.050	10/14/2013	ND	1.91	95.5	2.00	4.72		
Ethylbenzene*	<0.050	0.050	10/14/2013	ND	1.95	97.3	2.00	4.21		
Total Xylenes*	<0.150	0.150	10/14/2013	ND	5.81	96.8	6.00	4.48		
Total BTEX	<0.300	0.300	10/14/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 89.4-126

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	10/09/2013	ND	416	104	400	3.77		

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	10/10/2013	ND	188	94.1	200	0.921	
DRO >C10-C28	<10.0	10.0	10/10/2013	ND	187	93.4	200	0.907	
EXT DRO >C28-C35	<10.0	10.0	10/10/2013	ND					

Surrogate: 1-Chlorooctane 97.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 101 % 63.6-154

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**Analytical Results For:**

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

Received: 10/09/2013  
 Reported: 10/16/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/07/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-7 (H302439-05)**

BTX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/14/2013	ND	1.85	92.5	2.00	4.76		
Toluene*	<0.050	0.050	10/14/2013	ND	1.91	95.5	2.00	4.72		
Ethylbenzene*	<0.050	0.050	10/14/2013	ND	1.95	97.3	2.00	4.21		
Total Xylenes*	<0.150	0.150	10/14/2013	ND	5.81	96.8	6.00	4.48		
Total BTX	<0.300	0.300	10/14/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.8 % 89.4-126

Chloride, SM4500CI-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	10/09/2013	ND	416	104	400	3.77		

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	10/12/2013	ND	188	94.1	200	0.921	
DRO >C10-C28	<10.0	10.0	10/12/2013	ND	187	93.4	200	0.907	
EXT DRO >C28-C35	<10.0	10.0	10/12/2013	ND					

Surrogate: 1-Chlorooctane 103 % 65.2-140

Surrogate: 1-Chlorooctadecane 107 % 63.6-154

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**Analytical Results For:**

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

Received: 10/09/2013  
 Reported: 10/16/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/08/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-8 (H302439-06)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/14/2013	ND	1.85	92.5	2.00	4.76		
Toluene*	<0.050	0.050	10/14/2013	ND	1.91	95.5	2.00	4.72		
Ethylbenzene*	<0.050	0.050	10/14/2013	ND	1.95	97.3	2.00	4.21		
Total Xylenes*	<0.150	0.150	10/14/2013	ND	5.81	96.8	6.00	4.48		
Total BTEx	<0.300	0.300	10/14/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	10/09/2013	ND	416	104	400	3.77	

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	10/12/2013	ND	188	94.1	200	0.921	
DRO >C10-C28	<10.0	10.0	10/12/2013	ND	187	93.4	200	0.907	
EXT DRO >C28-C35	<10.0	10.0	10/12/2013	ND					

Surrogate: 1-Chlorooctane 100 % 65.2-140

Surrogate: 1-Chlorooctadecane 106 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

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

Received: 10/09/2013  
 Reported: 10/16/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/08/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-9 (H302439-07)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/14/2013	ND	1.85	92.5	2.00	4.76		
Toluene*	<0.050	0.050	10/14/2013	ND	1.91	95.5	2.00	4.72		
Ethylbenzene*	<0.050	0.050	10/14/2013	ND	1.95	97.3	2.00	4.21		
Total Xylenes*	<0.150	0.150	10/14/2013	ND	5.81	96.8	6.00	4.48		
Total BTEx	<0.300	0.300	10/14/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.3 % 89.4-126

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	10/09/2013	ND	416	104	400	3.77		

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	10/12/2013	ND	188	94.1	200	0.921	
DRO >C10-C28	<10.0	10.0	10/12/2013	ND	187	93.4	200	0.907	
EXT DRO >C28-C35	<10.0	10.0	10/12/2013	ND					

Surrogate: 1-Chlorooctane 112 % 65.2-140

Surrogate: 1-Chlorooctadecane 111 % 63.6-154

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

**Analytical Results For:**

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

Received: 10/09/2013  
 Reported: 10/16/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/08/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-10 (H302439-08)**

BTX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/14/2013	ND	1.85	92.5	2.00	4.76		
Toluene*	<0.050	0.050	10/14/2013	ND	1.91	95.5	2.00	4.72		
Ethylbenzene*	<0.050	0.050	10/14/2013	ND	1.95	97.3	2.00	4.21		
Total Xylenes*	<0.150	0.150	10/14/2013	ND	5.81	96.8	6.00	4.48		
Total BTX	<0.300	0.300	10/14/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.6 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	64.0	16.0	10/09/2013	ND	416	104	400	3.77		

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	10/10/2013	ND	194	96.8	200	4.49	
DRO >C10-C28	<10.0	10.0	10/10/2013	ND	188	94.1	200	2.47	
EXT DRO >C28-C35	<10.0	10.0	10/10/2013	ND					

Surrogate: 1-Chlorooctane 103 % 65.2-140

Surrogate: 1-Chlorooctadecane 104 % 63.6-154

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

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

Received: 10/09/2013  
 Reported: 10/16/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/08/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-11 (H302439-09)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/14/2013	ND	1.85	92.5	2.00	4.76	
Toluene*	<0.050	0.050	10/14/2013	ND	1.91	95.5	2.00	4.72	
Ethylbenzene*	<0.050	0.050	10/14/2013	ND	1.95	97.3	2.00	4.21	
Total Xylenes*	<0.150	0.150	10/14/2013	ND	5.81	96.8	6.00	4.48	
Total BTEx	<0.300	0.300	10/14/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.1 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	224	16.0	10/09/2013	ND	416	104	400	3.77	

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	10/10/2013	ND	194	96.8	200	4.49	
DRO >C10-C28	<10.0	10.0	10/10/2013	ND	188	94.1	200	2.47	
EXT DRO >C28-C35	<10.0	10.0	10/10/2013	ND					

Surrogate: 1-Chlorooctane 97.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 100 % 63.6-154

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**Analytical Results For:**

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

Received: 10/09/2013  
 Reported: 10/16/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/08/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-13 (H302439-10)**

BTX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/14/2013	ND	1.85	92.5	2.00	4.76		
Toluene*	<0.050	0.050	10/14/2013	ND	1.91	95.5	2.00	4.72		
Ethylbenzene*	<0.050	0.050	10/14/2013	ND	1.95	97.3	2.00	4.21		
Total Xylenes*	<0.150	0.150	10/14/2013	ND	5.81	96.8	6.00	4.48		
Total BTX	<0.300	0.300	10/14/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.0 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	10/09/2013	ND	416	104	400	3.77	

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	10/10/2013	ND	194	96.8	200	4.49	
DRO >C10-C28	<10.0	10.0	10/10/2013	ND	188	94.1	200	2.47	
EXT DRO >C28-C35	<10.0	10.0	10/10/2013	ND					

Surrogate: 1-Chlorooctane 102 % 65.2-140

Surrogate: 1-Chlorooctadecane 104 % 63.6-154

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**Analytical Results For:**

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

Received: 10/09/2013  
 Reported: 10/16/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/08/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-14 (H302439-11)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/14/2013	ND	1.85	92.5	2.00	4.76	
Toluene*	<0.050	0.050	10/14/2013	ND	1.91	95.5	2.00	4.72	
Ethylbenzene*	<0.050	0.050	10/14/2013	ND	1.95	97.3	2.00	4.21	
Total Xylenes*	<0.150	0.150	10/14/2013	ND	5.81	96.8	6.00	4.48	
Total BTX	<0.300	0.300	10/14/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.1 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	10/09/2013	ND	416	104	400	3.77	

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	10/10/2013	ND	194	96.8	200	4.49	
DRO >C10-C28	<10.0	10.0	10/10/2013	ND	188	94.1	200	2.47	
EXT DRO >C28-C35	<10.0	10.0	10/10/2013	ND					

Surrogate: 1-Chlorooctane 101 % 65.2-140

Surrogate: 1-Chlorooctadecane 103 % 63.6-154

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**Analytical Results For:**

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

Received: 10/09/2013  
 Reported: 10/16/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/08/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-15 (H302439-12)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/15/2013	ND	1.94	97.1	2.00	4.35		
Toluene*	<0.050	0.050	10/15/2013	ND	1.97	98.3	2.00	4.23		
Ethylbenzene*	<0.050	0.050	10/15/2013	ND	2.00	99.9	2.00	5.82		
Total Xylenes*	<0.150	0.150	10/15/2013	ND	5.82	97.0	6.00	4.78		
Total BTEx	<0.300	0.300	10/15/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.6 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	10/09/2013	ND	416	104	400	3.77	

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	10/10/2013	ND	194	96.8	200	4.49	
DRO >C10-C28	<10.0	10.0	10/10/2013	ND	188	94.1	200	2.47	
EXT DRO >C28-C35	<10.0	10.0	10/10/2013	ND					

Surrogate: 1-Chlorooctane 98.3 % 65.2-140

Surrogate: 1-Chlorooctadecane 103 % 63.6-154

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**Analytical Results For:**

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

Received: 10/09/2013  
 Reported: 10/16/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/08/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-16 (H302439-13)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/15/2013	ND	1.94	97.1	2.00	4.35		
Toluene*	<0.050	0.050	10/15/2013	ND	1.97	98.3	2.00	4.23		
Ethylbenzene*	<0.050	0.050	10/15/2013	ND	2.00	99.9	2.00	5.82		
Total Xylenes*	<0.150	0.150	10/15/2013	ND	5.82	97.0	6.00	4.78		
Total BTEx	<0.300	0.300	10/15/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.9 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	10/09/2013	ND	416	104	400	3.77	

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	10/10/2013	ND	194	96.8	200	4.49	
DRO >C10-C28	<10.0	10.0	10/10/2013	ND	188	94.1	200	2.47	
EXT DRO >C28-C35	<10.0	10.0	10/10/2013	ND					

Surrogate: 1-Chlorooctane 92.8 % 65.2-140

Surrogate: 1-Chlorooctadecane 98.5 % 63.6-154

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**Analytical Results For:**

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

Received: 10/09/2013  
 Reported: 10/16/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/08/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-17 (H302439-14)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/15/2013	ND	1.94	97.1	2.00	4.35	
Toluene*	<0.050	0.050	10/15/2013	ND	1.97	98.3	2.00	4.23	
Ethylbenzene*	<0.050	0.050	10/15/2013	ND	2.00	99.9	2.00	5.82	
Total Xylenes*	<0.150	0.150	10/15/2013	ND	5.82	97.0	6.00	4.78	
Total BTEx	<0.300	0.300	10/15/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	10/09/2013	ND	416	104	400	3.77	

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	10/10/2013	ND	194	96.8	200	4.49	
DRO >C10-C28	<10.0	10.0	10/10/2013	ND	188	94.1	200	2.47	
EXT DRO >C28-C35	<10.0	10.0	10/10/2013	ND					

Surrogate: 1-Chlorooctane 105 % 65.2-140

Surrogate: 1-Chlorooctadecane 108 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

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---

### 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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A handwritten signature in black ink that reads "Celey D. Keene".

---

Celey D. Keene, Lab Director/Quality Manager



# CARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240

(575) 393-2326 FAX (575) 393-2476

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

<b>Company Name:</b> Basin Environmental Service Technologies, LLC <b>Project Manager:</b> Ben Arguijo <b>Address:</b> P.O. Box 301 <b>City:</b> Lovington <b>State:</b> NM <b>Zip:</b> 88260 <b>Phone #:</b> (575)396-2378 <b>Fax #:</b> (575)396-1429 <b>Project #:</b> <b>Project Owner:</b> Fasken Oil & Ranch, Ltd. <b>Project Name:</b> Denton SWD #3 <b>Project Location:</b> Lea Co., NM <b>Sampler Name:</b> Ben J. Arguijo				<b>BILL TO</b> <b>P.O. #:</b> <b>Company:</b> Fasken Oil & Ranch, Ltd. <b>Attn:</b> Aaron Pachlhofer <b>Address:</b> 6101 Holiday Hill Rd. <b>City:</b> Midland <b>State:</b> TX <b>Zip:</b> 79707 <b>Phone #:</b> (432)687-1777 <b>Fax #:</b>				<b>ANALYSIS REQUEST</b>													
FOR LAB USE ONLY				<b>MATRIX</b> (G)RAB OR (C)OMP. # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER:				<b>PRESERV.</b> ACID/BASE: ICE / COOL OTHER:		<b>SAMPLING</b> DATE TIME		Chloride TPH (8015M) BTEX (8021B)									
Lab I.D.		Sample I.D.																			
H302439																					
1		TT-3		G 1		X		X		10/7/13 11:30		X X									
2		TT-4		G 1		X		X		10/7/13 12:30		X X									
3		TT-5		G 1		X		X		10/7/13 13:30		X X									
4		TT-6		G 1		X		X		10/7/13 14:30		X X		X							
5		TT-7		G 1		X		X		10/7/13 15:30		X X		X							
6		TT-8		G 1		X		X		10/8/13 08:30		X X		X							
7		TT-9		G 1		X		X		10/8/13 09:00		X X		X							
8		TT-10		G 1		X		X		10/8/13 09:45		X X		X							
9		TT-11		G 1		X		X		10/8/13 10:30		X X		X							
10		TT-13		G 1		X		X		10/8/13 12:00		X X		X							

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

<b>Relinquished By:</b>  <b>Date:</b> 10/9/13 <b>Received By:</b>  <b>Time:</b> 0700		<b>Phone Result:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Add'l Phone #:</b> <b>Fax Result:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Add'l Fax #:</b>	
<b>Relinquished By:</b>  <b>Date:</b> 10/9/13 <b>Received By:</b>  <b>Time:</b> 8:30		<b>REMARKS:</b> ****Run BTEX if TPH is ≤ 1,000 mg/kg AND chloride is ≤ 500 mg/kg**** Please e-mail results to bjarguijo@basinenv.com & aaronp@forl.com	
<b>Delivered By: (Circle One)</b> Sampler - UPS - Bus - Other:		<b>Sample Condition</b> Cool Intact <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> No 4.6°C	
		<b>CHECKED BY:</b> 	

FORM-006  
Revision 1.0

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476

#54





## CARDINAL LABORATORIES

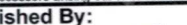




101 East Marland, Hobbs, NM 88240

**(575) 393-2326 FAX (575) 393-2476**

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]

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Relinquished By: 		Date: 10/9/13 Time: 0700		Received By: 		Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No Add'l Phone #: _____ Add'l Fax #: _____ REMARKS:	
Relinquished By: 		Date: 10/4/13 Time: 8:30		Received By: 		****Run BTEX if TPH is $\leq 1,000$ mg/kg AND chloride is $\leq 500$ mg/kg****  Please e-mail results to <a href="mailto:bjarguijo@basinenv.com">bjarguijo@basinenv.com</a> & <a href="mailto:aaronp@forl.com">aaronp@forl.com</a>	
Delivered By: (Circle One)		Sample Condition Cool <input checked="" type="checkbox"/> Intact <input type="checkbox"/> 4.6°C <input type="checkbox"/> Yes <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> No		CHECKED BY: (Initials) 			
Sampler - UPS - Bus - Other:							

FORM-006  
Revision 1.0

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476

# 54



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November 06, 2013

BEN J. ARGUIJO

Basin Environmental Service

P.O. Box 301

Lovington, NM 88260

RE: DENTON SWD #3

Enclosed are the results of analyses for samples received by the laboratory on 11/01/13 15:15.

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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager





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

**Analytical Results For:**

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

Received: 11/01/2013  
 Reported: 11/06/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/23/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-5B (H302676-01)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/04/2013	ND	2.14	107	2.00	0.0370	
Toluene*	<0.050	0.050	11/04/2013	ND	2.13	107	2.00	0.437	
Ethylbenzene*	<0.050	0.050	11/04/2013	ND	2.15	107	2.00	0.656	
Total Xylenes*	<0.150	0.150	11/04/2013	ND	6.29	105	6.00	0.890	
Total BTX	<0.300	0.300	11/04/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID) 109 % 89.4-126

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	11/04/2013	ND	400	100	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	11/04/2013	ND	200	100	200	0.0305	
DRO >C10-C28	<10.0	10.0	11/04/2013	ND	205	102	200	0.511	
EXT DRO >C28-C35	<10.0	10.0	11/04/2013	ND					

Surrogate: 1-Chlorooctane 87.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 90.7 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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---

### 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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A handwritten signature in black ink that reads "Celey D. Keene".

---

Celey D. Keene, Lab Director/Quality Manager





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---

November 04, 2013

BEN J. ARGUIJO

Basin Environmental Service

P.O. Box 301

Lovington, NM 88260

RE: DENTON SWD #3

Enclosed are the results of analyses for samples received by the laboratory on 10/24/13 17:05.

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).

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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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager



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**Analytical Results For:**

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

Received: 10/24/2013  
 Reported: 11/04/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/24/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: FLOOR #1 (H302589-01)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/01/2013	ND	2.06	103	2.00	0.153	
Toluene*	<0.050	0.050	11/01/2013	ND	2.05	103	2.00	0.309	
Ethylbenzene*	<0.050	0.050	11/01/2013	ND	2.07	104	2.00	0.301	
Total Xylenes*	<0.150	0.150	11/01/2013	ND	5.96	99.4	6.00	0.106	
Total BTX	<0.300	0.300	11/01/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	96.0	16.0	10/28/2013	ND	400	100	400	7.69		

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	10/29/2013	ND	210	105	200	1.98	
DRO >C10-C28	<10.0	10.0	10/29/2013	ND	202	101	200	1.03	
EXT DRO >C28-C35	<10.0	10.0	10/29/2013	ND					

Surrogate: 1-Chlorooctane 97.7 % 65.2-140

Surrogate: 1-Chlorooctadecane 99.6 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

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

Received: 10/24/2013  
 Reported: 11/04/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/24/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: FLOOR #2 (H302589-02)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4240	16.0	10/28/2013	ND	400	100	400	7.69	
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	10/29/2013	ND	210	105	200	1.98	
DRO >C10-C28	12.7	10.0	10/29/2013	ND	202	101	200	1.03	
EXT DRO >C28-C35	<10.0	10.0	10/29/2013	ND					
Surrogate: 1-Chlorooctane	99.8 %	65.2-140							
Surrogate: 1-Chlorooctadecane	104 %	63.6-154							

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

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

Received: 10/24/2013  
 Reported: 11/04/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/24/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: FLOOR #3 (H302589-03)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	11/01/2013	ND	2.06	103	2.00	0.153		
Toluene*	<0.050	0.050	11/01/2013	ND	2.05	103	2.00	0.309		
Ethylbenzene*	<0.050	0.050	11/01/2013	ND	2.07	104	2.00	0.301		
Total Xylenes*	<0.150	0.150	11/01/2013	ND	5.96	99.4	6.00	0.106		
Total BTEx	<0.300	0.300	11/01/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 105 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	320	16.0	10/28/2013	ND	400	100	400	7.69		

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	10/29/2013	ND	210	105	200	1.98	
DRO >C10-C28	<10.0	10.0	10/29/2013	ND	202	101	200	1.03	
EXT DRO >C28-C35	<10.0	10.0	10/29/2013	ND					

Surrogate: 1-Chlorooctane 106 % 65.2-140

Surrogate: 1-Chlorooctadecane 112 % 63.6-154

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

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

Received: 10/24/2013  
 Reported: 11/04/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/24/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: FLOOR #4 (H302589-04)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1740	16.0	10/28/2013	ND	400	100	400	7.69	
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	10/29/2013	ND	210	105	200	1.98	
DRO >C10-C28	<10.0	10.0	10/29/2013	ND	202	101	200	1.03	
EXT DRO >C28-C35	<10.0	10.0	10/29/2013	ND					
Surrogate: 1-Chlorooctane	91.2 %	65.2-140							
Surrogate: 1-Chlorooctadecane	95.9 %	63.6-154							

**Sample ID: FLOOR #5 (H302589-05)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4320	16.0	10/28/2013	ND	400	100	400	7.69	
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	10/29/2013	ND	210	105	200	1.98	
DRO >C10-C28	<10.0	10.0	10/29/2013	ND	202	101	200	1.03	
EXT DRO >C28-C35	<10.0	10.0	10/29/2013	ND					
Surrogate: 1-Chlorooctane		90.3 %	65.2-140						
Surrogate: 1-Chlorooctadecane		94.2 %	63.6-154						

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

**Analytical Results For:**

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

Received: 10/24/2013  
 Reported: 11/04/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/24/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: FLOOR #6 (H302589-06)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3560	16.0	10/28/2013	ND	400	100	400	7.69	
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	10/29/2013	ND	210	105	200	1.98	
DRO >C10-C28	<10.0	10.0	10/29/2013	ND	202	101	200	1.03	
EXT DRO >C28-C35	<10.0	10.0	10/29/2013	ND					
Surrogate: 1-Chlorooctane	78.5 %	65.2-140							
Surrogate: 1-Chlorooctadecane	82.4 %	63.6-154							

**Sample ID: TT-3B (H302589-07)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	288	16.0	10/28/2013	ND	400	100	400	7.69		

**Sample ID: TT-4B (H302589-08)**

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	10/28/2013	ND	400	100	400	7.69		

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

**Analytical Results For:**

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

Received: 10/24/2013  
 Reported: 11/04/2013  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/24/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: TT-5C (H302589-09)**

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	10/28/2013	ND	400	100	400	7.69		

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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### 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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A handwritten signature in black ink that reads "Celey D. Keene".

---

Celey D. Keene, Lab Director/Quality Manager

**CARDINAL LABORATORIES**

101 East Marland, Hobbs, NM 88240

**(575) 393-2326 FAX (575) 393-2476**

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

(575) 393-2326 FAX (575) 393-2476						<b>BILL TO</b>				<b>ANALYSIS REQUEST</b>																											
<b>Company Name:</b> Basin Environmental Service Technologies, LLC						<b>P.O. #:</b>				<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Chloride</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TPH (8015M)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">BTEX (8021B) added as per Aaron 10/30/13</div> </div>																											
<b>Project Manager:</b> Ben Arguijo						<b>Company:</b> Fasken Oil & Ranch, Ltd.																															
<b>Address:</b> P.O. Box 301						<b>Attn:</b> Aaron Pachlhofer																															
<b>City:</b> Lovington		<b>State:</b> NM		<b>Zip:</b> 88260		<b>Address:</b> 6101 Holiday Hill Rd.																															
<b>Phone #:</b> (575)396-2378		<b>Fax #:</b> (575)396-1429				<b>City:</b> Midland																															
<b>Project #:</b>		<b>Project Owner:</b> Fasken Oil & Ranch, Ltd.				<b>State:</b> TX <b>Zip:</b> 79707																															
<b>Project Name:</b> Denton SWD #3						<b>Phone #:</b> (432)687-1777																															
<b>Project Location:</b> Lea Co., NM						<b>Fax #:</b>																															
<b>Sampler Name:</b> Ben J. Arguijo																																					
<small>FOR LAB USE ONLY</small>						<small>MATRIX</small>		<small>PRESERV.</small>		<small>SAMPLING</small>																											
<b>Lab I.D.</b>		<b>Sample I.D.</b>				(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	<b>DATE</b>	<b>TIME</b>																			
H302589 1 - N 3 4 5 6 S T 3b 4b <del>5b</del> TT-SC *						G	1			X					X			10/24/13	0830	X	X	X															
		Floor #1				G	1			X					X			10/24/13	0835	X	X																
		Floor #2				G	1			X					X			10/24/13	0840	X	X	X															
		Floor #3				G	1			X					X			10/24/13	0845	X	X																
		Floor #4				G	1			X					X			10/24/13	0850	X	X																
		Floor #5				G	1			X					X			10/24/13	0855	X	X																
		Floor #6				G	1			X					X			10/24/13	1315	X			Hold for TPH : BTEX														
		TT-3b				G	1			X				X			10/24/13	1330	X																		
		TT-4b				G	1			X				X			10/24/13	1345	X																		
		<del>TT-5b</del> TT-SC *				G	1			X					X			10/24/13	1345	X																	
<small><b>PLEASE NOTE:</b> Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.</small>																																					
<b>Relinquished By:</b> [Signature]						<b>Date:</b> 10/24/13		<b>Received By:</b> [Signature] Jodi Benson						<b>Phone Result:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No				<b>Add'l Phone #:</b>																			
						<b>Time:</b> 1705								<b>Fax Result:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No				<b>Add'l Fax #:</b>																			
<b>Relinquished By:</b>						<b>Date:</b>		<b>Received By:</b>						<b>REMARKS:</b>  ****Run BTEX if TPH is ≤ 1,000 mg/kg AND chloride is ≤ 500 mg/kg**** (Floor 1 - Floor 6) Please e-mail results to bjarguijo@basinenv.com & aaronp@forl.com																							
						<b>Time:</b>																															
<b>Delivered By: (Circle One)</b>						<b>Sample Condition</b>						<b>CHECKED BY:</b> [Signature]																									
<b>Sampler - UPS - Bus - Other:</b>																																					
5.2°C						Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/>						*changed as per Ben. 11/1/13 Ch																									



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

August 11, 2014

BEN J. ARGUIJO

Basin Environmental Service

P.O. Box 301

Lovington, NM 88260

RE: DENTON SWD #3

Enclosed are the results of analyses for samples received by the laboratory on 08/04/14 16:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

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

Received: 08/04/2014  
 Reported: 08/11/2014  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 08/01/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB-1 @ 5' (H402384-01)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/06/2014	ND	2.08	104	2.00	8.22	
Toluene*	<0.050	0.050	08/06/2014	ND	2.13	107	2.00	8.36	
Ethylbenzene*	<0.050	0.050	08/06/2014	ND	2.16	108	2.00	8.86	
Total Xylenes*	<0.150	0.150	08/06/2014	ND	6.75	112	6.00	8.92	
Total BTX	<0.300	0.300	08/06/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	288	16.0	08/06/2014	ND	416	104	400	8.00	

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	08/05/2014	ND	201	101	200	3.43	
DRO >C10-C28	<10.0	10.0	08/05/2014	ND	209	105	200	6.60	
EXT DRO >C28-C35	<10.0	10.0	08/05/2014	ND					

Surrogate: 1-Chlorooctane 99.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 106 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

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

Received: 08/04/2014  
 Reported: 08/11/2014  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 08/01/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB-1 @ 20' (H402384-02)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	400	16.0	08/06/2014	ND	416	104	400	8.00		

**Sample ID: SB-1 @ 25' (H402384-03)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	304	16.0	08/06/2014	ND	416	104	400	8.00	

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 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 08/04/2014  
 Reported: 08/11/2014  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 08/01/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB-1 @ 30' (H402384-04)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/06/2014	ND	2.08	104	2.00	8.22	
Toluene*	<0.050	0.050	08/06/2014	ND	2.13	107	2.00	8.36	
Ethylbenzene*	<0.050	0.050	08/06/2014	ND	2.16	108	2.00	8.86	
Total Xylenes*	<0.150	0.150	08/06/2014	ND	6.75	112	6.00	8.92	
Total BTEx	<0.300	0.300	08/06/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	08/07/2014	ND	416	104	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	08/05/2014	ND	201	101	200	3.43	
DRO >C10-C28	<10.0	10.0	08/05/2014	ND	209	105	200	6.60	
EXT DRO >C28-C35	<10.0	10.0	08/05/2014	ND					

Surrogate: 1-Chlorooctane 102 % 65.2-140

Surrogate: 1-Chlorooctadecane 111 % 63.6-154

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Received: 08/04/2014  
 Reported: 08/11/2014  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 08/01/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB-2 @ 5' (H402384-05)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	08/06/2014	ND	2.08	104	2.00	8.22		
Toluene*	<0.050	0.050	08/06/2014	ND	2.13	107	2.00	8.36		
Ethylbenzene*	<0.050	0.050	08/06/2014	ND	2.16	108	2.00	8.86		
Total Xylenes*	<0.150	0.150	08/06/2014	ND	6.75	112	6.00	8.92		
Total BTEx	<0.300	0.300	08/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	112	16.0	08/07/2014	ND	416	104	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	08/05/2014	ND	201	101	200	3.43	
DRO >C10-C28	<10.0	10.0	08/05/2014	ND	209	105	200	6.60	
EXT DRO >C28-C35	<10.0	10.0	08/05/2014	ND					

Surrogate: 1-Chlorooctane 93.2 % 65.2-140

Surrogate: 1-Chlorooctadecane 96.8 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

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 BEN J. ARGUIJO  
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 Fax To: (575) 396-1429

Received: 08/04/2014  
 Reported: 08/11/2014  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 08/01/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB-2 @ 15' (H402384-06)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	368	16.0	08/07/2014	ND	416	104	400	0.00	

**Sample ID: SB-2 @ 25' (H402384-07)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	288	16.0	08/07/2014	ND	416	104	400	0.00	

**Sample ID: SB-2 @ 30' (H402384-08)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	08/07/2014	ND	416	104	400	0.00	

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 Fax To: (575) 396-1429

Received: 08/04/2014  
 Reported: 08/11/2014  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 08/01/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB-2 @ 35' (H402384-09)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	08/06/2014	ND	2.08	104	2.00	8.22		
Toluene*	<0.050	0.050	08/06/2014	ND	2.13	107	2.00	8.36		
Ethylbenzene*	<0.050	0.050	08/06/2014	ND	2.16	108	2.00	8.86		
Total Xylenes*	<0.150	0.150	08/06/2014	ND	6.75	112	6.00	8.92		
Total BTEX	<0.300	0.300	08/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	08/07/2014	ND	416	104	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	08/05/2014	ND	201	101	200	3.43	
DRO >C10-C28	<10.0	10.0	08/05/2014	ND	209	105	200	6.60	
EXT DRO >C28-C35	<10.0	10.0	08/05/2014	ND					

Surrogate: 1-Chlorooctane 97.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 103 % 63.6-154

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Basin Environmental Service  
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 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 08/04/2014  
 Reported: 08/11/2014  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 08/01/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB-3 @ 5' (H402384-10)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	08/06/2014	ND	2.08	104	2.00	8.22		
Toluene*	<0.050	0.050	08/06/2014	ND	2.13	107	2.00	8.36		
Ethylbenzene*	<0.050	0.050	08/06/2014	ND	2.16	108	2.00	8.86		
Total Xylenes*	<0.150	0.150	08/06/2014	ND	6.75	112	6.00	8.92		
Total BTEx	<0.300	0.300	08/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	288	16.0	08/07/2014	ND	416	104	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	<20.0	20.0	08/06/2014	11.8	185	92.5	200	1.06	
DRO >C10-C28	<10.0	10.0	08/06/2014	ND	188	94.1	200	0.965	
EXT DRO >C28-C35	<10.0	10.0	08/06/2014	ND					

Surrogate: 1-Chlorooctane 90.3 % 65.2-140

Surrogate: 1-Chlorooctadecane 93.3 % 63.6-154

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

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

Received: 08/04/2014  
 Reported: 08/11/2014  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 08/01/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB-3 @ 10' (H402384-11)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	704	16.0	08/07/2014	ND	416	104	400	0.00		

**Sample ID: SB-3 @ 15' (H402384-12)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	144	16.0	08/07/2014	ND	416	104	400	0.00	

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

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

Received: 08/04/2014  
 Reported: 08/11/2014  
 Project Name: DENTON SWD #3  
 Project Number: FASKEN  
 Project Location: LEA COUNTY, NM

Sampling Date: 08/01/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB-3 @ 20' (H402384-13)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	08/06/2014	ND	2.08	104	2.00	8.22		
Toluene*	<0.050	0.050	08/06/2014	ND	2.13	107	2.00	8.36		
Ethylbenzene*	<0.050	0.050	08/06/2014	ND	2.16	108	2.00	8.86		
Total Xylenes*	<0.150	0.150	08/06/2014	ND	6.75	112	6.00	8.92		
Total BTEx	<0.300	0.300	08/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	96.0	16.0	08/07/2014	ND	416	104	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	08/06/2014	11.8	185	92.5	200	1.06	
DRO >C10-C28	<10.0	10.0	08/06/2014	ND	188	94.1	200	0.965	
EXT DRO >C28-C35	<10.0	10.0	08/06/2014	ND					

Surrogate: 1-Chlorooctane 78.5 % 65.2-140

Surrogate: 1-Chlorooctadecane 89.9 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager



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### 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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A handwritten signature in black ink, appearing to read "C. D. Keene", written over a horizontal line.

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Celey D. Keene, Lab Director/Quality Manager

**CARDINAL LABORATORIES**

101 East Marland, Hobbs, NM 88240

**(575) 393-2326 FAX (575) 393-2476**

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

(575) 393-2326 FAX (575) 393-2476				<b>BILL TO</b>				<b>ANALYSIS REQUEST</b>																																					
<b>Company Name:</b> Basin Environmental Service Technologies, LLC				<b>P.O. #:</b>				<div>Chloride</div> <div>TPH (8015M)</div> <div>BTEX (8021B)</div>																																					
<b>Project Manager:</b> Ben Arguijo				<b>Company:</b> Fasken Oil & Ranch, Ltd.																																									
<b>Address:</b> P.O. Box 301				<b>Attn:</b> Aaron Pachlhofer																																									
<b>City:</b> Lovington <b>State:</b> NM <b>Zip:</b> 88260				<b>Address:</b> 6101 Holiday Hill Rd.																																									
<b>Phone #:</b> (575)396-2378 <b>Fax #:</b> (575)396-1429				<b>City:</b> Midland																																									
<b>Project #:</b> <b>Project Owner:</b> Fasken Oil & Ranch, Ltd.				<b>State:</b> TX <b>Zip:</b> 79707																																									
<b>Project Name:</b> Denton SWD #3				<b>Phone #:</b> (432)687-1777																																									
<b>Project Location:</b> Lea Co., NM				<b>Fax #:</b>																																									
<b>Sampler Name:</b> Ben J. Arguijo																																													
FOR LAB USE ONLY						MATRIX		PRESERV.		SAMPLING																																			
Lab I.D.		Sample I.D.		(G)RAB OR (C)OMP.		# CONTAINERS		GROUNDWATER		WASTEWATER		SOIL		OIL		SLUDGE		OTHER :		ACID/BASE:		ICE / COOL		OTHER :		DATE		TIME																	
H402384				G 1				X												X				8/1/14		0830		X		X		X													
1		SB-1 @ 5'		G 1				X												X				8/1/14		0845		X																	
2		SB-1 @ 20'		G 1				X												X				8/1/14		0850		X																	
3		SB-1 @ 25'		G 1				X												X				8/1/14		0855		X		X		X													
4		SB-1 @ 30'		G 1				X												X				8/1/14		0920		X		X		X													
5		SB-2 @ 5'		G 1				X												X				8/1/14		0930		X																	
6		SB-2 @ 15'		G 1				X												X				8/1/14		0940		X																	
7		SB-2 @ 25'		G 1				X												X				8/1/14		0945		X																	
8		SB-2 @ 30'		G 1				X												X				8/1/14		0950		X		X		X													
9		SB-2 @ 35'		G 1				X												X				8/1/14		1015		X		X		X													
10		SB-3 @ 5'		G 1				X												X				8/1/14		1015		X		X		X													
<p>PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.</p>																																													
Relinquished By:				Date: 8/1/14				Received By: Joei Benson				Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No				Add'l Phone #:																													
Relinquished By:				Time: 1050				Received By:				Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No				Add'l Fax #:																													
Delivered By: (Circle One)				Date:				Sample Condition				CHECKED BY: (Initials)																																	
Sampler - UPS - Bus - Other:				Time:				Cool <input checked="" type="checkbox"/> Intact <input type="checkbox"/>																																					
				5.70				Cool <input type="checkbox"/> Intact <input type="checkbox"/>																																					







**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone:(575) 393-6161 Fax:(575) 393-0720  
**District II**  
811 S. First St., Artesia, NM 88210  
Phone:(575) 748-1283 Fax:(575) 748-9720  
**District III**  
1000 Rio Brazos Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170  
**District IV**  
1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS  
  
Action 204077

CONDITIONS

Operator: FASKEN OIL & RANCH LTD 6101 Holiday Hill Rd Midland, TX 79707	OGRID: 151416
	Action Number: 204077
	Action Type: [IM-SD] Incident File Support Doc (ENV) (IM-BNF)

CONDITIONS

Created By	Condition	Condition Date
amaxwell	Historical document review. Closure approved by Bradford Billings 3/9/2020.	4/19/2023