

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 Department

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

Form C-141  
Revised August 24, 2018  
Submit to appropriate OCD District office

Incident ID	
District RP	1RP-5670
Facility ID	
Application ID	

## Release Notification

### Responsible Party

Responsible Party	COG Operating, LLC	OGRID	229137
Contact Name	Jennifer Knowlton	Contact Telephone	(575) 748-1570
Contact email	JKnowlton@concho.com	Incident # (assigned by OCD)	
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701		

### Location of Release Source

Latitude 32.75391 Longitude -103.57318  
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Joannie-Shell #001	Site Type	Tank Battery
Date Release Discovered	August 18, 2019	API# (if applicable)	30-025-24549

Unit Letter	Section	Township	Range	County
D	16	18S	34E	Lea

Surface Owner: ☒ State ☐ Federal ☐ Tribal ☐ Private (Name: \_\_\_\_\_)

### Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

<input checked="" type="checkbox"/> Crude Oil	Volume Released (bbls) 10	Volume Recovered (bbls) 5
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

#### Cause of Release

The release was caused by a hole in the bottom of the tank.  
The release was in the unlined berm. A vacuum truck was dispatched to remove all freestanding fluids. Concho will evaluate the site to determine if we may commence remediation immediately or delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

Incident ID	
District RP	1RP-5670
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC?  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

### Initial Response

*The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury*

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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.	
Printed Name: <u>DeAnn Grant</u>	Title: <u>HSE Administrative Assistant</u>
Signature: <u></u>	Date: <u>8/19/2019</u>
email: <u>agrانت@concho.com</u>	Telephone: <u>(432) 253-4513</u>
<b><u>OCD Only</u></b>	
Received by: _____	Date: _____

**\*\*\*\*\* LIQUID SPILLS - VOLUME CALCULATIONS \*\*\*\*\***

Location of spill: Joannie-Shell #001

Date of Spill: 18-Aug-2019

If the leak/spill is associated with production equipment, i.e. - wellhead, stuffing box,  
flowline, tank battery, production vessel, transfer pump, or storage tank place an "X" here: ☒

**Input Data:**

If spill volumes from measurement, i.e. metering, tank volumes, etc. are known enter the volumes here: OIL: 0.0 BBL WATER: 0.0 BBL

If "known" spill volumes are given, input data for the following "Area Calculations" is optional. The above will override the calculated volumes.

Total Area Calculations						Standing Liquid Calculations					
Total Surface Area	width	length		wet soil depth	oil (%)	Standing Liquid Area	width	length	liquid depth	oil (%)	
Rectangle Area #1	25 ft	48 ft	X	2.00 in	100%	Rectangle Area #1	0 ft	X	0 ft	X	0 in 0%
Rectangle Area #2	0 ft	X	0 ft	X	0 in 0%	Rectangle Area #2	0 ft	X	0 ft	X	0 in 0%
Rectangle Area #3	0 ft	X	0 ft	X	0 in 0%	Rectangle Area #3	0 ft	X	0 ft	X	0 in 0%
Rectangle Area #4	0 ft	X	0 ft	X	0 in 0%	Rectangle Area #4	0 ft	X	0 ft	X	0 in 0%
Rectangle Area #5	0 ft	X	0 ft	X	0 in 0%	Rectangle Area #5	0 ft	X	0 ft	X	0 in 0%
Rectangle Area #6	0 ft	X	0 ft	X	0 in 0%	Rectangle Area #6	0 ft	X	0 ft	X	0 in 0%
Rectangle Area #7	0 ft	X	0 ft	X	0 in 0%	Rectangle Area #7	0 ft	X	0 ft	X	0 in 0%
Rectangle Area #8	0 ft	X	0 ft	X	0 in 0%	Rectangle Area #8	0 ft	X	0 ft	X	0 in 0%

okay

**production system leak - DAILY PRODUCTION DATA REQUIRED**

Average Daily Production: Oil 0 BBL Water 0 BBL 0 Gas (MCFD)

Total Hydrocarbon Content in gas: 0% (percentage)

Did leak occur before the separator?: ☒ YES ☒ N/A (place an "X")

H2S Content in Produced Gas: 0 PPM

H2S Content in Tank Vapors: 0 PPM

Amount of Free Liquid Recovered: 0 BBL okay

Percentage of Oil in Free Liquid Recovered: 0% (percentage)

Liquid holding factor \*: 0.14 gal per gal

Use the following when the spill wets the grains of the soil.

\* Sand = 0.08 gallon (gal.) liquid per gal. volume of soil.  
\* Gravelly (caliche) loam = 0.14 gal. liquid per gal. volume of soil.  
\* Sandy clay loam soil = 0.14 gal liquid per gal. volume of soil.  
\* Clay loam = 0.16 gal. liquid per gal. volume of soil.

Use the following when the liquid completely fills the pore space of the soil:

Occurs when the spill soaked soil is contained by barriers, natural (or not).  
\* Clay loam = 0.20 gal. liquid per gal. volume of soil.  
\* Gravelly (caliche) loam = 0.25 gal. liquid per gal. volume of soil.  
\* Sandy loam = 0.5 gal. liquid per gal. volume of soil.

Total Solid/Liquid Volume: <u>1,200</u> sq. ft.	cu. ft.	<u>200</u> cu. ft.	Total Free Liquid Volume:	sq. ft.	cu. ft.	cu. ft.
<b>Estimated Volumes Spilled</b>			<b>Estimated Production Volumes Lost</b>			
	<b>H2O</b>	<b>OIL</b>		<b>H2O</b>	<b>OIL</b>	
Liquid in Soil:	<u>0.0</u> BBL	<u>5.0</u> BBL	Estimated Production Spilled:	<u>0.0</u> BBL	<u>0.0</u> BBL	
Free Liquid:	<u>0.0</u> BBL	<u>0.0</u> BBL				
Totals:	<u>0.0</u> BBL	<u>5.0</u> BBL	<b>Estimated Surface Damage</b>			
Total Liquid Spill Liquid:	<u>0.0</u> BBL	<u>4.99</u> BBL	Surface Area:	<u>1,200</u> sq. ft.		
			Surface Area:	<u>.0275</u> acre		
<b>Recovered Volumes</b>			<b>Estimated Weights, and Volumes</b>			
Estimated oil recovered:	<u>BBL</u>	check - okay	Saturated Soil =	<u>22,400</u> lbs	<u>200</u> cu. ft.	<u>7</u> cu. yds.
Estimated water recovered:	<u>BBL</u>	check - okay	Total Liquid =	<u>5</u> BBL	<u>209</u> gallon	<u>1,743</u> lbs

**Air Emission from flowline leaks:**

Volume of oil spill: - BBL  
Separator gas calculated: - MCF  
Separator gas released: - MCF  
Gas released from oil: - lb  
H2S released: - lb  
Total HC gas released: - lb  
Total HC gas released: - MCF

**Air Emission of Reporting Requirements:**

New Mexico Texas  
HC gas release reportable? NO NO  
H2S release reportable? NO NO

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	<u>110 CE</u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

<p><b>Characterization Report Checklist:</b> <i>Each of the following items must be included in the report.</i></p> <ul style="list-style-type: none"><li><input type="checkbox"/> Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.</li><li><input type="checkbox"/> Field data</li><li><input type="checkbox"/> Data table of soil contaminant concentration data</li><li><input type="checkbox"/> Depth to water determination</li><li><input type="checkbox"/> Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release</li><li><input type="checkbox"/> Boring or excavation logs</li><li><input type="checkbox"/> Photographs including date and GIS information</li><li><input type="checkbox"/> Topographic/Aerial maps</li><li><input type="checkbox"/> Laboratory data including chain of custody</li></ul>
--

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Incident ID	
District RP	
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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.

Printed Name: Ike Tavaréz

Title: Senior HSE Supervisor

Signature: \_\_\_\_\_

Date: 2/19/2020

email: \_\_\_\_\_

Telephone: \_\_\_\_\_

**OCD Only**

Cristina Eads

Received by: \_\_\_\_\_

Date: 02/19/2020

Incident ID	
District RP	1RP-5670
Facility ID	
Application ID	


## Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

**Closure Report Attachment Checklist:** *Each of the following items must be included in the closure report.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☐ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Brittany N. Esparza Title: HSE Administrative Assistant  
 Signature:  Date: 2/19/2020  
 email: besparza@concho.com Telephone: (432) 221-0398

**OCD Only**

Received by: Cristina Eads Date: 02/19/2020

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by:  Date: 02/19/2020  
 Printed Name: Cristina Eads Title: Environmental Specialist

## Remediation Summary and Soil Closure Request

**COG Operating, LLC**

**Joannie-Shell #001**

Lea County, New Mexico

Unit Letter D, Section 16, Township 18 South, Range 34 West

Latitude 32.75391 North, Longitude 103.57318 West

**NMOCD Reference No. 1RP-5670**

Prepared By:

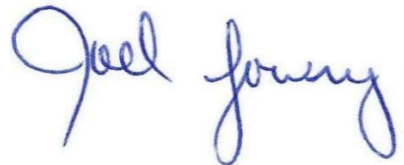
**Etech Environmental & Safety Solutions, Inc.**

3100 Plains Highway

Lovington, New Mexico 88260



Lance Crenshaw



Joel W. Lowry



## TABLE OF CONTENTS

	<i>Section</i>
PROJECT INFORMATION .....	<b>1.0</b>
SITE CHARACTERIZATION .....	<b>2.0</b>
CLOSURE CRITERIA FOR SOILS IMPACTED BY A RELEASE .....	<b>3.0</b>
REMEDIATION ACTIVITIES SUMMARY .....	<b>4.0</b>
RESTORATION, RECLAMATION AND RE-VEGETATION PLAN .....	<b>5.0</b>
SOIL CLOSURE REQUEST .....	<b>6.0</b>
LIMITATIONS .....	<b>7.0</b>
DISTRIBUTION .....	<b>8.0</b>

### FIGURES

Figure 1 - Topographic Map

Figure 2 - Aerial Proximity Map

Figure 3 - Site & Sample Location Map

### TABLES

Table 1 - Concentrations of BTEX, TPH and/or Chloride in Soil

### APPENDICES

Appendix A - Depth to Groundwater Information

Appendix B - Field Data and Soil Profile Logs

Appendix C - Laboratory Analytical Reports

Appendix D - Photographic Log



Etech Environmental & Safety Solutions, Inc. (Etech), on behalf of COG Operating, LLC, has prepared this Remediation Summary and Soil Closure Request for the Release Site known as the Joannie-Shell #001. Details of the release are summarized below:

Latitude: 32.75391 Longitude: -103.57318

Provided GPS are in WGS84 format.

Site Name: Joannie-Shell #001	Site Type: Tank Battery
Date Release Discovered: 8/18/2019	API # (if applicable):

Unit Letter	Section	Township	Range	County
D	16	18S	34W	Lea

Surface Owner: ☒ State ☐ Federal ☐ Tribal ☐ Private (Name \_\_\_\_\_)

<input checked="" type="checkbox"/> Crude Oil	Volume Released (bbls) 10	Volume Recovered (bbls) 5
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of total dissolved solids (TDS) in the produced water > 10,000 mg/L?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released	Volume/Weight Recovered

The release was attributed to a hole developing in the bottom of the tank. The release affected an area measuring approximately 1,100 sq. ft. within the unlined earthen containment.

<input checked="" type="checkbox"/>	The source of the release has been stopped.
<input checked="" type="checkbox"/>	The impacted area has been secured to protect human health and the environment.
<input checked="" type="checkbox"/>	Release materials have been contained via the use of berms or dikes, absorbent pad, or other containment devices
<input checked="" type="checkbox"/>	All free liquids and recoverable materials have been removed and managed appropriately.

## 2.0 SITE CHARACTERIZATION

A search of groundwater databases maintained by the New Mexico Office of the State Engineer (NMOSE) and United States Geological Survey (USGS) was conducted in an effort to determine the horizontal distance to known water sources within a half mile radius of the Release Site. Probable groundwater depth was determined using data generated by numeric models based on available water well data and published information. Depth to groundwater information is provided as Appendix A.

What is the shallowest depth to groundwater beneath the area affected by the release?	~ 110 Ft.		
Did the release impact groundwater or surface water?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Are the lateral extents of the release within 300 feet of any occupied permanent residence, school, hospital, institution or church?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Are the lateral extents of the release within the incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Did the release impact areas not on an exploration, development, production or storage site?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	

NMOCD Siting Criteria data was gathered from available resources including Bureau of Land Management (BLM) shapefiles; topographic maps; NMOSE and USGS databases; and aerial imagery. The results are depicted on Figures 1 & 2.

## 3.0 CLOSURE CRITERIA FOR SOILS IMPACTED BY A RELEASE

Based on the volume and nature of the release, inferred depth to groundwater and NMOCD Siting Criteria, the NMOCD Closure Criteria for the Site is as follows:

Closure Criteria for Soil Impacted by a Release			
Probable Depth to Groundwater	Constituent	Method	Limit
~ 110 Ft.	Chloride	EPA 300.0 or SM4500 Cl B	20000 mg/kg
	TPH (GRO + DRO + MRO)	EPA SW-846 Method 8015M Ext	2500 mg/kg
	DRO + GRO	EPA SW-846 Method 8015M	1000 mg/kg
	BTEX	EPA SW-846 Methods 8021b or 8260b	50 mg/kg
	Benzene	EPA SW-846 Methods 8021b or 8260b	10 mg/kg

## 4.0 REMEDIATION ACTIVITIES SUMMARY

On September 19, 2019, Etech conducted an initial release assessment at the Site. During the initial release assessment a series of hand-augered soil bores were advanced within the affected area. During the advanced of the hand-augered soil bores, four (4) soil samples (AH-1 @ Surf., AH-1 @ 1', AH-2 @ Surf. and AH-2 @ 1') were collected and field screened for BTEX, TPH and chloride. In addition, eight (8) soil samples (NH-1, NH-2, EH-1, EH-2, SH-1, SH-2, WH-1 and WH-2) were collected from the inferred edge of the affected area. The collected soil samples were submitted to a certified commercial laboratory for analysis of BTEX, TPH and chloride concentrations. Laboratory analytical results indicated BTEX, TPH and chloride concentrations were less than the applicable NMOCD Closure Criteria in each of the submitted soil samples with the exception of soil samples AH-1 @ Surf., AH-2 @ Surf. and AH-2 @ 1'.

On October 30, 2019, remediation activities commenced at the Site. In accordance with the NMOCD, impacted soil affected above the NMOCD Closure Criteria in the areas characterized by soil samples AH-1 @ Surf., AH-2 @ Surf. and AH-2 @ 1' was excavated and stockpiled on-site, pending final disposition at an NMOCD-approved surface waste facility for disposal. The floor and sidewalls of the excavation were advanced until field observations and test results suggested BTEX, TPH and chloride concentrations were below the applicable NMOCD Closure Criteria.

Between October 30, and November 1, 2019, Etech collected twenty-eight (28) excavation confirmation soil samples (WW-1, WW-2, WW-3, SW 1, SW 2, SW 3, SW 4, SW 5, SW 6, EW 1, EW 2, EW 3, Floor S #1, Floor S #2, Floor S #3, Floor S #4, Floor S #5, Floor S #6, Floor S #7, Floor S #8, Floor S #9, Floor S #10, NW S #1, NW S #2, NW S #3, NW S #4, NW S #5 and NW S #6). The collected soil samples were submitted to a certified commercial laboratory for analysis of BTEX, TPH and/or chloride. Laboratory analytical results indicated BTEX, TPH and chloride concentrations below the applicable NMOCD Closure Criteria and/or the NMOCD Reclamation Standard in each of the submitted soil samples with the exception of soil samples WW-1, which exhibited a TPH concentration of 5,750 mg/kg and WW-3, which exhibited a TPH concentration of 5,440 mg/kg and Floor S #1, which exhibited a TPH concentration of 4,465 mg/kg. The excavation was advanced in the areas characterized by soil samples WW-1, WW-3 and Floor S #1.

On November 4, 2019, excavation activities resumed at the Site. Impacted soil in the areas characterized by soil samples WW-1, WW-3 and Floor S #1 was excavated and transported to an NMOCD-approved surface waste facility for disposal. Upon excavating impacted soil remaining in-situ, Etech collected, three (3) additional excavation confirmation soil samples (WW 1B, WW 3B and Floor S #1) and submitted them to the laboratory for analysis of BTEX, TPH and chloride. Laboratory analytical results indicated BTEX, TPH and chloride concentrations were below the applicable NMOCD Closure Criteria in each of the submitted soil samples.

A "Site & Sample Location Map" is provided as Figure 3. A "Soil Chemistry Table" is provided as Table 1. Laboratory Analytical Reports are provided in Appendix C. Field data and soil profile logs, if applicable, are provided as Appendix B.

The final dimensions of the excavated area were approximately 80 Ft. in length, 25 Ft. in width and ranged from 1 to 3 Ft. in depth. During the course of remediation activities approximately 452 cubic yards of impacted soil were transported to an NMOCD-approved surface waste facility for disposal.

## 5.0 RESTORATION, RECLAMATION AND RE-VEGETATION PLAN

Upon receiving laboratory analytical results from confirmation soil samples, excavated areas were backfilled with locally sourced, non-impacted "like" material placed at or near original relative positions. The affected area was contoured and/or compacted to achieve erosion control, stability and preservation of surface water flow to the extent practicable. The area affected by remediation and closure activities is located on an active production pad therefore seeding will not be required.

## **6.0 SOIL CLOSURE REQUEST**

Remediation activities were conducted in accordance with NMOCD Guidelines. Impacted soil affected above the NMOCD Closure Criteria was excavated and transported to an NMOCD-approved disposal facility. Laboratory analytical results from confirmation soil samples indicate concentrations of BTEX, TPH and chloride are below the NMOCD Closure Criteria in each of the submitted soil samples.

Based on laboratory analytical results and field activities conducted to date, Etech recommends COG Operating, LLC provide copies of this Remediation Summary and Soil Closure Request to the appropriate agencies and request closure be granted to the Joannie-Shell #001 Site.

## **7.0 LIMITATIONS**

Etech Environmental & Safety Solutions, Inc., has prepared this Site Assessment Report and Proposed Remediation Workplan to the best of its ability. No other warranty, expressed or implied, is made or intended. Etech has examined and relied upon documents reference in the report and on oral statements made by certain individuals. Basis has not conducted an independent examination of the facts contained in referenced materials and statements. Etech has presumed the genuineness of these documents and statements and that the information provided therein is true and accurate. Etech has prepared the report in a professional manner, using the degree of skill and care exercised by similar environmental consultants. Etech 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 COG Operating, LLC. Use of the information contained in this report is prohibited within the consent of Etech and/or COG Operating, LLC.

## **8.0 DISTRIBUTION**

***COG Operating, LLC***

*600 West Illinois Avenue  
Midland, TX 79701*

***New Mexico Energy, Minerals and Natural Resources Department***

*Oil Conservation Division, District 1  
1220 South St. Francis Drive  
Santa Fe, NM 87505*

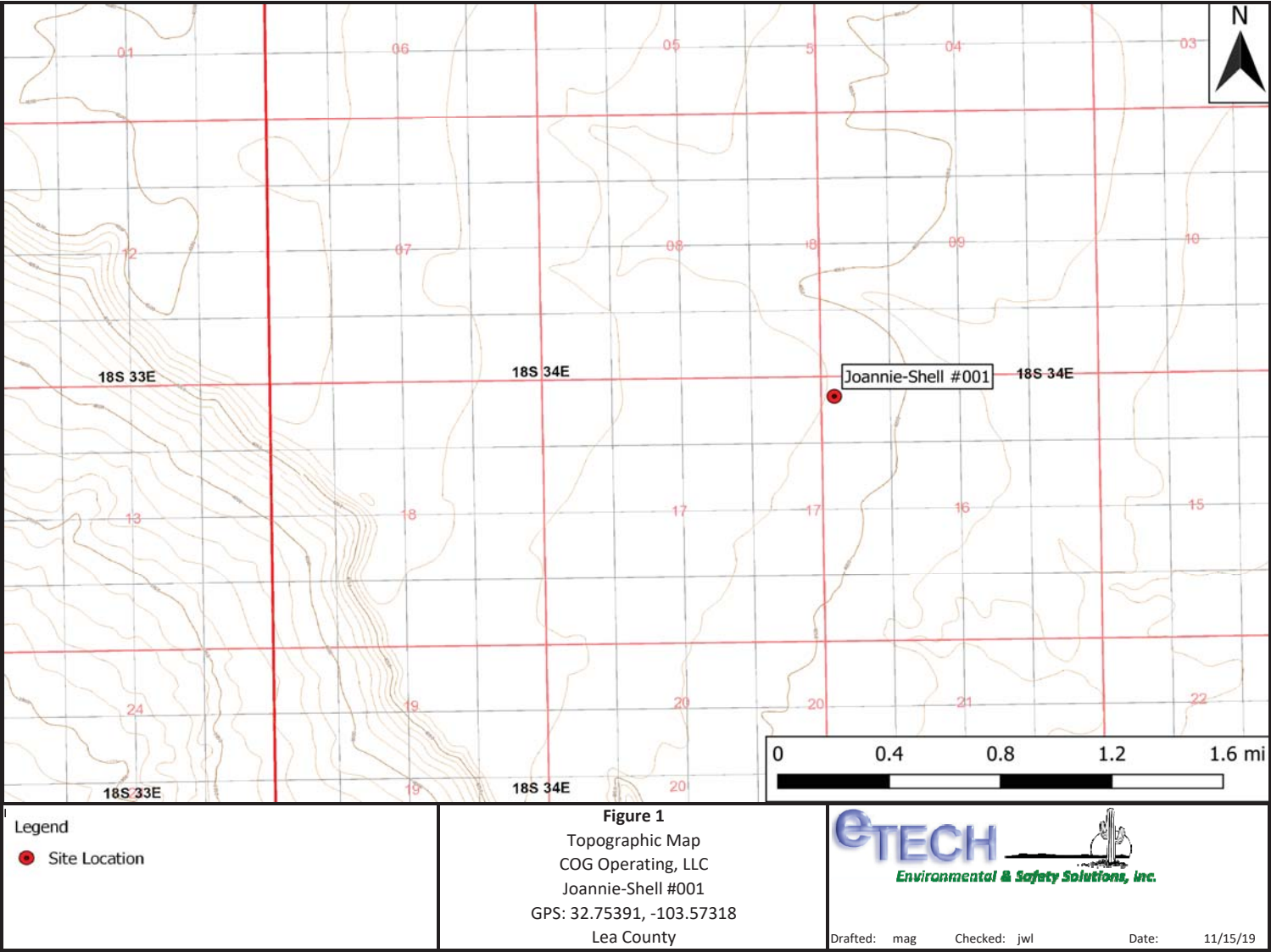
***Hobbs Field Office***

*New Mexico State Land Office  
2827 North Dal Paso Street  
Suite 117  
Hobbs, NM 88240*

*(Electronic Submission)*

## **Figure 1**

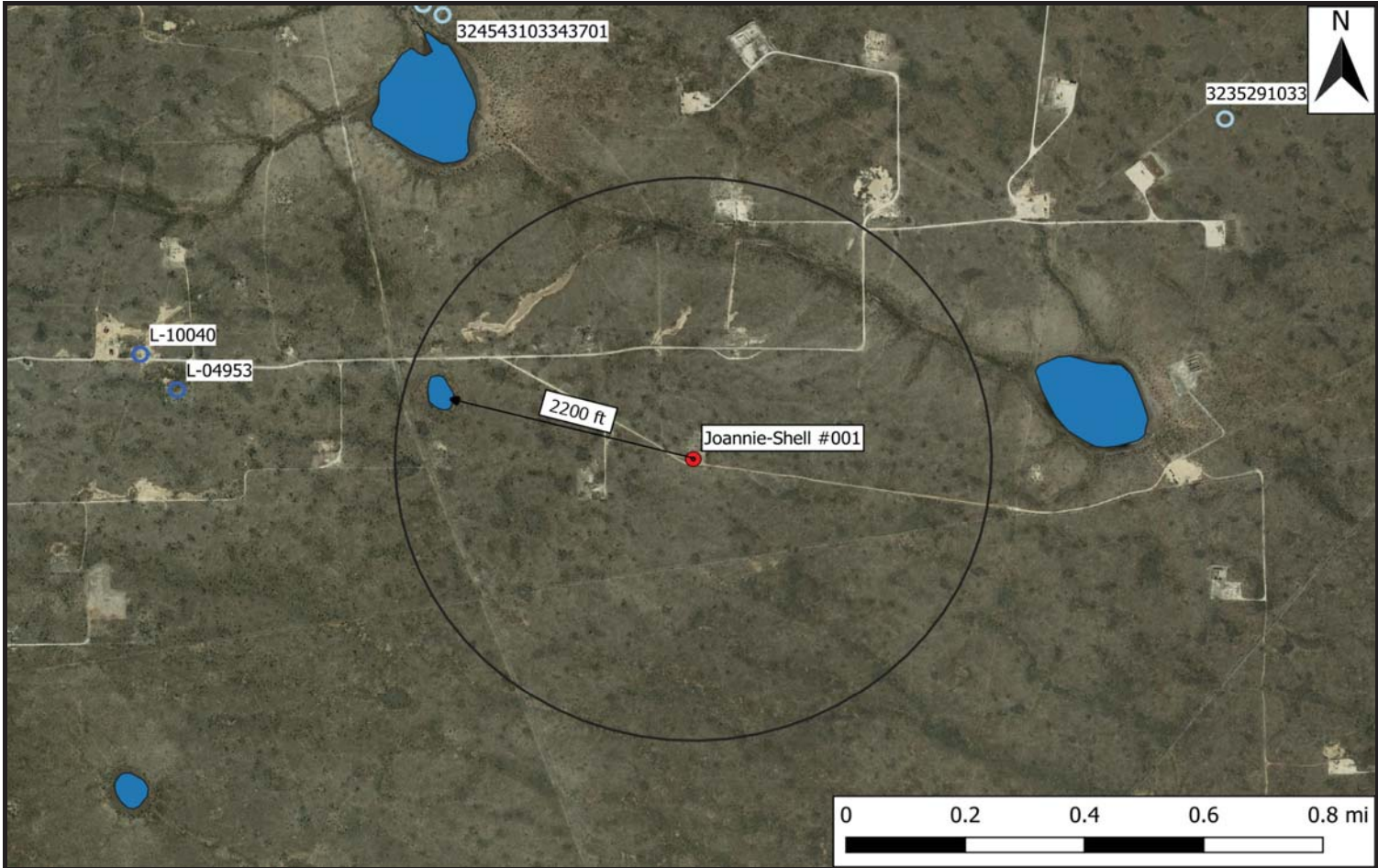
### **Topographic Map**



## **Figure 2**

### **Aerial Proximity Map**





Legend	
	Site Location
	0.5 Mi Radius
	1% Annual Flood Chance
	Surface Water
	Potash Mine Workings
	Well - USGS
	Well - NMOSE
	High Karst
	Medium Karst

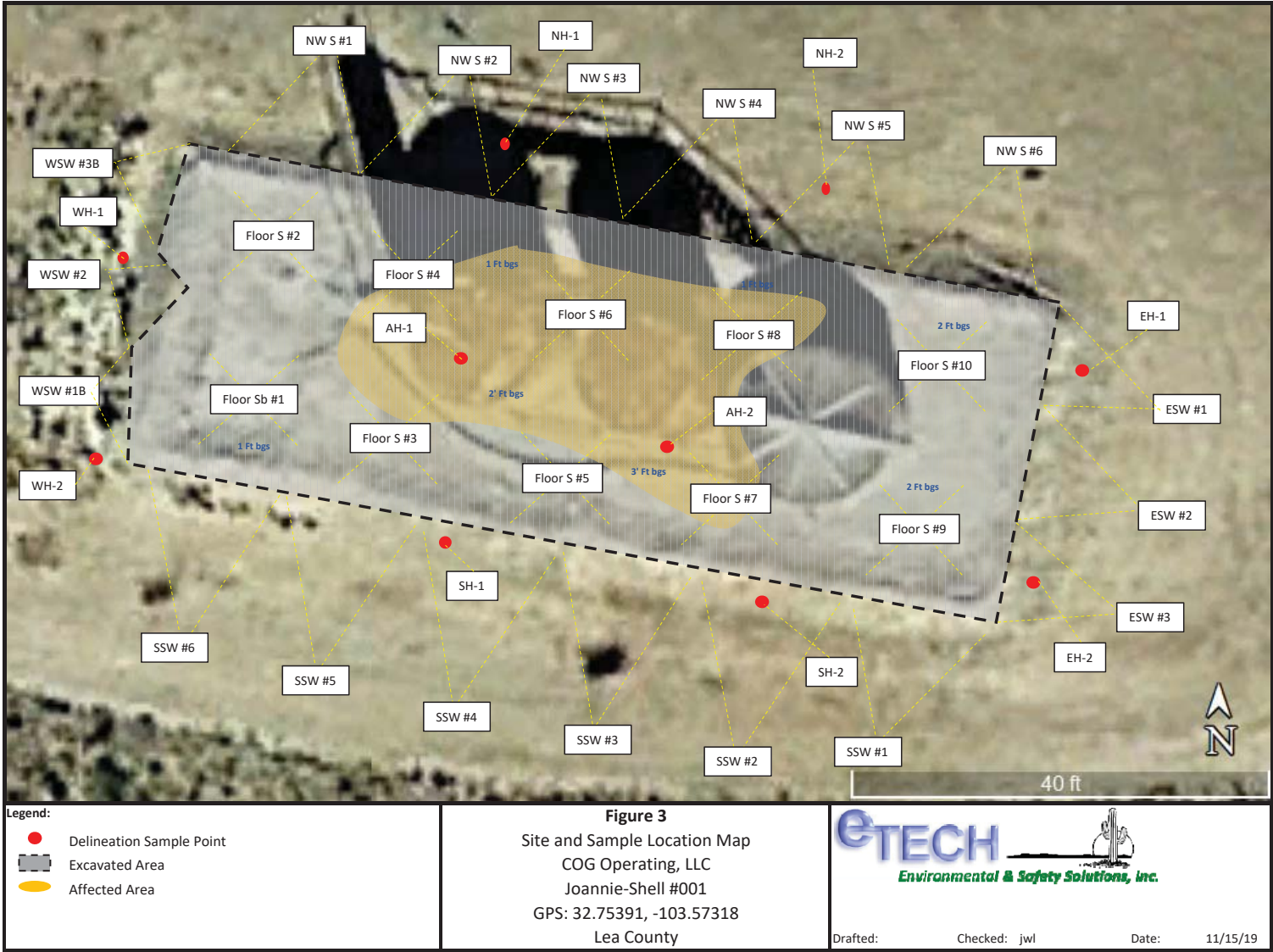
**Figure 2**  
Aerial Map  
COG Operating, LLC  
Joannie-Shell #001  
GPS: 32.75391, -103.57318  
Lea County

Environmental & Safety Solutions, Inc.

Drafted: mag    Checked: jwl    Date: 11/15/19

# **Figure 3**

## **Site and Sample Location Map**



**Table 1**  
**Concentrations of BTEX, TPH, and/or Chloride in Soil**

**TABLE 1**  
**CONCENTRATIONS OF BENZENE, BTEX TPH AND CHLORIDE IN SOIL**  
**COG Operating, LLC**  
**Joannie-Shell #001**  
**NMOCD Ref. #: 1RP-5670**

Sample ID	Date	Depth	Soil Status	SW 846 8021B		SW 846 8015M Ext.					4500 Cl
				Benzene (mg/kg)	BTEX (mg/kg)	GRO C <sub>6</sub> -C <sub>10</sub> (mg/kg)	DRO C <sub>10</sub> -C <sub>28</sub> (mg/kg)	GRO + DRO C <sub>6</sub> -C <sub>28</sub> (mg/kg)	ORO C <sub>28</sub> -C <sub>36</sub> (mg/kg)	TPH C <sub>6</sub> -C <sub>36</sub> (mg/kg)	Chloride (mg/kg)
AH-1	9/19/2019	Surf	Excavated	<0.050	0.832	250	36,000	<b>36,250</b>	9,930	<b>46,180</b>	1,550
AH-1	9/19/2019	1'	In-Situ	<0.050	<0.300	<10.0	112	112	31.4	143.4	432
AH-2	9/19/2019	Surf	Excavated	<0.050	<0.300	<100	35,200	<b>35,200</b>	11,100	<b>46,300</b>	1,860
AH-2	9/19/2019	1'	Excavated	<0.050	<0.300	16.4	1,740	<b>1,756</b>	542	2,298	880
NH-1	9/19/2019	Surf	In-Situ	<0.050	<0.300	<10.0	300	300	289	589	3,360
NH-2	9/19/2019	Surf	In-Situ	<0.050	<0.300	<50.0	608	608	417	1,025	1,090
EH-1	9/19/2019	Surf	In-Situ	<0.050	<0.300	<10.0	104	104	105	209	16.0
EH-2	9/19/2019	Surf	In-Situ	<0.050	<0.300	13.4	23.6	37.0	<10.0	37.0	48.0
SH-1	9/19/2019	Surf	In-Situ	<0.050	<0.300	<10.0	<10.0	<20.0	<10.0	<30.0	32.0
SH-2	9/19/2019	Surf	In-Situ	<0.050	<0.300	<10.0	<10.0	<20.0	<10.0	<30.0	32.0
WH-1	9/19/2019	Surf	In-Situ	<0.050	<0.300	<10.0	<10.0	<20.0	<10.0	<30.0	16.0
WH-2	9/19/2019	Surf	In-Situ	<0.050	<0.300	<10.0	<10.0	<20.0	<10.0	<30.0	32.0
WW-1	10/30/2019	0-1'	Excavated	<0.050	<0.300	<50.0	4,110	<b>4,110</b>	1,640	<b>5,750</b>	208
WW-2	10/30/2019	0-1'	In-Situ	<0.050	<0.300	<10.0	885	885	483	1,368	160
WW-3	10/30/2019	0-1'	Excavated	<0.050	<0.300	<50.0	3,830	<b>3,830</b>	1,610	<b>5,440</b>	624
SW 1	10/30/2019	0-2'	In-Situ	<0.050	<0.300	<10.0	185	185	132	317	32.0
SW 2	10/30/2019	0-3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	80.0
SW 3	10/30/2019	0-3'	In-Situ	<0.050	<0.300	<10.0	126	126	13.8	140	128
SW 4	10/30/2019	0-3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	464
SW 5	10/30/2019	0-1.5'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,020
SW 6	10/30/2019	0-1.5'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	192
EW 1	10/30/2019	0-2'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
EW 2	10/30/2019	0-2'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	80.0
EW 3	10/30/2019	0-2'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	48.0
Floor S #1	10/31/2019	1'	Excavated	<0.050	<0.300	<50.0	3,470	<b>3,470</b>	995	<b>4,465</b>	352
Floor S #2	10/31/2019	1'	In-Situ	<0.050	<0.300	<10.0	291	291	119	410	384
Floor S #3	10/31/2019	1-2'	In-Situ	<0.050	<0.300	<10.0	118	118	33.5	151.5	1090
Floor S #4	10/31/2019	1'	In-Situ	<0.050	<0.300	<10.0	193	193	85.2	278.2	432
Floor S #5	10/31/2019	2-3'	In-Situ	<0.050	<0.300	<10.0	98.3	98.3	21.6	120	96.0
Floor S #6	10/31/2019	1-2'	In-Situ	<0.050	<0.300	<10.0	391	391	87.8	479	640
Floor S #7	10/31/2019	2-3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	176
Floor S #8	10/31/2019	1-2'	In-Situ	<0.050	<0.300	<10.0	10.3	<10.0	<10.0	10.3	64.0
Floor S #9	10/31/2019	2'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	96.0
Floor S #10	10/31/2019	2'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	64.0
NW S #1	11/1/2019	0-1'	In-Situ	<0.050	<0.300	<10.0	48.6	48.6	182	231	288
NW S #2	11/1/2019	0-1'	In-Situ	<0.050	<0.300	<10.0	371	371	385	756	464
NW S #3	11/1/2019	0-1'	In-Situ	<0.050	<0.300	<10.0	934	934	402	1,336	512
NW S #4	11/1/2019	0-1'	In-Situ	<0.050	<0.300	<10.0	827	827	337	1,164	688
NW S #5	11/1/2019	0-1'	In-Situ	<0.050	<0.300	<10.0	87.1	87.1	30.6	117.7	336
NW S #6	11/1/2019	0-2'	In-Situ	<0.050	<0.300	<10.0	51.4	51.4	<10.0	51.4	400
WW 1B	11/5/2019	1-3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	256
WW 3B	11/5/2019	0-1'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	64.0
Floor Sb #1	11/5/2019	1.5'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	320
<b>Closure Criteria</b>				<b>10</b>	<b>50</b>	<b>-</b>	<b>-</b>	<b>1,000</b>	<b>-</b>	<b>2,500</b>	<b>20,000</b>

**NOTES:**

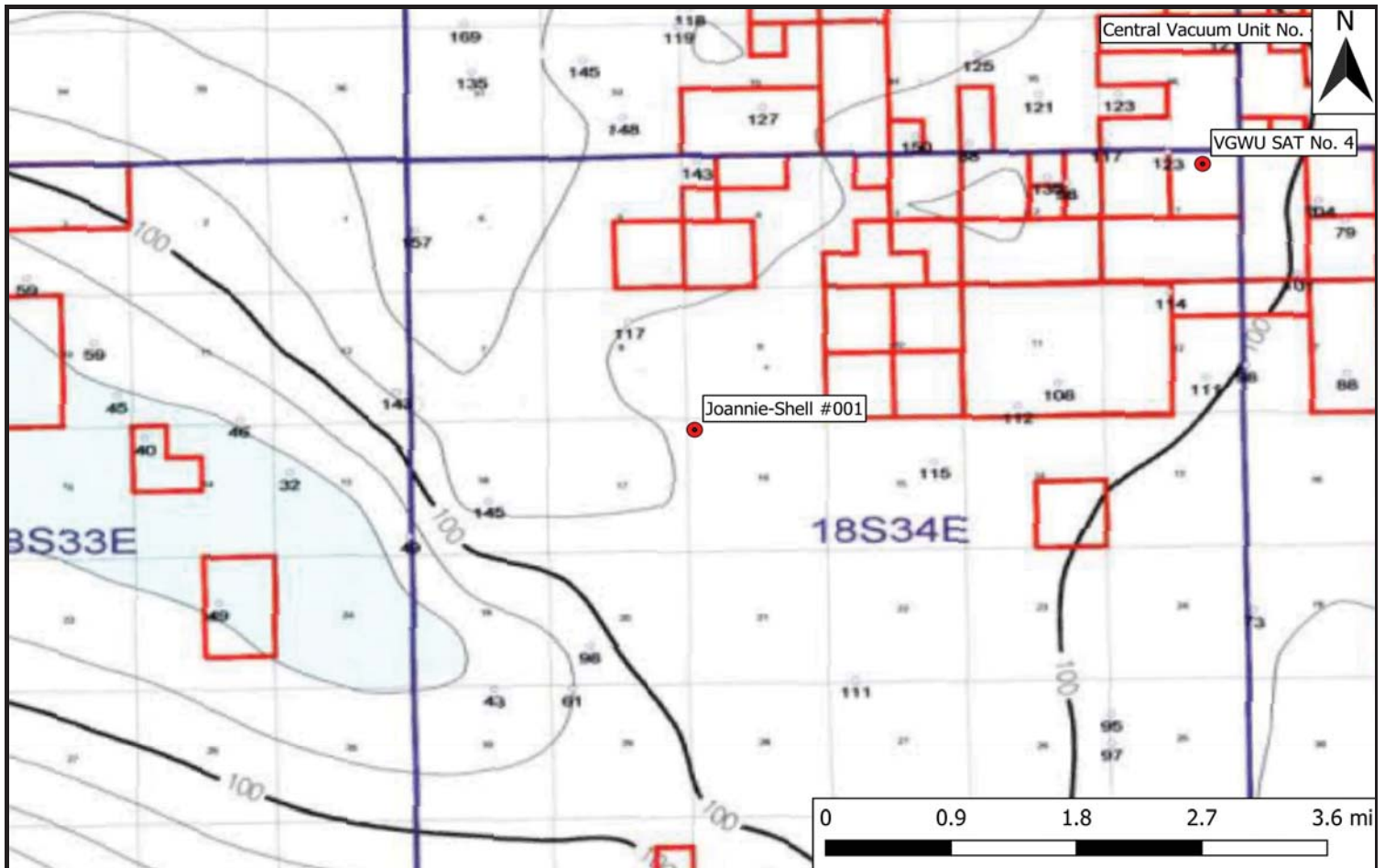
- = Not analyzed for constituent

**Bold** text denotes a concentration that exceeds the NMOCD Closure Criteria

## **Appendix A**

### **Depth to Groundwater Information**





### Legend

- Site Location

### Figure 4

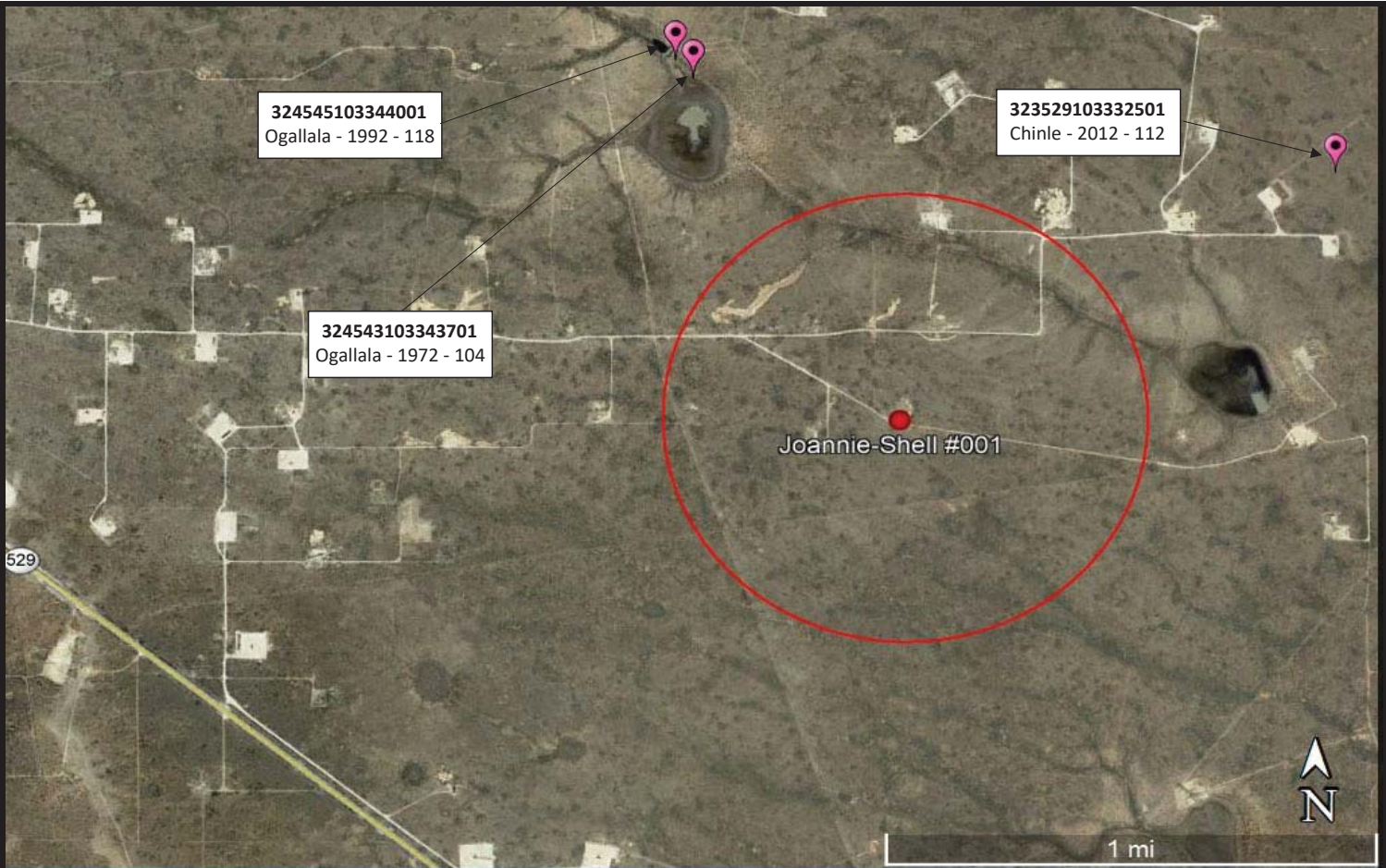
Inferred Depth to Groundwater Trend Map  
COG Operating, LLC  
Joannie-Shell #001  
GPS: 32.75391, -103.57318  
Lea County



Drafted: mag

Checked: jwl

Date: 11/15/19



**Legend:**

- Site Location
- USGS Water Well
- 1/2 Mile Radius

**Figure 5**  
USGS Well Proximity Map  
COG Operating, LLC  
Joannie-Shell #001  
GPS: 32.75391, -103.57318  
Lea County

**eTECH**  
Environmental & Safety Solutions, Inc.

Drafted:      Checked: jwl      Date: 11/15/19





## New Mexico Office of the State Engineer

# Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced,  
O=orphaned,  
C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	POD Code	Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	DepthWell	DepthWater	Water Column
<a href="#">L 05882</a>	L	L	LE	1	4	16	18S	34E		634605	3624030*	1284	230	110	120
<a href="#">L 05374</a>	L	L	LE	2	2	16	18S	34E		634994	3624840*	1330	192	105	87
<a href="#">L 04953</a>	L	L	LE	4	3	3	08	18S	34E	632269	3625104*	1410	200	150	50
<a href="#">L 10040</a>	L	L	LE	3	3	08	18S	34E		632170	3625205*	1525	215	145	70

Average Depth to Water: **127 feet**

Minimum Depth: **105 feet**

Maximum Depth: **150 feet**

**Record Count:** 4

**UTM NAD83 Radius Search (in meters):**

**Easting (X):** 633665.6

**Northing (Y):** 3624906.4

**Radius:** 1610

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

11/15/19 6:41 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER



USGS Home  
Contact USGS  
Search USGS

## National Water Information System: Web Interface

[USGS Water Resources](#)

Data Category:

Groundwater

Geographic Area:

United States

GO

Click to hide News Bulletins

- [Introducing The Next Generation of USGS Water Data for the Nation](#)
- [Full News](#) 

Groundwater levels for the Nation

## Search Results -- 1 sites found

site\_no list =

- 323529103332501

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

## USGS 323529103332501 20S.34E.04.44434

Available data for this site

Groundwater: Field measurements

GO

Lea County, New Mexico

Hydrologic Unit Code 13070007

Latitude 32°45'44.9", Longitude 103°33'27.8" NAD83

Land-surface elevation 4,041 feet above NAVD88

The depth of the well is 200 feet below land surface.

This well is completed in the Chinle Formation (231CHNL) local aquifer.

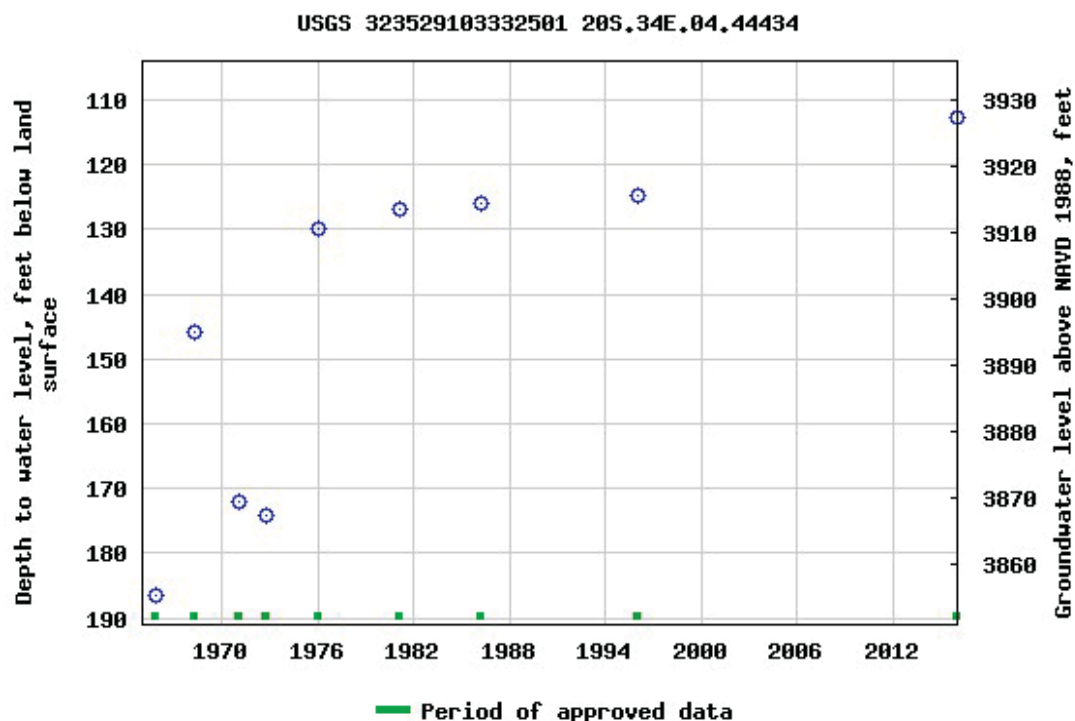
### Output formats

[Table of data](#)

[Tab-separated data](#)

[Graph of data](#)

[Reselect period](#)



Breaks in the plot represent a gap of at least one year between field measurements.

[Download a presentation-quality graph](#)

[Questions about sites/data?](#)

[Feedback on this web site](#)

[Automated retrievals](#)

[Help](#)

[Data Tips](#)

[Explanation of terms](#)

[Subscribe for system changes](#)

[News](#)

[Accessibility](#)

[Plug-Ins](#)

[FOIA](#)

[Privacy](#)

[Policies and Notices](#)

[U.S. Department of the Interior](#) | [U.S. Geological Survey](#)

**Title: Groundwater for USA: Water Levels**

**URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>**



Page Contact Information: [USGS Water Data Support Team](#)

Page Last Modified: 2019-09-18 10:35:37 EDT

1.24 1.15 nadww02



USGS Home  
Contact USGS  
Search USGS

## National Water Information System: Web Interface

[USGS Water Resources](#)

Data Category:

Groundwater

Geographic Area:

United States

GO

Click to hide News Bulletins

- [Introducing The Next Generation of USGS Water Data for the Nation](#)
- [Full News](#) 

Groundwater levels for the Nation

## Search Results -- 1 sites found

site\_no list =

- 324545103344001

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

## USGS 324545103344001 18S.34E.08.231221

Available data for this site

Groundwater: Field measurements

GO

Lea County, New Mexico

Hydrologic Unit Code 13070007

Latitude 32°45'56", Longitude 103°34'49" NAD27

Land-surface elevation 4,041.00 feet above NGVD29

The depth of the well is 194 feet below land surface.

This well is completed in the Ogallala Formation (121OGLL) local aquifer.

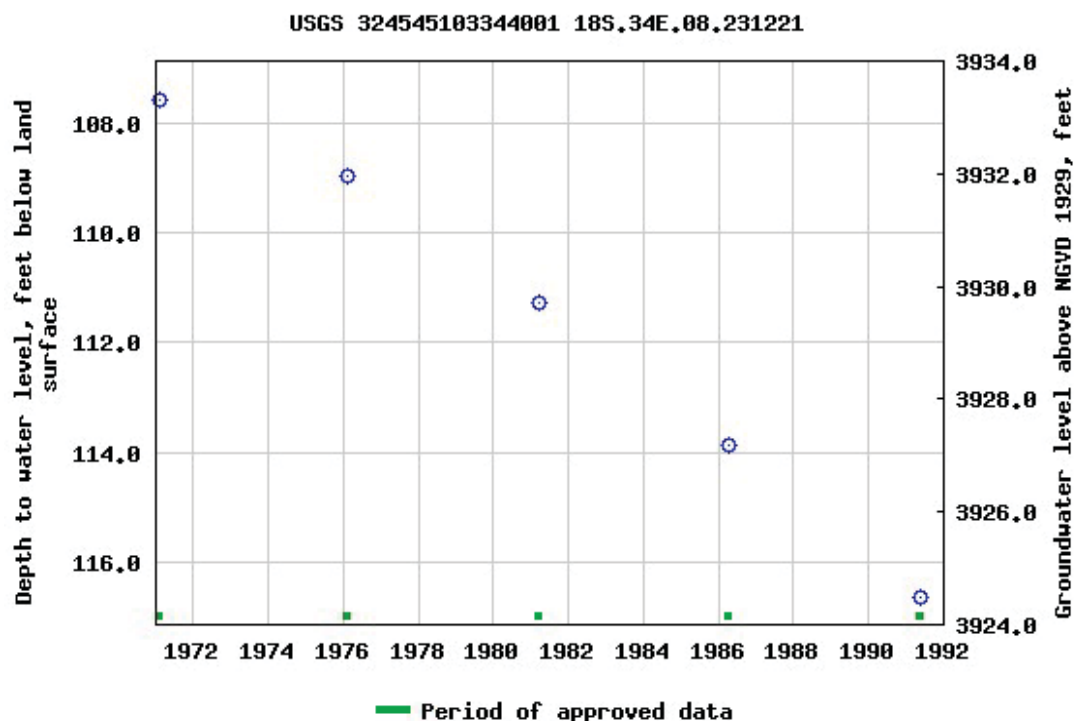
### Output formats

[Table of data](#)

[Tab-separated data](#)

[Graph of data](#)

[Reselect period](#)



Breaks in the plot represent a gap of at least one year between field measurements.

[Download a presentation-quality graph](#)

[Questions about sites/data?](#)

[Feedback on this web site](#)

[Automated retrievals](#)

[Help](#)

[Data Tips](#)

[Explanation of terms](#)

[Subscribe for system changes](#)

[News](#)

[Accessibility](#)

[Plug-Ins](#)

[FOIA](#)

[Privacy](#)

[Policies and Notices](#)

[U.S. Department of the Interior](#) | [U.S. Geological Survey](#)

**Title: Groundwater for USA: Water Levels**

**URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>**



Page Contact Information: [USGS Water Data Support Team](#)

Page Last Modified: 2019-09-18 10:37:07 EDT

1.07 1.03 nadww01




USGS Home  
Contact USGS  
Search USGS

National Water Information System: Web Interface

[USGS Water Resources](#)

Data Category:	Geographic Area:	
Groundwater	United States	GO

Click to hideNews Bulletins

- [Introducing The Next Generation of USGS Water Data for the Nation](#)
- [Full News](#) 

Groundwater levels for the Nation

Search Results -- 1 sites found

site\_no list =

- 324543103343701

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

USGS 324543103343701 18S.34E.08.23213

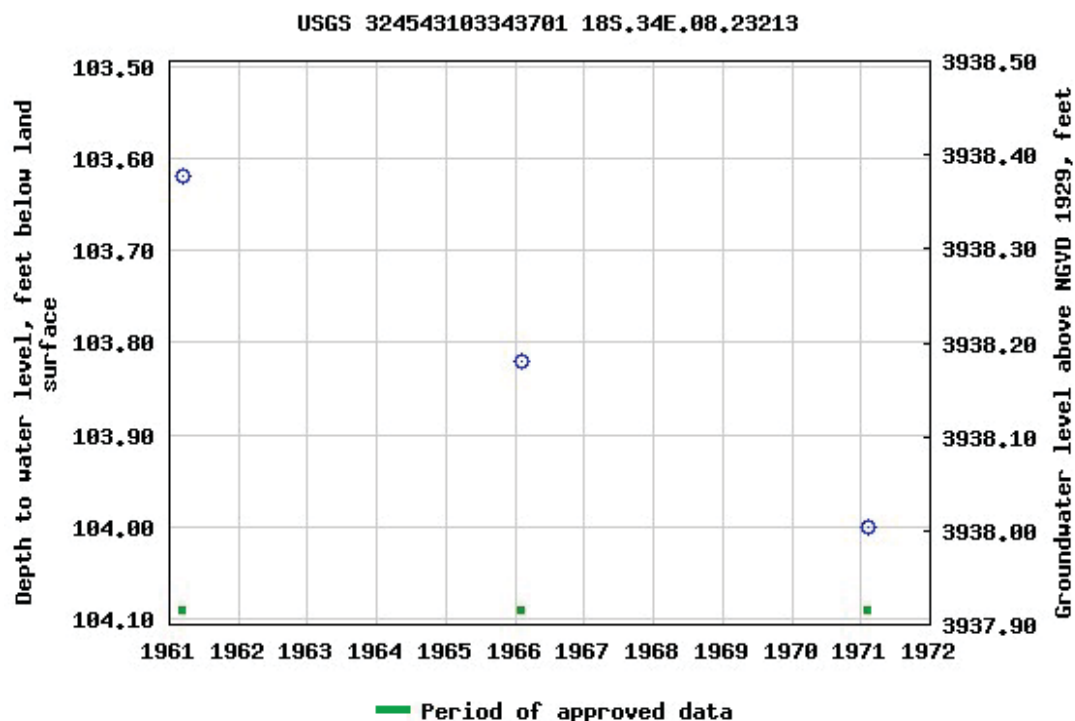
Available data for this site 

Groundwater: Field measurements	GO
---------------------------------	----

Lea County, New Mexico  
Hydrologic Unit Code 13070007  
Latitude 32°45'55", Longitude 103°34'47" NAD27  
Land-surface elevation 4,042.00 feet above NGVD29  
This well is completed in the Ogallala Formation (1210GLL) local aquifer.

Output formats

<a href="#">Table of data</a>
<a href="#">Tab-separated data</a>
<a href="#">Graph of data</a>
<a href="#">Reselect period</a>



Breaks in the plot represent a gap of at least one year between field measurements.

[Download a presentation-quality graph](#)

[Questions about sites/data?](#)

[Feedback on this web site](#)

[Automated retrievals](#)

[Help](#)

[Data Tips](#)

[Explanation of terms](#)

[Subscribe for system changes](#)

[News](#)

[Accessibility](#)

[Plug-Ins](#)

[FOIA](#)

[Privacy](#)

[Policies and Notices](#)

[U.S. Department of the Interior](#) | [U.S. Geological Survey](#)

**Title: Groundwater for USA: Water Levels**

**URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>**



Page Contact Information: [USGS Water Data Support Team](#)

Page Last Modified: 2019-09-18 10:36:40 EDT

1.06 0.99 nadww01

**Appendix B**  
**Field Data and Soil Profile Logs**





## Initial Release Assessment Form

Project: Joannie-Shell #001

Clean Up Level:

Date: 11/19/2019

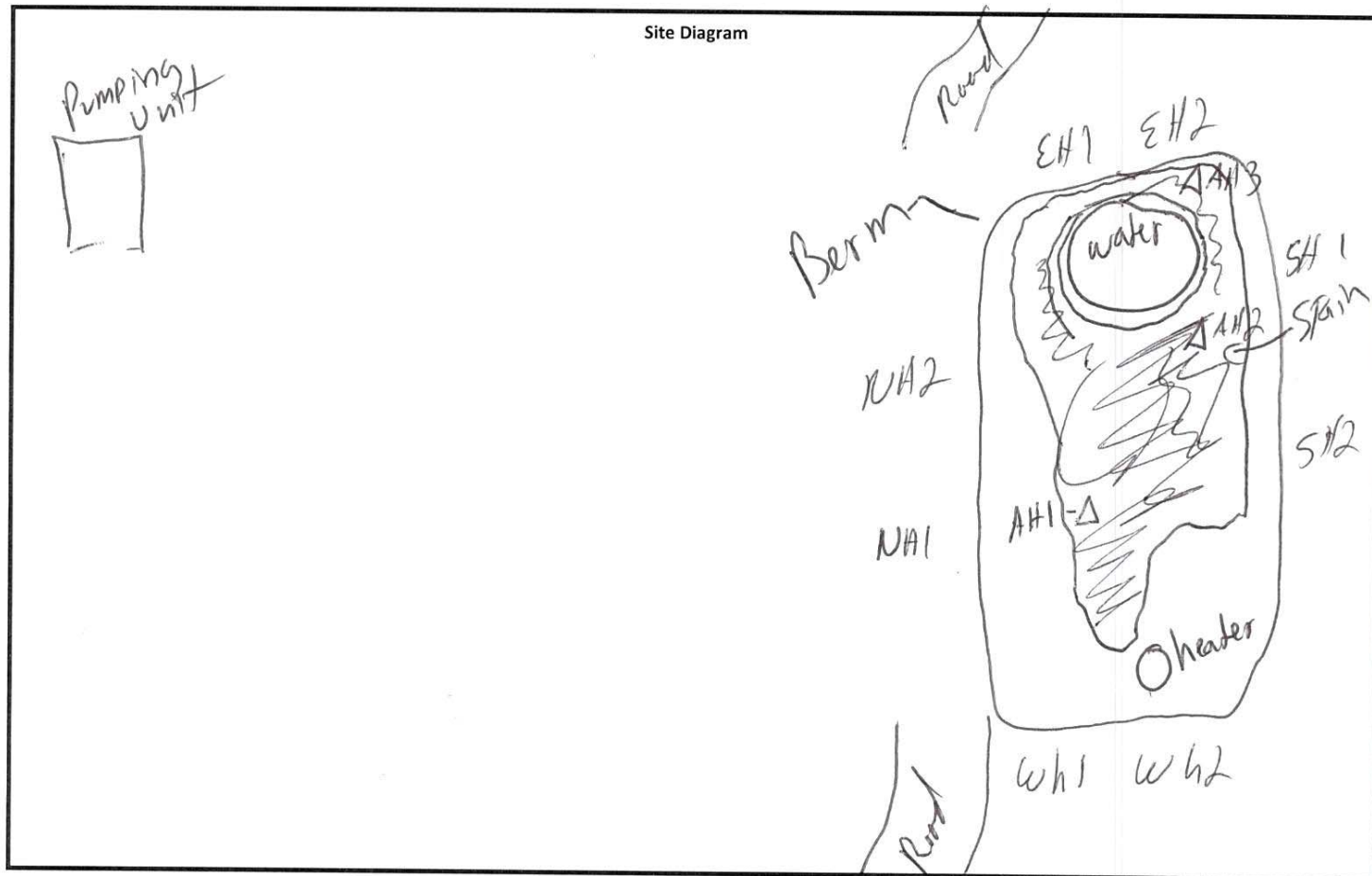
0

Project Number: 0

Latitude: 32.75391

Longitude: -103.57318

Site Diagram



Notes: 10661 oil spill after hole was found in bottom of tank. Tanks have been removed. Site needs delineation & remediation. Need to map spill area and take samples. Very rocky area, may need backhoe to dig through rock if needed. DBW < 100' so TPH is 2,500.

~Length:

~Width:

~Area:

~Depth:

3-4 Representative Pictures of the Affected Area including sample locations?

Yes

No



Necessary Samples Field Screened and on Ice?



Sample and Field Screen Data Entered on Sample Log?



Was horizontal and vertical delineation achieved?





Project: Joannie-Shell #001

Project Number: 0 Latitude: 32.75391 Longitude: -103.57318

Sample Point = SP #1 @ ## etc

Floor = FL #1 etc

Sidewall = SW #1 etc

Test Trench = TT #1 @ ##

Refusal = SP #1 @ 4'-R

Soil Intended to be Deferred = SP #1 @ 4' In-Situ

Resamples= SP #1 @ 5b or SW #1b

Stockpile = Stockpile #1

GPS Sample Points, Center of Comp Areas



## Sample Log

Date: 10-30-19Project: Joanie-Shell #001Project Number: 11244Latitude: 32.75391Longitude: -103.57318

Sample ID	PID/Odor	Chloride Conc.	GPS
WW1	mild	212	11:55
WW2	light	396	11:59
WW3	strong	396	11:59
SW1	very light	352	12:50
SW2	very light	128	12:51
SW3	light	212	12:53
SW4	very light	592	12:54
SW5	light	1320	12:56
SW6	medium	312	12:58
EW1	none	<128	1:33
EW2	none	<128	1:34
EW3	none	<128	1:37
<u>10-31-19</u>			
Floor S#1	strong	396	8:49
Floor S#2	none	396	8:50
Floor S#3	very light	1144	8:52
Floor S#4	very light	536	8:53
Floor S#5	medium	180	8:54
Floor S#6	strong	396	8:55
Floor S#7	none	244	11:07
Floor S#8	medium	212	1:13
Floor S#9	none	180	11:08
Floor S#10	none	156	1:14
<u>11-1-19</u>			
Floor S#8	None	128	8:40
NW S#1	None	244	9:06
NW S#2	None	312	9:10
NW S#3	None	396	9:30
NW S#4	None	352	9:35
NW S#5	None	312	9:36
NW S#6	None	488	9:40

Sample Point = SP #1 @ ## etc

Floor = FL #1 etc

Sidewall = SW #1 etc

Test Trench = TT #1 @ ##

Refusal = SP #1 @ 4'-R

Soil Intended to be Deferred = SP #1 @ 4' In-Situ

Resamples = SP #1 @ 5b or SW #1b

Stockpile = Stockpile #1

GPS Sample Points, Center of Comp Areas





Date: 11-5-11

Latitude: 32.75391

Longitude: -103.57318

### GPS Sample Points, Center of Comp Areas



## Soil Profile

Date:

9-18-19

Project: Joannie-Shell #001

Project Number: 0

Latitude: 32.75391

Longitude: -103.57318

Depth (ft. bgs)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40

Description

Caliche, rock

" "

## **Appendix C**

### **Laboratory Analytical Reports**



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

September 24, 2019

LANCE CRENSHAW

Etech Environmental & Safety Solutions

P.O. Box 301

Lovington, NM 88260

RE: JOANIE SHELL #001

Enclosed are the results of analyses for samples received by the laboratory on 09/19/19 15:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. 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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 09/19/2019  
 Reported: 09/24/2019  
 Project Name: JOANIE SHELL #001  
 Project Number: 11244  
 Project Location: COG - LEA CO NM

Sampling Date: 09/19/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: AH - 1 @ SURFACE (H903249-01)**

BTEX 8021B		mg/kg	Analyzed By: BF						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2019	ND	1.58	79.1	2.00	7.18	
Toluene*	<0.050	0.050	09/24/2019	ND	1.55	77.6	2.00	7.16	
Ethylbenzene*	0.239	0.050	09/24/2019	ND	1.56	77.9	2.00	6.01	
Total Xylenes*	0.593	0.150	09/24/2019	ND	4.66	77.7	6.00	5.89	
Total BTEX	0.832	0.300	09/24/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 116 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1550	16.0	09/20/2019	ND	432	108	400	3.77		

TPH 8015M		mg/kg	Analyzed By: MS					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	250	100	09/20/2019	ND	205	103	200	0.584	
DRO >C10-C28*	36000	100	09/20/2019	ND	205	103	200	2.08	
EXT DRO >C28-C36	9930	100	09/20/2019	ND					

Surrogate: 1-Chlorooctane 162 % 41-142

Surrogate: 1-Chlorooctadecane 1390 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 09/19/2019  
 Reported: 09/24/2019  
 Project Name: JOANIE SHELL #001  
 Project Number: 11244  
 Project Location: COG - LEA CO NM

Sampling Date: 09/19/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: AH - 1 @ 1' (H903249-02)**

BTEX 8021B			mg/kg		Analyzed By: BF					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/24/2019	ND	1.58	79.1	2.00	7.18		
Toluene*	<0.050	0.050	09/24/2019	ND	1.55	77.6	2.00	7.16		
Ethylbenzene*	<0.050	0.050	09/24/2019	ND	1.56	77.9	2.00	6.01		
Total Xylenes*	<0.150	0.150	09/24/2019	ND	4.66	77.7	6.00	5.89		
Total BTEX	<0.300	0.300	09/24/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 88.4 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	432	16.0	09/20/2019	ND	432	108	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	09/20/2019	ND	205	103	200	0.584	
DRO >C10-C28*	112	10.0	09/20/2019	ND	205	103	200	2.08	
EXT DRO >C28-C36	31.4	10.0	09/20/2019	ND					

Surrogate: 1-Chlorooctane 96.9 % 41-142

Surrogate: 1-Chlorooctadecane 108 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 09/19/2019  
 Reported: 09/24/2019  
 Project Name: JOANIE SHELL #001  
 Project Number: 11244  
 Project Location: COG - LEA CO NM

Sampling Date: 09/19/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: AH - 2 @ SURFACE (H903249-03)**

BTEX 8021B			mg/kg		Analyzed By: BF					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/24/2019	ND	1.58	79.1	2.00	7.18		
Toluene*	<0.050	0.050	09/24/2019	ND	1.55	77.6	2.00	7.16		
Ethylbenzene*	0.065	0.050	09/24/2019	ND	1.56	77.9	2.00	6.01		
Total Xylenes*	0.227	0.150	09/24/2019	ND	4.66	77.7	6.00	5.89		
Total BTEX	<0.300	0.300	09/24/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 86.4 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1860	16.0	09/20/2019	ND	432	108	400	3.77	

TPH 8015M			mg/kg		Analyzed By: MS				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<100	100	09/20/2019	ND	205	103	200	0.584		
DRO >C10-C28*	35200	100	09/20/2019	ND	205	103	200	2.08		
EXT DRO >C28-C36	11100	100	09/20/2019	ND						

Surrogate: 1-Chlorooctane 122 % 41-142

Surrogate: 1-Chlorooctadecane 1530 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 09/19/2019  
 Reported: 09/24/2019  
 Project Name: JOANIE SHELL #001  
 Project Number: 11244  
 Project Location: COG - LEA CO NM

Sampling Date: 09/19/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: AH - 2 @ 1' (H903249-04)**

BTEX 8021B		mg/kg		Analyzed By: BF						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/24/2019	ND	1.58	79.1	2.00	7.18		
Toluene*	<0.050	0.050	09/24/2019	ND	1.55	77.6	2.00	7.16		
Ethylbenzene*	0.053	0.050	09/24/2019	ND	1.56	77.9	2.00	6.01		
Total Xylenes*	0.217	0.150	09/24/2019	ND	4.66	77.7	6.00	5.89		
Total BTEX	<0.300	0.300	09/24/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 89.1 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	880	16.0	09/20/2019	ND	432	108	400	3.77	
TPH 8015M		mg/kg		Analyzed By: MS					
									S-04

TPH 8015M		mg/kg		Analyzed By: MS					S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	16.4	10.0	09/20/2019	ND	205	103	200	0.584		
DRO >C10-C28*	1740	10.0	09/20/2019	ND	205	103	200	2.08		
EXT DRO >C28-C36	542	10.0	09/20/2019	ND						

Surrogate: 1-Chlorooctane 96.7 % 41-142

Surrogate: 1-Chlorooctadecane 161 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 09/19/2019  
 Reported: 09/24/2019  
 Project Name: JOANIE SHELL #001  
 Project Number: 11244  
 Project Location: COG - LEA CO NM

Sampling Date: 09/19/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: NH - 1 @ SURFACE (H903249-05)**

BTEX 8021B			mg/kg		Analyzed By: BF					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/24/2019	ND	1.58	79.1	2.00	7.18		
Toluene*	<0.050	0.050	09/24/2019	ND	1.55	77.6	2.00	7.16		
Ethylbenzene*	<0.050	0.050	09/24/2019	ND	1.56	77.9	2.00	6.01		
Total Xylenes*	<0.150	0.150	09/24/2019	ND	4.66	77.7	6.00	5.89		
Total BTEX	<0.300	0.300	09/24/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 87.6 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3360	16.0	09/20/2019	ND	432	108	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	09/20/2019	ND	205	103	200	0.584	
DRO >C10-C28*	300	10.0	09/20/2019	ND	205	103	200	2.08	
EXT DRO >C28-C36	289	10.0	09/20/2019	ND					

Surrogate: 1-Chlorooctane 92.8 % 41-142

Surrogate: 1-Chlorooctadecane 116 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 09/19/2019  
 Reported: 09/24/2019  
 Project Name: JOANIE SHELL #001  
 Project Number: 11244  
 Project Location: COG - LEA CO NM

Sampling Date: 09/19/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: NH - 2 @ SURFACE (H903249-06)**

BTEX 8021B			mg/kg		Analyzed By: BF					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/24/2019	ND	1.58	79.1	2.00	7.18		
Toluene*	<0.050	0.050	09/24/2019	ND	1.55	77.6	2.00	7.16		
Ethylbenzene*	<0.050	0.050	09/24/2019	ND	1.56	77.9	2.00	6.01		
Total Xylenes*	<0.150	0.150	09/24/2019	ND	4.66	77.7	6.00	5.89		
Total BTEX	<0.300	0.300	09/24/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 89.2 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1090	16.0	09/20/2019	ND	432	108	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*	<50.0	50.0	09/20/2019	ND	205	103	200	0.584	
DRO >C10-C28*	608	50.0	09/20/2019	ND	205	103	200	2.08	
EXT DRO >C28-C36	417	50.0	09/20/2019	ND					

Surrogate: 1-Chlorooctane 94.9 % 41-142

Surrogate: 1-Chlorooctadecane 132 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 09/19/2019  
 Reported: 09/24/2019  
 Project Name: JOANIE SHELL #001  
 Project Number: 11244  
 Project Location: COG - LEA CO NM

Sampling Date: 09/19/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: EH - 1 @ SURFACE (H903249-07)**

BTEX 8021B			mg/kg		Analyzed By: BF					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/24/2019	ND	1.58	79.1	2.00	7.18		
Toluene*	<0.050	0.050	09/24/2019	ND	1.55	77.6	2.00	7.16		
Ethylbenzene*	<0.050	0.050	09/24/2019	ND	1.56	77.9	2.00	6.01		
Total Xylenes*	<0.150	0.150	09/24/2019	ND	4.66	77.7	6.00	5.89		
Total BTEX	<0.300	0.300	09/24/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 88.7 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	09/20/2019	ND	432	108	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	09/20/2019	ND	205	103	200	0.584	
DRO >C10-C28*	104	10.0	09/20/2019	ND	205	103	200	2.08	
EXT DRO >C28-C36	105	10.0	09/20/2019	ND					

Surrogate: 1-Chlorooctane 94.5 % 41-142

Surrogate: 1-Chlorooctadecane 103 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 09/19/2019  
 Reported: 09/24/2019  
 Project Name: JOANIE SHELL #001  
 Project Number: 11244  
 Project Location: COG - LEA CO NM

Sampling Date: 09/19/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: EH - 2 @ SURFACE (H903249-08)**

BTEX 8021B		mg/kg	Analyzed By: BF						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2019	ND	1.58	79.1	2.00	7.18	
Toluene*	<0.050	0.050	09/24/2019	ND	1.55	77.6	2.00	7.16	
Ethylbenzene*	<b>0.072</b>	0.050	09/24/2019	ND	1.56	77.9	2.00	6.01	
<b>Total Xylenes*</b>	<b>0.238</b>	0.150	09/24/2019	ND	4.66	77.7	6.00	5.89	
<b>Total BTEX</b>	<b>0.310</b>	0.300	09/24/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 88.0 % 73.3-129

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>48.0</b>	16.0	09/20/2019	ND	432	108	400	3.77	
TPH 8015M		mg/kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10*</b>	<b>13.4</b>	10.0	09/20/2019	ND	205	103	200	0.584	
<b>DRO &gt;C10-C28*</b>	<b>23.6</b>	10.0	09/20/2019	ND	205	103	200	2.08	
EXT DRO >C28-C36	<10.0	10.0	09/20/2019	ND					

Surrogate: 1-Chlorooctane 95.4 % 41-142

Surrogate: 1-Chlorooctadecane 95.2 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 09/19/2019  
 Reported: 09/24/2019  
 Project Name: JOANIE SHELL #001  
 Project Number: 11244  
 Project Location: COG - LEA CO NM

Sampling Date: 09/19/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: SH - 1 @ SURFACE (H903249-09)**

BTEX 8021B			mg/kg		Analyzed By: BF					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/24/2019	ND	1.58	79.1	2.00	7.18		
Toluene*	<0.050	0.050	09/24/2019	ND	1.55	77.6	2.00	7.16		
Ethylbenzene*	<0.050	0.050	09/24/2019	ND	1.56	77.9	2.00	6.01		
Total Xylenes*	<0.150	0.150	09/24/2019	ND	4.66	77.7	6.00	5.89		
Total BTEX	<0.300	0.300	09/24/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 88.8 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	09/20/2019	ND	432	108	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	09/20/2019	ND	205	103	200	0.584	
DRO >C10-C28*	<10.0	10.0	09/20/2019	ND	205	103	200	2.08	
EXT DRO >C28-C36	<10.0	10.0	09/20/2019	ND					

Surrogate: 1-Chlorooctane 90.5 % 41-142

Surrogate: 1-Chlorooctadecane 93.9 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 09/19/2019  
 Reported: 09/24/2019  
 Project Name: JOANIE SHELL #001  
 Project Number: 11244  
 Project Location: COG - LEA CO NM

Sampling Date: 09/19/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: SH - 2 @ SURFACE (H903249-10)**

BTEX 8021B			mg/kg		Analyzed By: BF				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2019	ND	1.58	79.1	2.00	7.18	
Toluene*	<0.050	0.050	09/24/2019	ND	1.55	77.6	2.00	7.16	
Ethylbenzene*	<0.050	0.050	09/24/2019	ND	1.56	77.9	2.00	6.01	
Total Xylenes*	<0.150	0.150	09/24/2019	ND	4.66	77.7	6.00	5.89	
Total BTEX	<0.300	0.300	09/24/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 90.7 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	09/20/2019	ND	432	108	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	09/20/2019	ND	199	99.7	200	0.456	
DRO >C10-C28*	<10.0	10.0	09/20/2019	ND	177	88.5	200	0.973	
EXT DRO >C28-C36	<10.0	10.0	09/20/2019	ND					

Surrogate: 1-Chlorooctane 86.8 % 41-142

Surrogate: 1-Chlorooctadecane 87.0 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 09/19/2019  
 Reported: 09/24/2019  
 Project Name: JOANIE SHELL #001  
 Project Number: 11244  
 Project Location: COG - LEA CO NM

Sampling Date: 09/19/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: WH - 1 @ SURFACE (H903249-11)**

BTEX 8021B		mg/kg		Analyzed By: BF						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/23/2019	ND	1.81	90.7	2.00	3.84		
Toluene*	<0.050	0.050	09/23/2019	ND	1.77	88.4	2.00	3.35		
Ethylbenzene*	0.060	0.050	09/23/2019	ND	1.76	88.2	2.00	4.48		
Total Xylenes*	0.230	0.150	09/23/2019	ND	5.25	87.5	6.00	2.74		
Total BTEX	<0.300	0.300	09/23/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 83.3 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	09/20/2019	ND	432	108	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	09/20/2019	ND	199	99.7	200	0.456	
DRO >C10-C28*	<10.0	10.0	09/20/2019	ND	177	88.5	200	0.973	
EXT DRO >C28-C36	<10.0	10.0	09/20/2019	ND					

Surrogate: 1-Chlorooctane 88.4 % 41-142

Surrogate: 1-Chlorooctadecane 88.4 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received: 09/19/2019  
 Reported: 09/24/2019  
 Project Name: JOANIE SHELL #001  
 Project Number: 11244  
 Project Location: COG - LEA CO NM

Sampling Date: 09/19/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: WH - 2 @ SURFACE (H903249-12)**

BTEX 8021B			mg/kg		Analyzed By: BF				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/23/2019	ND	1.81	90.7	2.00	3.84	
Toluene*	<0.050	0.050	09/23/2019	ND	1.77	88.4	2.00	3.35	
Ethylbenzene*	<0.050	0.050	09/23/2019	ND	1.76	88.2	2.00	4.48	
Total Xylenes*	<0.150	0.150	09/23/2019	ND	5.25	87.5	6.00	2.74	
Total BTEX	<0.300	0.300	09/23/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 86.1 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	09/20/2019	ND	432	108	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	09/20/2019	ND	199	99.7	200	0.456	
DRO >C10-C28*	<10.0	10.0	09/20/2019	ND	177	88.5	200	0.973	
EXT DRO >C28-C36	<10.0	10.0	09/20/2019	ND					

Surrogate: 1-Chlorooctane 92.1 % 41-142

Surrogate: 1-Chlorooctadecane 91.1 % 37.6-147

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

---

**Notes and Definitions**

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
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

---

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.

---

Caley D. Keene, Lab Director/Quality Manager

91 jo 51 ebd

**CARDINAL LABORATORIES**

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603  
 (505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325) 673-7020

**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

Company Name: Etch Environmental		P.O. #:		<b>BILL TO</b>										<b>ANALYSIS REQUEST</b>																											
Project Manager: Lance Crenshaw		Company: COG Operating																																							
Address:		Attn:																																							
City:		Address:																																							
Phone #:		City:																																							
Project #: 11244		State:																																							
Project Name: Joanie Shell #001		Zip:																																							
Project Location: Lea County		Phone #:																																							
Sampler Name: Lance Crenshaw		Fax #:																																							
FOR LAB USE ONLY																																									
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		Chlorides		TPH 8015 M		BTEX		Texas TPH		Complete Cations/Anions		TDS	
1 AH-1 @ surface		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1		1					
2 AH-1 @ 1'		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2		2					
3 AH-2 @ surface		3		3		3		3		3		3		3		3		3		3		3		3		3		3		3		3		3		3					
4 AH-2 @ 1'		4		4		4		4		4		4		4		4		4		4		4		4		4		4		4		4		4		4					
5 NH-1 @ surface		5		5		5		5		5		5		5		5		5		5		5		5		5		5		5		5		5		5					
6 NH-2 @ surface		6		6		6		6		6		6		6		6		6		6		6		6		6		6		6		6		6		6					
7 EH-1 @ surface		7		7		7		7		7		7		7		7		7		7		7		7		7		7		7		7		7		7					
8 EH-2 @ surface		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8					
9 SH-1 @ surface		9		9		9		9		9		9		9		9		9		9		9		9		9		9		9		9		9		9					
10 SH-2 @ surface		10		10		10		10		10		10		10		10		10		10		10		10		10		10		10		10		10		10					

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 analysis. 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.

Relinquished By: *[Signature]* Date: *9/15* Time: *3:15* Received By: *[Signature]* Date: *9/19* Time: *09:20*

Delivered By: (Circle One) *0.12* *#97* Sample Condition: ☒ Cool ☐ Intact ☐ Yes ☐ No ☐ Yes ☐ No CHECKED BY: (Initials) *TC*

Sampler - UPS - Bus - Other: *Corrected 0.52*

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

Phone Result: ☐ Yes ☒ No Add'l Phone #:   
 Fax Result: ☐ Yes ☒ No Add'l Fax #:   
 REMARKS:   
 email results: pm@etechenv.com



Page 16 of 16



## ORDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603  
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325) 673-7020

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476



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

November 04, 2019

LANCE CRENSHAW

Etech Environmental & Safety Solutions

P.O. Box 301

Lovington, NM 88260

RE: JOANIE SHELL #001

Enclosed are the results of analyses for samples received by the laboratory on 11/01/19 15:23.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-19-12. 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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/30/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: WW 1 (H903739-01)**

BTEX 8021B		mg/kg		Analyzed By: MS				S-04		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	11/02/2019	ND	1.61	80.3	2.00	2.02	GC-NC	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98		
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11		
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13		
Total BTEX	<0.300	0.300	11/02/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 217 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	208	16.0	11/04/2019	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<50.0	50.0	11/02/2019	ND	230	115	200	1.38	
DRO >C10-C28*	4110	50.0	11/02/2019	ND	227	114	200	3.45	
EXT DRO >C28-C36	1640	50.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 101 % 41-142

Surrogate: 1-Chlorooctadecane 254 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/30/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: WW 2 (H903739-02)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	11/04/2019	ND	416	104	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/02/2019	ND	230	115	200	1.38	
DRO >C10-C28*	885	10.0	11/02/2019	ND	227	114	200	3.45	
EXT DRO >C28-C36	483	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 102 % 41-142

Surrogate: 1-Chlorooctadecane 169 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/30/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: WW 3 (H903739-03)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	GC-NC
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 128 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	624	16.0	11/04/2019	ND	416	104	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<50.0	50.0	11/02/2019	ND	230	115	200	1.38	
DRO >C10-C28*	3830	50.0	11/02/2019	ND	227	114	200	3.45	
EXT DRO >C28-C36	1610	50.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 109 % 41-142

Surrogate: 1-Chlorooctadecane 233 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/30/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: SW 1 (H903739-04)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	11/04/2019	ND	416	104	400	3.92	

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	11/02/2019	ND	230	115	200	1.38	
DRO >C10-C28*	185	10.0	11/02/2019	ND	227	114	200	3.45	
EXT DRO >C28-C36	132	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 104 % 41-142

Surrogate: 1-Chlorooctadecane 122 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/30/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: SW 2 (H903739-05)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.1 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	11/04/2019	ND	416	104	400	3.92	

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	11/02/2019	ND	230	115	200	1.38	
DRO >C10-C28*	<10.0	10.0	11/02/2019	ND	227	114	200	3.45	
EXT DRO >C28-C36	<10.0	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 103 % 41-142

Surrogate: 1-Chlorooctadecane 110 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/30/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: SW 3 (H903739-06)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	11/04/2019	ND	416	104	400	3.92	

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	11/01/2019	ND	222	111	200	3.50	
DRO >C10-C28*	126	10.0	11/01/2019	ND	221	111	200	2.54	
EXT DRO >C28-C36	13.8	10.0	11/01/2019	ND					

Surrogate: 1-Chlorooctane 85.9 % 41-142

Surrogate: 1-Chlorooctadecane 91.2 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/30/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: SW 4 (H903739-07)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	464	16.0	11/04/2019	ND	416	104	400	3.92	

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	11/01/2019	ND	222	111	200	3.50	
DRO >C10-C28*	<10.0	10.0	11/01/2019	ND	221	111	200	2.54	
EXT DRO >C28-C36	<10.0	10.0	11/01/2019	ND					

Surrogate: 1-Chlorooctane 84.0 % 41-142

Surrogate: 1-Chlorooctadecane 86.1 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/30/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: SW 5 (H903739-08)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1020	16.0	11/04/2019	ND	416	104	400	3.92	

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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	<10.0	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 103 % 41-142

Surrogate: 1-Chlorooctadecane 110 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/30/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: SW 6 (H903739-09)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	11/04/2019	ND	416	104	400	3.92	

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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	<10.0	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 97.5 % 41-142

Surrogate: 1-Chlorooctadecane 104 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/30/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: EW 1 (H903739-10)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	11/04/2019	ND	416	104	400	3.92	

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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	<10.0	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 102 % 41-142

Surrogate: 1-Chlorooctadecane 110 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/30/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: EW 2 (H903739-11)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	11/04/2019	ND	416	104	400	3.92	

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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	<10.0	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 105 % 41-142

Surrogate: 1-Chlorooctadecane 110 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/30/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: EW 3 (H903739-12)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	11/04/2019	ND	416	104	400	3.92	

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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	<10.0	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 102 % 41-142

Surrogate: 1-Chlorooctadecane 107 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/31/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: FLOOR S #1 (H903739-13)**

BTEX 8021B			mg/kg		Analyzed By: MS			S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	GC-NC
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 149 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>352</b>	16.0	11/04/2019	ND	416	104	400	3.92	

TPH 8015M			mg/kg		Analyzed By: MS			S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<50.0	50.0	11/02/2019	ND	229	114	200	1.62	
<b>DRO &gt;C10-C28*</b>	<b>3470</b>	50.0	11/02/2019	ND	228	114	200	1.28	
<b>EXT DRO &gt;C28-C36</b>	<b>995</b>	50.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 96.0 % 41-142

Surrogate: 1-Chlorooctadecane 199 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/31/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: FLOOR S #2 (H903739-14)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	384	16.0	11/04/2019	ND	416	104	400	3.92	

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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	291	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	119	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 98.4 % 41-142

Surrogate: 1-Chlorooctadecane 121 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/31/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: FLOOR S #3 (H903739-15)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1090	16.0	11/04/2019	ND	416	104	400	3.92	

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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	118	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	33.5	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 102 % 41-142

Surrogate: 1-Chlorooctadecane 113 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/31/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: FLOOR S #4 (H903739-16)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	432	16.0	11/04/2019	ND	432	108	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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	193	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	85.2	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 88.7 % 41-142

Surrogate: 1-Chlorooctadecane 107 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/31/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: FLOOR S #5 (H903739-17)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	11/04/2019	ND	432	108	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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	98.3	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	21.6	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 95.2 % 41-142

Surrogate: 1-Chlorooctadecane 113 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/31/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: FLOOR S #6 (H903739-18)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	640	16.0	11/04/2019	ND	432	108	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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	391	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	87.8	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 95.0 % 41-142

Surrogate: 1-Chlorooctadecane 112 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/31/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: FLOOR S #7 (H903739-19)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	176	16.0	11/04/2019	ND	432	108	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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	<10.0	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 100 % 41-142

Surrogate: 1-Chlorooctadecane 108 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/31/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: FLOOR S #8 (H903739-20)**

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	11/02/2019	ND	1.61	80.3	2.00	2.02	
Toluene*	<0.050	0.050	11/02/2019	ND	1.59	79.5	2.00	1.98	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.62	81.0	2.00	2.11	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.82	80.4	6.00	2.13	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	11/04/2019	ND	432	108	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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	10.3	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 95.6 % 41-142

Surrogate: 1-Chlorooctadecane 103 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/31/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: FLOOR S #9 (H903739-21)**

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	11/02/2019	ND	1.87	93.5	2.00	11.9	
Toluene*	<0.050	0.050	11/02/2019	ND	1.51	75.3	2.00	17.6	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.61	80.3	2.00	24.8	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.68	78.1	6.00	31.2	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.6 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	11/04/2019	ND	432	108	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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	<10.0	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 95.6 % 41-142

Surrogate: 1-Chlorooctadecane 101 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	10/31/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: FLOOR S #10 (H903739-22)**

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	11/02/2019	ND	1.87	93.5	2.00	11.9	
Toluene*	<0.050	0.050	11/02/2019	ND	1.51	75.3	2.00	17.6	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.61	80.3	2.00	24.8	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.68	78.1	6.00	31.2	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 93.3 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	11/04/2019	ND	432	108	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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	<10.0	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 96.7 % 41-142

Surrogate: 1-Chlorooctadecane 103 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	11/01/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: NW S #1 (H903739-23)**

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	11/02/2019	ND	1.87	93.5	2.00	11.9	
Toluene*	<0.050	0.050	11/02/2019	ND	1.51	75.3	2.00	17.6	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.61	80.3	2.00	24.8	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.68	78.1	6.00	31.2	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.3 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	288	16.0	11/04/2019	ND	432	108	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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	48.6	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	18.2	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 89.4 % 41-142

Surrogate: 1-Chlorooctadecane 98.8 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	11/01/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: NW S #2 (H903739-24)**

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	11/02/2019	ND	1.87	93.5	2.00	11.9	
Toluene*	<0.050	0.050	11/02/2019	ND	1.51	75.3	2.00	17.6	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.61	80.3	2.00	24.8	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.68	78.1	6.00	31.2	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	464	16.0	11/04/2019	ND	432	108	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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	371	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	385	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 101 % 41-142

Surrogate: 1-Chlorooctadecane 134 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	11/01/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: NW S #3 (H903739-25)**

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	11/02/2019	ND	1.87	93.5	2.00	11.9	
Toluene*	<0.050	0.050	11/02/2019	ND	1.51	75.3	2.00	17.6	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.61	80.3	2.00	24.8	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.68	78.1	6.00	31.2	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.5 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	512	16.0	11/04/2019	ND	432	108	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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	934	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	402	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 96.4 % 41-142

Surrogate: 1-Chlorooctadecane 140 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	11/01/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: NW S #4 (H903739-26)**

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	11/02/2019	ND	1.87	93.5	2.00	11.9	
Toluene*	<0.050	0.050	11/02/2019	ND	1.51	75.3	2.00	17.6	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.61	80.3	2.00	24.8	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.68	78.1	6.00	31.2	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.1 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	688	16.0	11/04/2019	ND	432	108	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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	827	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	337	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 98.9 % 41-142

Surrogate: 1-Chlorooctadecane 132 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	11/01/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: NW S #5 (H903739-27)**

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	11/02/2019	ND	1.87	93.5	2.00	11.9	
Toluene*	<0.050	0.050	11/02/2019	ND	1.51	75.3	2.00	17.6	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.61	80.3	2.00	24.8	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.68	78.1	6.00	31.2	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 92.6 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	336	16.0	11/04/2019	ND	432	108	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	11/02/2019	ND	229	114	200	1.62	
DRO >C10-C28*	87.1	10.0	11/02/2019	ND	228	114	200	1.28	
EXT DRO >C28-C36	30.6	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 95.2 % 41-142

Surrogate: 1-Chlorooctadecane 110 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/01/2019	Sampling Date:	11/01/2019
Reported:	11/04/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Jodi Henson
Project Location:	COG - LEA CO NM		

**Sample ID: NW S #6 (H903739-28)**

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	11/02/2019	ND	1.87	93.5	2.00	11.9	
Toluene*	<0.050	0.050	11/02/2019	ND	1.51	75.3	2.00	17.6	
Ethylbenzene*	<0.050	0.050	11/02/2019	ND	1.61	80.3	2.00	24.8	
Total Xylenes*	<0.150	0.150	11/02/2019	ND	4.68	78.1	6.00	31.2	
Total BTEX	<0.300	0.300	11/02/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.7 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	400	16.0	11/04/2019	ND	432	108	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	11/02/2019	ND	222	111	200	3.50	
DRO >C10-C28*	51.4	10.0	11/02/2019	ND	221	111	200	2.54	
EXT DRO >C28-C36	<10.0	10.0	11/02/2019	ND					

Surrogate: 1-Chlorooctane 81.0 % 41-142

Surrogate: 1-Chlorooctadecane 85.3 % 37.6-147

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

---

### Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
GC-NC	8260 confirmation analysis was performed; initial GC results were not supported by GC/MS analysis and are reported as ND.
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

---

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.

---

Caley D. Keene, Lab Director/Quality Manager

**CARDINAL LABORATORIES**

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603  
 (505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325) 673-7020

**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

Company Name: COG		<b>BILL TO</b>		<b>ANALYSIS REQUEST</b>																	
Project Manager: Joel Lowry		P.O. #:																			
Address:		Company: COG																			
City:		Attn:																			
State: Zip:		Address:																			
Phone #: Fax #:		City: State: Zip:																			
Project #: 11244 Project Owner:		Phone #: Fax #:																			
Project Name: Joannie-Shell #001 Spill date: 8/18/19																					
Project Location: Rural Lea																					
Sampler Name: Hilda Villa																					
FOR LAB USE ONLY																					
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX		PRESERV	SAMPLING														
1	WW1	G	1	✓	✓	✓	✓	DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS						
2	WW2	G	1	✓	✓	✓	✓	10/30/19	11:55	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	WW3	G	1	✓	✓	✓	✓	10/30/19	11:59	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4	SW1	G	1	✓	✓	✓	✓	10/30/19	12:50	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5	SW2	G	1	✓	✓	✓	✓	10/30/19	12:51	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6	SW3	G	1	✓	✓	✓	✓	10/30/19	12:53	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7	SW4	G	1	✓	✓	✓	✓	10/30/19	12:54	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
8	SW5	G	1	✓	✓	✓	✓	10/30/19	12:56	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
9	SW6	G	1	✓	✓	✓	✓	10/30/19	12:58	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
10	EW1	G	1	✓	✓	✓	✓	10/30/19	01:33	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

PLEASE NOTE: Laboratory and 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 analysis. 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 consequential or incidental 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.

Relinquished By: *[Signature]* Date: 11/11/19 Received By: *[Signature]* Date: 11/11/19  
 Relinquished By: *[Signature]* Date: 11/11/19 Received By: *[Signature]* Date: 11/11/19

Delivered By: (Circle One) *t.h* Sample Condition ☒ Cool ☒ Intact ☐ Yes ☐ No  
 Sampler - UPS - Bus - Other: *2.4e / 2.8e* ☐ Yes ☐ No

CHECKED BY: *[Signature]*  
 email results pm@etechnv.com *RUSH!!*

Phone Result: ☐ Yes ☒ No Add'l Phone #:   
 Fax Result: ☐ Yes ☒ No Add'l Fax #:   
 REMARKS:   
 † Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476



**ARDINAL LABORATORIES**

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603  
 (505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325) 673-7020

**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

Company Name: COG		P.O. #:		<b>BILL TO</b>										<b>ANALYSIS REQUEST</b>																											
Project Manager: Joel Lowry		Company: COG																																							
Address:		Attn:																																							
City:		Address:																																							
Phone #:		City:																																							
Project #:		State:																																							
Project Name: Joannie-Shell #001 Spill date: 8/18/19		Zip:																																							
Project Location: Rural Lea		Phone #:																																							
Sample Name: Hilda Villa		Fax #:																																							
FOR LAB USE ONLY																																									
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		Chlorides		TPH 8015 M		BTEX		Texas TPH		Complete Cations/Anions		TDS	
H903739				G 1		1		✓		✓		✓		✓		✓		✓		✓		✓		✓		10/30/19		01:34		✓		✓		✓		✓		✓			
11 EW2				G 1		1		✓		✓		✓		✓		✓		✓		✓		✓		✓		10/30/19		01:37		✓		✓		✓		✓		✓			
12 EW3				G 1		1		✓		✓		✓		✓		✓		✓		✓		✓		✓		10/31/19		08:49		✓		✓		✓		✓		✓			
13 Floors #1				G 1		1		✓		✓		✓		✓		✓		✓		✓		✓		✓		10/31/19		08:50		✓		✓		✓		✓		✓			
14 Floors #2				G 1		1		✓		✓		✓		✓		✓		✓		✓		✓		✓		10/31/19		08:52		✓		✓		✓		✓		✓			
15 Floors #3				G 1		1		✓		✓		✓		✓		✓		✓		✓		✓		✓		10/31/19		08:53		✓		✓		✓		✓		✓			
16 Floors #4				G 1		1		✓		✓		✓		✓		✓		✓		✓		✓		✓		10/31/19		08:54		✓		✓		✓		✓		✓			
17 Floors #5				G 1		1		✓		✓		✓		✓		✓		✓		✓		✓		✓		10/31/19		08:55		✓		✓		✓		✓		✓			
18 Floors #6				G 1		1		✓		✓		✓		✓		✓		✓		✓		✓		✓		10/31/19		11:07		✓		✓		✓		✓		✓			
19 Floors #7				G 1		1		✓		✓		✓		✓		✓		✓		✓		✓		✓		10/31/19		11:13		✓		✓		✓		✓		✓			
20 Floors #8				G 1		1		✓		✓		✓		✓		✓		✓		✓		✓		✓		10/31/19		11:13		✓		✓		✓		✓		✓			

**PLEASE NOTE:** Lab and Damages. Customer'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 analysis. 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 analysis. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruption, 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.

**Relinquished By:** *[Signature]* **Date:** 11/1/19 **Received By:** *[Signature]* **Date:** 11/1/19

**Relinquished By:** *[Signature]* **Date:** 11/1/19 **Received By:** *[Signature]* **Date:** 11/1/19

**Delivered By: (Circle One)** *t.4* **Sample Condition** ☒ Intact ☐ Cool ☐ Yes ☐ No **CHECKED BY:** *[Signature]* **REMARKS:** email results pm@etechnv.com

**Sampler - UPS - Bus - Other:** *2.44/2.80 #97* ☐ Yes ☐ No ☐ Yes ☐ No

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

**ARDINAL LABORATORIES**

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603  
 (505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325) 673-7020

**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

Company Name: COG		P.O. #:		<b>BILL TO</b>										<b>ANALYSIS REQUEST</b>																											
Project Manager: Joel Lowry		Company: COG																																							
Address:		Attn:																																							
City:		State:		Zip:																																					
Phone #:		Fax #:		Address:																																					
Project #: 11244		Project Owner:		City:		State:		Zip:																																	
Project Name: Joannie-Shell #001 Spill date: 8/18/19		Phone #:		Fax #:																																					
Project Location: Rural Lea		Sample Name: Hilda Villa																																							
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		Chlorides		TPH 8015 M		BTEX		Texas TPH		Complete Cations/Anions		TDS	
H4C3739																																									
21 Floors #9		G 1		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓					
22 Floors #10		G 1		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓					
23 NW S #1		G 1		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓					
24 NW S #2		G 1		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓					
25 NW S #3		G 1		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓					
26 NW S #4		G 1		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓					
27 NW S #5		G 1		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓					
28 NW S #6		G 1		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓					

**PLEASE NOTE:** Liability and Damages. Cardinal's liability and clients' exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analysis. 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 service, in no event shall Cardinal be liable for the performance of services rendered by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: *Joel Lowry* Date: *11/1/19* Received By: *Joel Lowry* Date: *11/1/19* Time: *15:23*

Relinquished By: *Joel Lowry* Date: *11/1/19* Received By: *Joel Lowry* Date: *11/1/19* Time: *15:23*

Delivered By: (Circle One) *#97 + i4* Sample Condition ☒ Cool ☒ Intact ☐ Yes ☐ No

Sampler - UPS - Bus - Other: *2.40/12.80* CHECKED BY: *(initials)*

+ Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

REMARKS: email results pm@etechnv.com *BUSHT!!*



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

November 06, 2019

LANCE CRENSHAW

Etech Environmental & Safety Solutions

P.O. Box 301

Lovington, NM 88260

RE: JOANNIE SHELL #001

Enclosed are the results of analyses for samples received by the laboratory on 11/05/19 13:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-19-12. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/05/2019	Sampling Date:	11/05/2019
Reported:	11/06/2019	Sampling Type:	Soil
Project Name:	JOANNIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

**Sample ID: WW 1B (H903765-01)**

BTEX 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	11/06/2019	ND	1.81	90.7	2.00	6.60		
Toluene*	<0.050	0.050	11/06/2019	ND	1.82	90.8	2.00	6.49		
Ethylbenzene*	<0.050	0.050	11/06/2019	ND	1.84	92.2	2.00	6.38		
Total Xylenes*	<0.150	0.150	11/06/2019	ND	5.48	91.3	6.00	6.63		
Total BTEX	<0.300	0.300	11/06/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.0 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	256	16.0	11/06/2019	ND	432	108	400	3.77		

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/06/2019	ND	206	103	200	1.90	
DRO >C10-C28*	<10.0	10.0	11/06/2019	ND	193	96.4	200	7.90	
EXT DRO >C28-C36	<10.0	10.0	11/06/2019	ND					

Surrogate: 1-Chlorooctane 83.6 % 41-142

Surrogate: 1-Chlorooctadecane 83.0 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/05/2019	Sampling Date:	11/05/2019
Reported:	11/06/2019	Sampling Type:	Soil
Project Name:	JOANNIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

**Sample ID: WW 3B (H903765-02)**

BTEX 8021B			mg/kg		Analyzed By: CK				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/06/2019	ND	1.81	90.7	2.00	6.60	
Toluene*	<0.050	0.050	11/06/2019	ND	1.82	90.8	2.00	6.49	
Ethylbenzene*	<0.050	0.050	11/06/2019	ND	1.84	92.2	2.00	6.38	
Total Xylenes*	<0.150	0.150	11/06/2019	ND	5.48	91.3	6.00	6.63	
Total BTEX	<0.300	0.300	11/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.1 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	11/06/2019	ND	432	108	400	3.77	

TPH 8015M			mg/kg		Analyzed By: CK				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/06/2019	ND	206	103	200	1.90	
DRO >C10-C28*	<10.0	10.0	11/06/2019	ND	193	96.4	200	7.90	
EXT DRO >C28-C36	<10.0	10.0	11/06/2019	ND					

Surrogate: 1-Chlorooctane 77.1 % 41-142

Surrogate: 1-Chlorooctadecane 78.2 % 37.6-147

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:**

Etech Environmental & Safety Solutions  
 LANCE CRENSHAW  
 P.O. Box 301  
 Lovington NM, 88260  
 Fax To: (575) 396-1429

Received:	11/05/2019	Sampling Date:	11/05/2019
Reported:	11/06/2019	Sampling Type:	Soil
Project Name:	JOANNIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244 (SPILL DATE 8/18/19)	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

**Sample ID: FLOOR SB #1 (H903765-03)**

BTEX 8021B			mg/kg		Analyzed By: CK				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/06/2019	ND	1.81	90.7	2.00	6.60	
Toluene*	<0.050	0.050	11/06/2019	ND	1.82	90.8	2.00	6.49	
Ethylbenzene*	<0.050	0.050	11/06/2019	ND	1.84	92.2	2.00	6.38	
Total Xylenes*	<0.150	0.150	11/06/2019	ND	5.48	91.3	6.00	6.63	
Total BTEX	<0.300	0.300	11/06/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.8 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	320	16.0	11/06/2019	ND	432	108	400	3.77	

TPH 8015M			mg/kg		Analyzed By: CK				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/06/2019	ND	206	103	200	1.90	
DRO >C10-C28*	<10.0	10.0	11/06/2019	ND	193	96.4	200	7.90	
EXT DRO >C28-C36	<10.0	10.0	11/06/2019	ND					

Surrogate: 1-Chlorooctane 79.3 % 41-142

Surrogate: 1-Chlorooctadecane 81.6 % 37.6-147

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

---

### Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
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

---

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.

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

---

Caley D. Keene, Lab Director/Quality Manager



9 jo 9 eba d

**ARDINAL LABORATORIES**

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603  
 (505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325) 673-7020

**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

Company Name: COG		P.O. #:		<b>BILL TO</b>										<b>ANALYSIS REQUEST</b>									
Project Manager: Joel Lowry		Company: COG																					
Address:		Attn:																					
City:		Address:																					
Phone #:		City:																					
Fax #:		State:																					
Project #: 11244		Zip:																					
Project Name: Joannie Shell #001 Spill Date 8/18/19		Phone #:																					
Project Location:		Fax #:																					
Sampler Name: Hilda Villa																							

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	ANALYSIS REQUEST								
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :			ACID/BASE:	ICE / COOL	OTHER :	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS
1	WM1B	G	1	✓						11/5/19	12:41	✓	✓	✓						
2	WM3B	G	1	✓						11/5/19	12:43	✓	✓	✓						
3	FLOORB #1	G	1	✓						11/5/19	12:45	✓	✓	✓						

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.

Relinquished By:	Date: 11-5-19	Received By:	Date: 11-5-19
Hilda Villa	11:59	Joanna Delatorre	13:10
Relinquished By:	Date:	Received By:	Date:

Delivered By: (Circle One)	5:52	#497	Sample Condition	CHECKED BY: (Initials)
Sampler - UPS - Bus - Other:	Corrected 5:59		Cool <input type="checkbox"/> Intact <input type="checkbox"/>	
			Yes <input type="checkbox"/> No <input type="checkbox"/>	

Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

pm@etechenv.com

email results

Push!!

## **Appendix D**

### **Photographic Log**



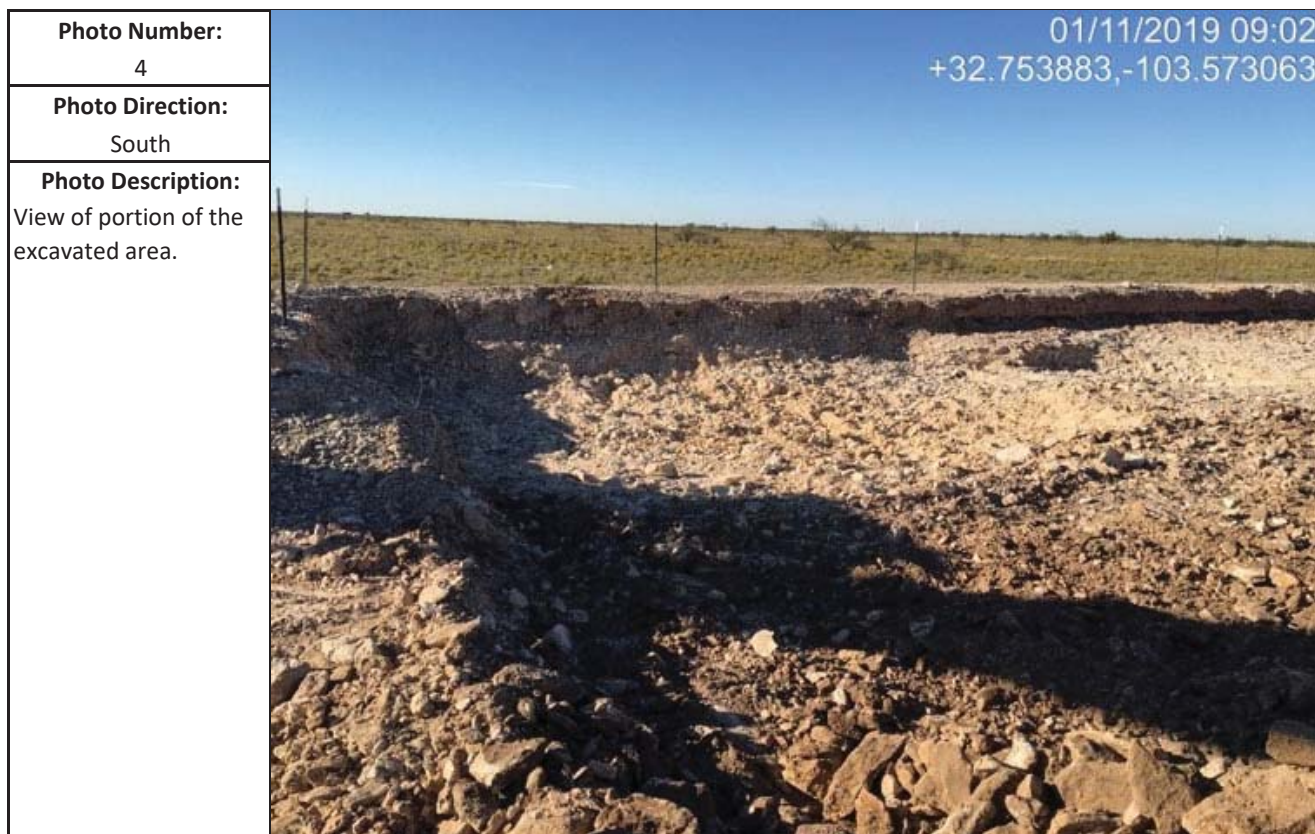
Photographic Log

<b>Photo Number:</b> 1	
<b>Photo Direction:</b> West	
<b>Photo Description:</b> View of surface staining from the initial release.	

<b>Photo Number:</b> 2	
<b>Photo Direction:</b> West	
<b>Photo Description:</b> View of surface staining from the initial release.	



## Photographic Log





Photographic Log

<b>Photo Number:</b> 5	
<b>Photo Direction:</b> Southwest	
<b>Photo Description:</b> View of backfilling activities.	

<b>Photo Number:</b> 6	
<b>Photo Direction:</b> North	
<b>Photo Description:</b> View of the affected area after remediation activities.	