

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

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

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

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.

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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>
<u>OCD Only</u> 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.

Use the following when the liquid completely fills the pore space 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.

- 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: 1,200 sq. ft. cu. ft. 200 cu. ft. Total Free Liquid Volume: sq. ft. cu. ft. cu. ft.

Estimated Volumes Spilled

	H2O	OIL
Liquid in Soil:	<u>0.0</u> BBL	<u>5.0</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

Estimated Production Volumes Lost

	H2O	OIL
Estimated Production Spilled:	<u>0.0</u> BBL	<u>0.0</u> BBL

Estimated Surface Damage

Surface Area: 1,200 sq. ft.
Surface Area: .0275 acre

Recovered Volumes

Estimated oil recovered: **BBL** **check - okay**
Estimated water recovered: **BBL** **check - okay**

Estimated Weights, and Volumes

Saturated Soil = 22,400 lbs 200 cu. ft. 7 cu. yds.
Total Liquid = 5 BBL 209 gallon 1,743 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:

	<u>New Mexico</u>	<u>Texas</u>
HC gas release reportable?	NO	NO
H2S release reportable?	NO	NO

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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 not 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.

Characterization Report Checklist: Each of the following items must be included in the report.

- Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- Field data
- Data table of soil contaminant concentration data
- Depth to water determination
- Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- Boring or excavation logs
- Photographs including date and GIS information
- Topographic/Aerial maps
- Laboratory data including chain of custody

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.

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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

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

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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



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FIGURES

- Figure 1 - Topographic Map
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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
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1.0 PROJECT INFORMATION

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:

Location of Release Source				
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: <input checked="" type="checkbox"/> State <input type="checkbox"/> Federal <input type="checkbox"/> Tribal <input type="checkbox"/> Private (Name _____)				
Nature and Volume of Release				
<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	
Cause of Release and Affected Area: 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.				
Initial Response				
<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.				

Previously submitted portions of the NMOCD Form C-141 are available on the NMOCD Imaging System.

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

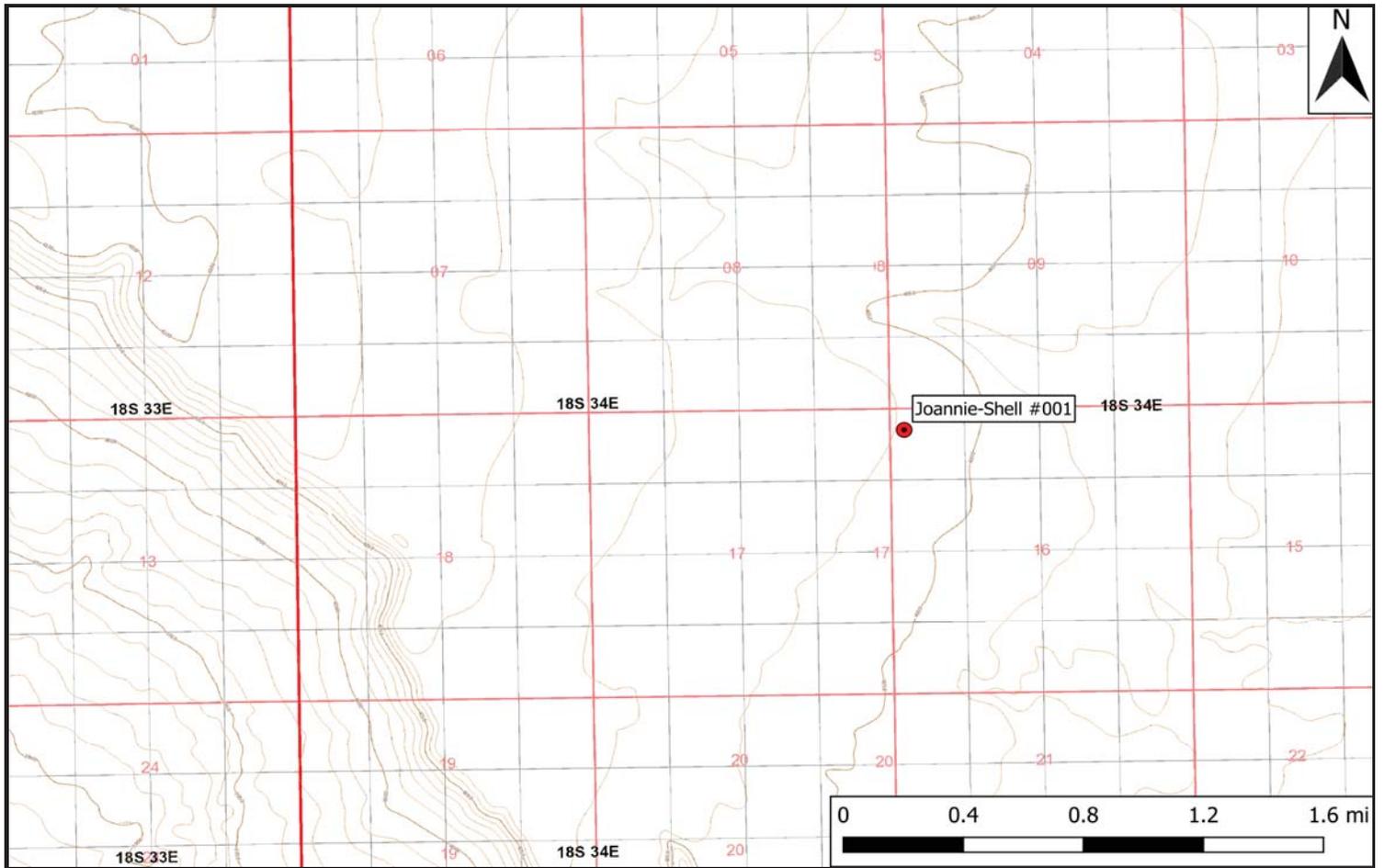
*Oil Conservation Division, District 1
1220 South St. Francis Drive
Santa Fe, NM 87505*

Hobbs Field Office

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

(Electronic Submission)

Figure 1 Topographic Map



Legend
● Site Location

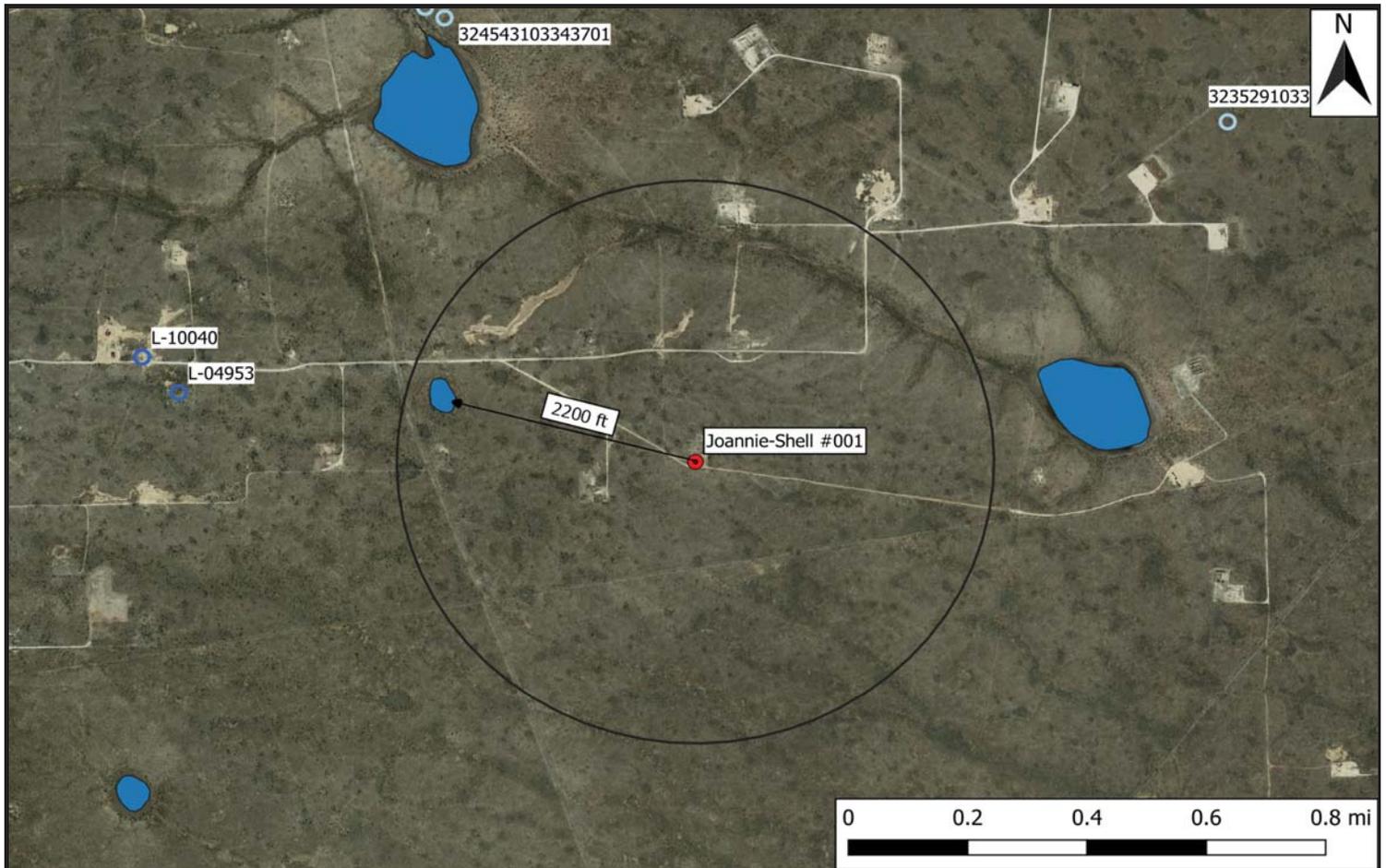
Figure 1
Topographic Map
COG Operating, LLC
Joannie-Shell #001
GPS: 32.75391, -103.57318
Lea County



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

Figure 2

Aerial Proximity Map



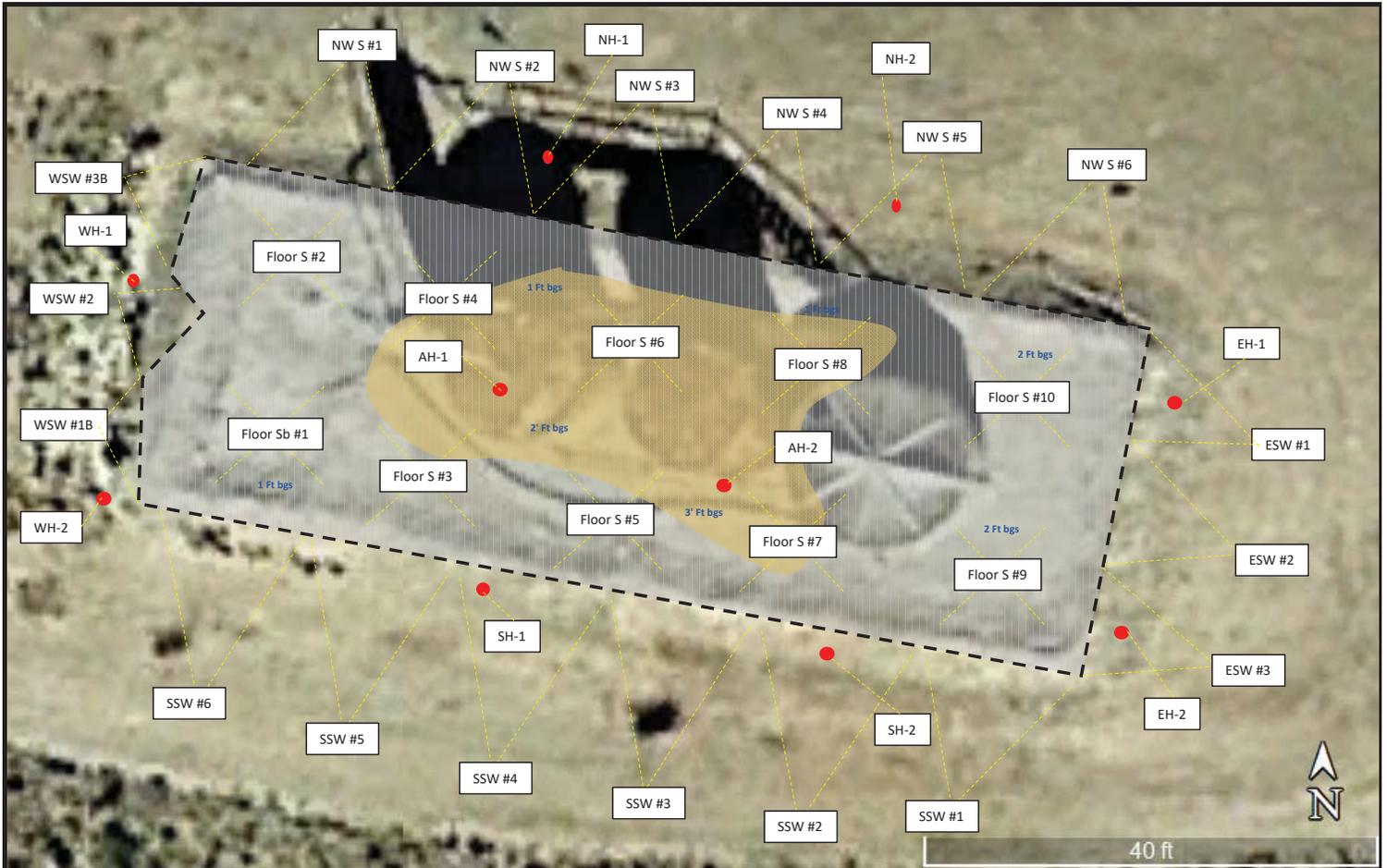
Legend	
Site Location	Well - USGS
0.5 Mi Radius	Well - NMOSE
1% Annual Flood Chance	High Karst
Surface Water	Medium Karst
Potash Mine Workings	

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

eTECH
Environmental & Safety Solutions, Inc.

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

Figure 3
Site and Sample Location Map



Legend:

- Delineation Sample Point
- ▭ Excavated Area
- Affected Area

Figure 3
Site and Sample Location 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

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 ₆ -C ₁₀ (mg/kg)	DRO C ₁₀ -C ₂₈ (mg/kg)	GRO + DRO C ₆ -C ₂₈ (mg/kg)	ORO C ₂₈ -C ₃₆ (mg/kg)	TPH C ₆ -C ₃₆ (mg/kg)	Chloride (mg/kg)
AH-1	9/19/2019	Surf	Excavated	<0.050	0.832	250	36,000	36,250	9,930	46,180	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	35,200	11,100	46,300	1,860
AH-2	9/19/2019	1'	Excavated	<0.050	<0.300	16.4	1,740	1,756	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	4,110	1,640	5,750	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	3,830	1,610	5,440	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	3,470	995	4,465	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
Closure Criteria				10	50	-	-	1,000	-	2,500	20,000

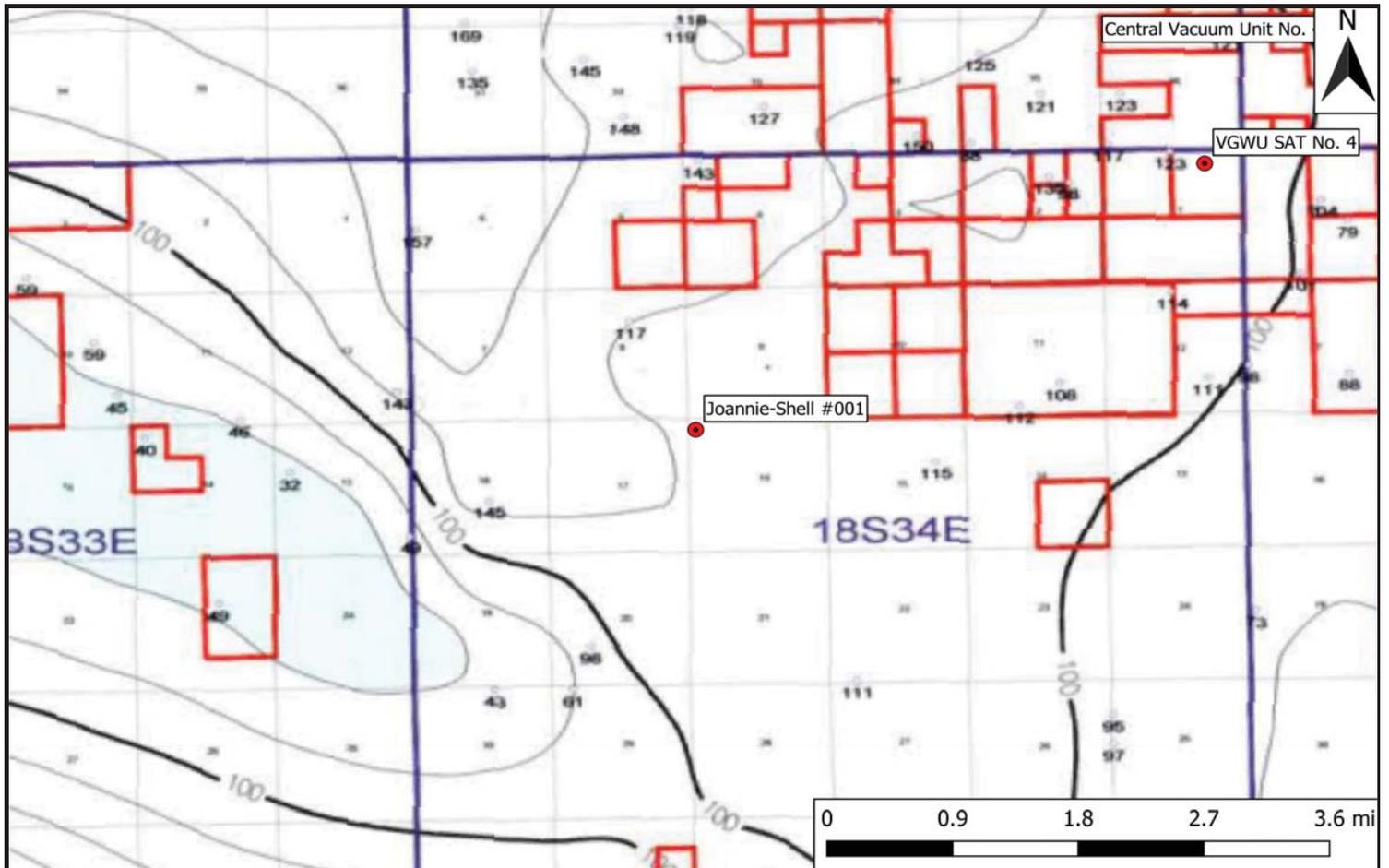
NOTES:

- = Not analyzed for constituent

Bold text denotes a concentration that exceeds the NMOCD Closure Criteria

Appendix A

Depth to Groundwater Information

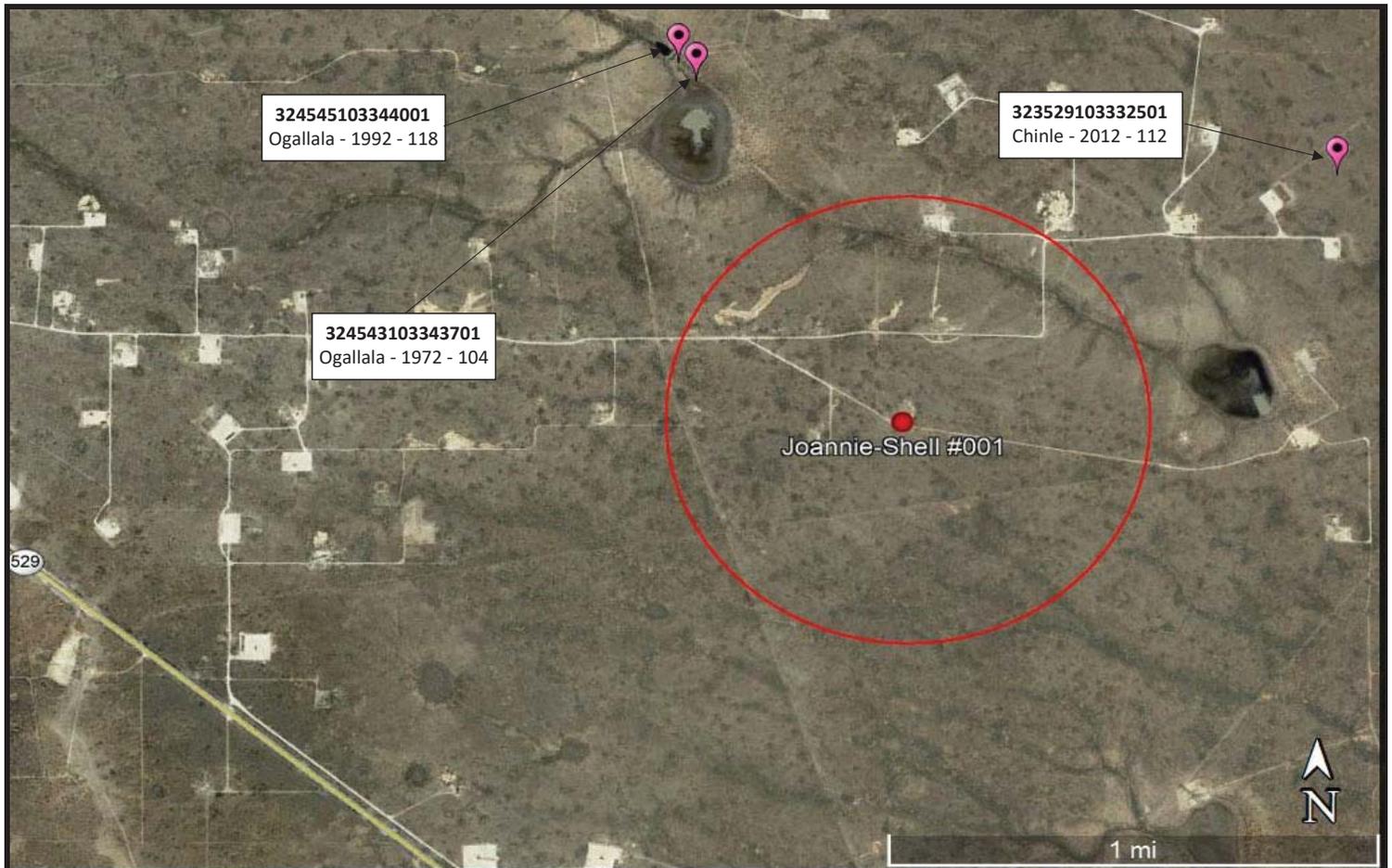


Legend
● Site Location

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	Tw	Rng	X	Y	Distance	DepthWell	DepthWater	Water Column
L 05882	L	LE		1	4	16	18S	34E		634605	3624030*	1284	230	110	120
L 05374	L	LE		2	2	16	18S	34E		634994	3624840*	1330	192	105	87
L 04953	L	LE		4	3	3	08	18S	34E	632269	3625104*	1410	200	150	50
L 10040	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



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- 323529103332501

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USGS 323529103332501 20S.34E.04.44434

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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.

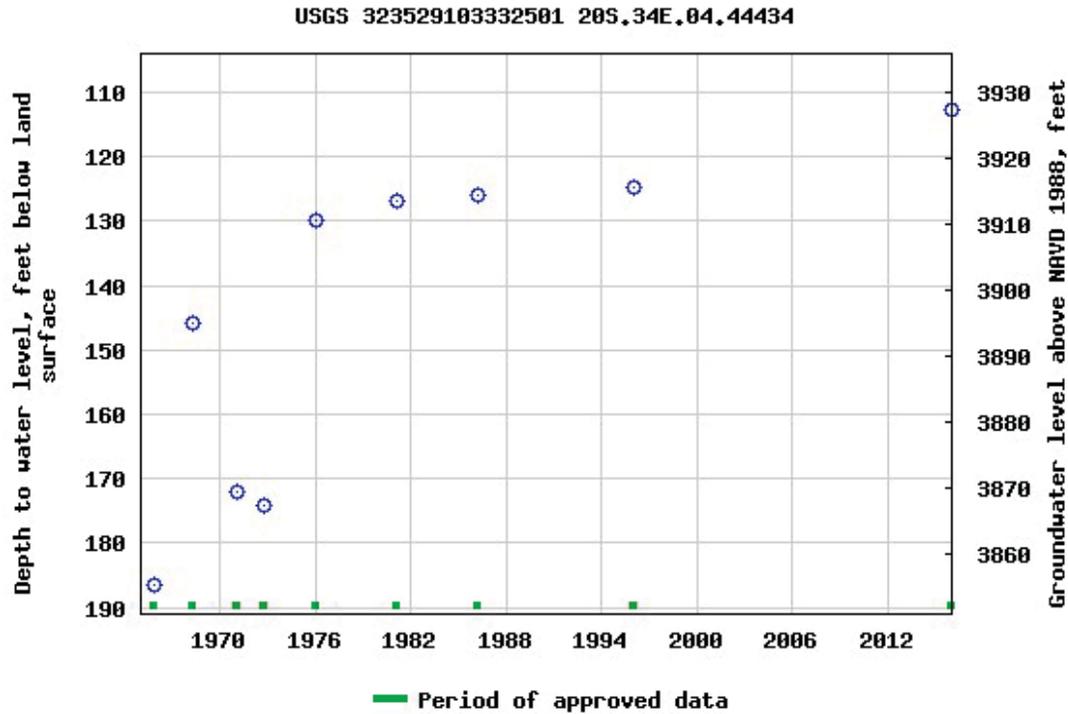
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1.24 1.15 nadww02



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- 324545103344001

Minimum number of levels = 1

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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

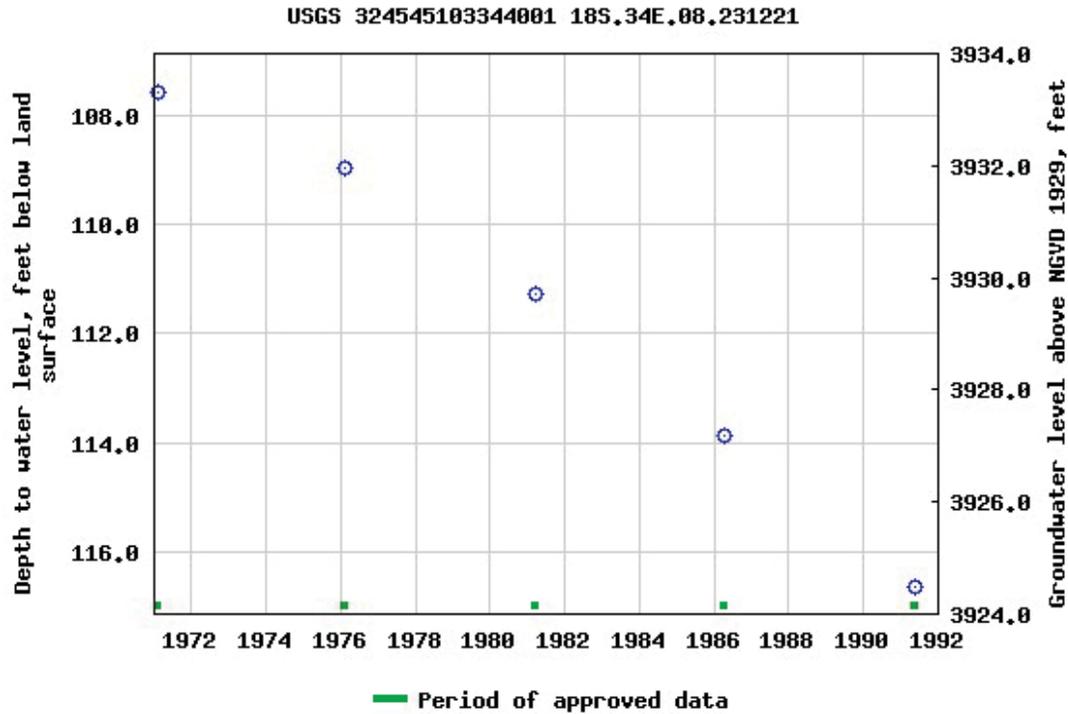
Land-surface elevation 4,041.00 feet above NGVD29

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
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- 324543103343701

Minimum number of levels = 1

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Available data for this site

Groundwater: Field measurements

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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 (121OGLL) local aquifer.

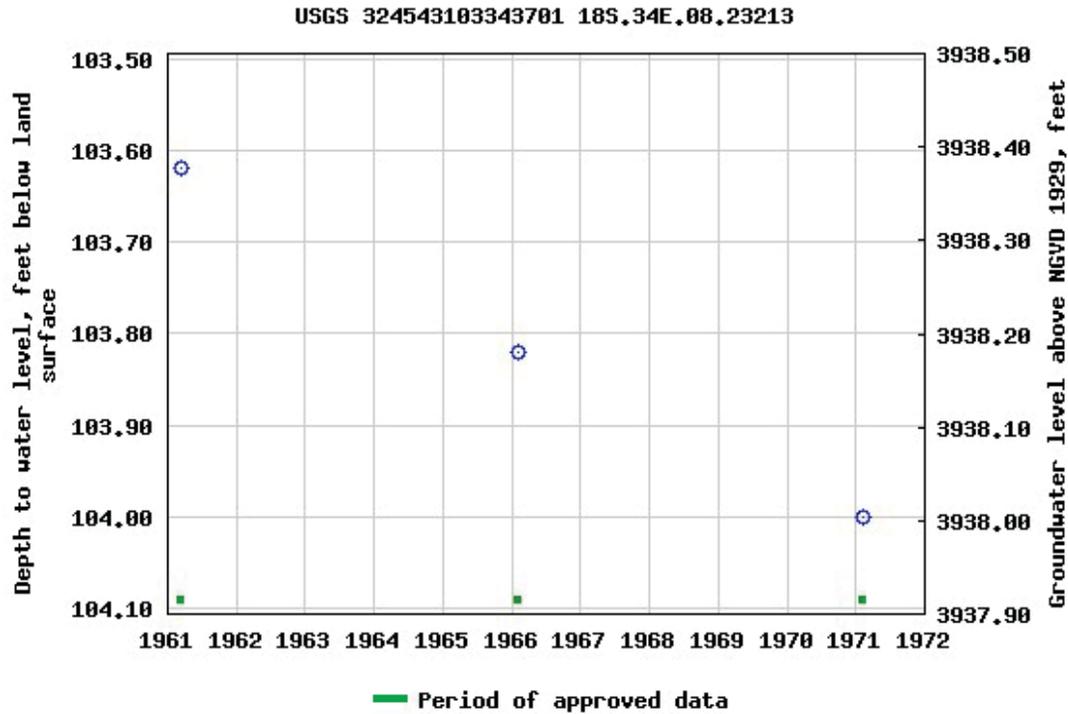
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1.06 0.99 nadww01

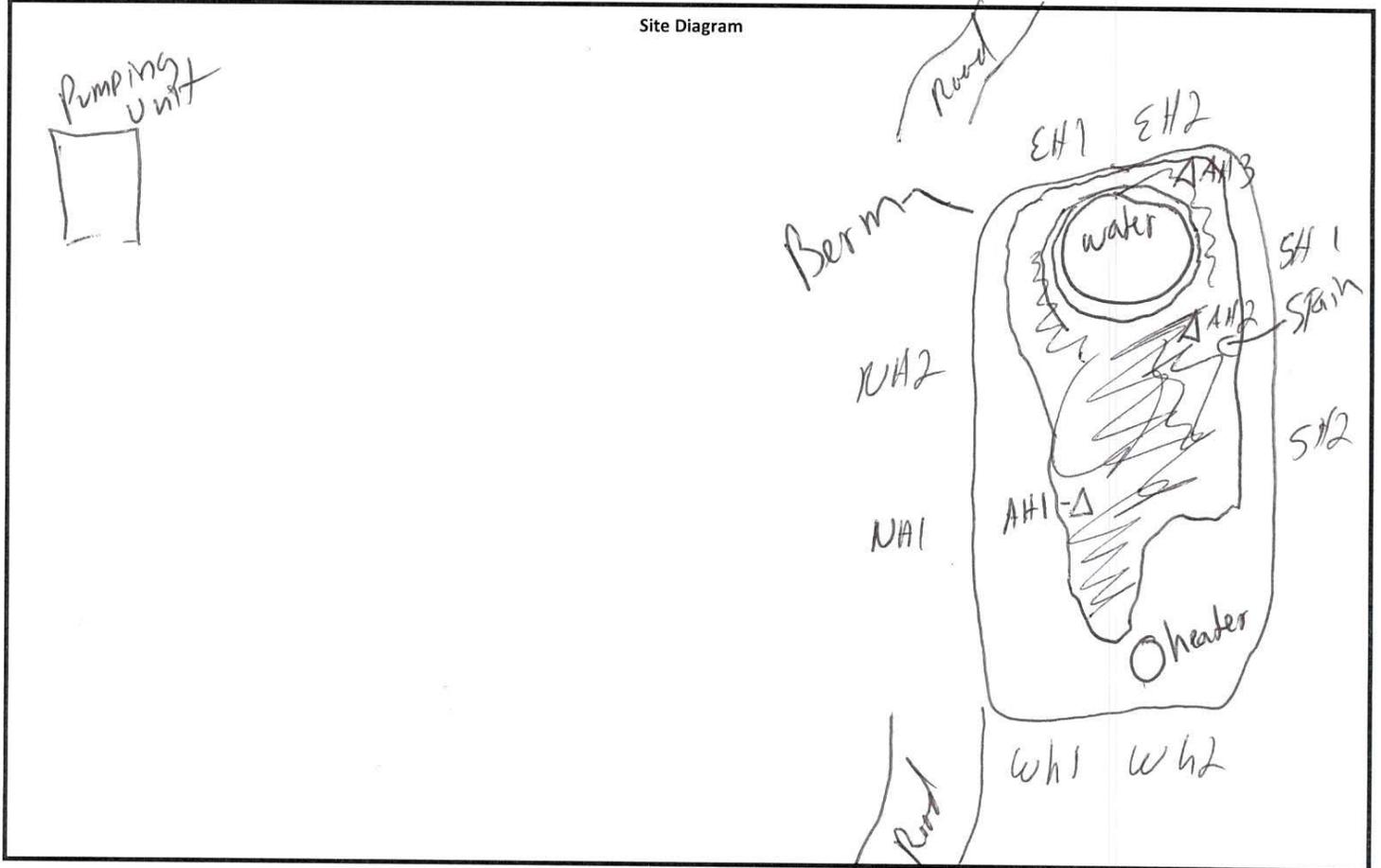
Appendix B

Field Data and Soil Profile Logs



Initial Release Assessment Form

Date: 11/19/2019
 Project: Joannie-Shell #001 Clean Up Level: 0
 Project Number: 0 Latitude: 32.75391 Longitude: -103.57318



Notes: 10 bbl 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' SD 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?				<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample and Field Screen Data Entered on Sample Log?				<input checked="" type="checkbox"/>	<input type="checkbox"/>
Was horizontal and vertical delineation achieved?				<input type="checkbox"/>	<input type="checkbox"/>



Sample Log

Date: 10-30-19

Project: Joanie-Shell #001

Project Number: 11244

Latitude: 32.75391

Longitude: -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



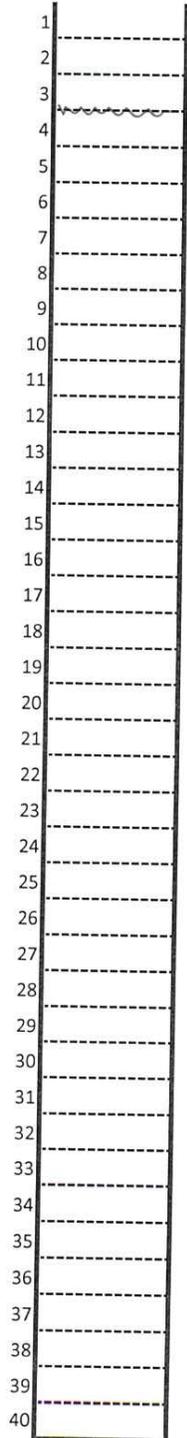
Soil Profile

Date: 9-18-19

Project: Joannie-Shell #001

Project Number: 0 Latitude: 32.75391 Longitude: -103.57318

Depth (ft. bgs)



Description

Caliche, pack
 " "
 " "

A series of horizontal dashed lines extending across the page, corresponding to the depth scale on the left. These lines are intended for handwritten descriptions of soil layers at various depths. The first two lines are partially filled with the handwritten text 'Caliche, pack' and ' " " '.

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.

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.

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

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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	Sampling Date:	09/19/2019
Reported:	09/24/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

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

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Analytical Results For:

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 Fax To: (575) 396-1429

Received:	09/19/2019	Sampling Date:	09/19/2019
Reported:	09/24/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

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

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Received:	09/19/2019	Sampling Date:	09/19/2019
Reported:	09/24/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

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
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

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Received:	09/19/2019	Sampling Date:	09/19/2019
Reported:	09/24/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

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

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Received:	09/19/2019	Sampling Date:	09/19/2019
Reported:	09/24/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

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

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Received:	09/19/2019	Sampling Date:	09/19/2019
Reported:	09/24/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

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

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Received:	09/19/2019	Sampling Date:	09/19/2019
Reported:	09/24/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

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*	0.072	0.050	09/24/2019	ND	1.56	77.9	2.00	6.01		
Total Xylenes*	0.238	0.150	09/24/2019	ND	4.66	77.7	6.00	5.89		
Total BTEX	0.310	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	
Chloride	48.0	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*	13.4	10.0	09/20/2019	ND	205	103	200	0.584		
DRO >C10-C28*	23.6	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

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Received:	09/19/2019	Sampling Date:	09/19/2019
Reported:	09/24/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

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

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Received:	09/19/2019	Sampling Date:	09/19/2019
Reported:	09/24/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

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

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Celey D. Keene, Lab Director/Quality Manager



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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	Sampling Date:	09/19/2019
Reported:	09/24/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

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

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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	Sampling Date:	09/19/2019
Reported:	09/24/2019	Sampling Type:	Soil
Project Name:	JOANIE SHELL #001	Sampling Condition:	Cool & Intact
Project Number:	11244	Sample Received By:	Tamara Oldaker
Project Location:	COG - LEA CO NM		

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

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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

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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: Elch Environmental		P.O. #:		BILL TO		ANALYSIS REQUEST					
Project Manager: Lance Crenshaw		Company: COG Operating									
Address:		Attn:									
City:		Address:									
Phone #:		City:									
Project #: 11244		State: Zip:									
Project Name: Joanie Shell #001		Phone #:									
Project Location: Lea County		Fax #:									
Sampler Name: Lance Crenshaw		DATE		TIME							
FOR LAB USE ONLY		DATE		TIME							
Lab I.D. Sample I.D.		DATE		TIME							
H963249		9/19/19		08:00							
1 AH-1 @ surface		9/19/19		08:10							
2 AH-1 @ 1'		9/19/19		08:15							
3 AH-2 @ surface		9/19/19		08:20							
4 AH-2 @ 1'		9/19/19		08:30							
5 NH-1 @ surface		9/19/19		08:40							
6 NH-2 @ surface		9/19/19		08:45							
7 EH-1 @ surface		9/19/19		09:00							
8 EH-2 @ surface		9/19/19		09:15							
9 SH-1 @ surface		9/19/19		09:20							
10 SH-2 @ surface		9/19/19		09:20							

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

Delivered By: (Circle One) *0.12* #*497* Sample Condition: Cool Yes No Intact Yes No
 Sampler - UPS - Bus - Other: *Corrected 0.52* CHECKED BY: *[Signature]* (Initials)

Phone Result: Yes No Add'l Phone #: _____
 Fax Result: Yes No Add'l Fax #: _____
 REMARKS: email results: pm@etechnv.com

† 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.

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



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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	
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) 217 % 73.3-129

Chloride, SM4500Cl-B	mg/kg	Analyzed By: AC						S-06	
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

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Celey D. Keene, Lab Director/Quality Manager



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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

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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

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Analytical Results For:

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 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

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Celey D. Keene, Lab Director/Quality Manager



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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

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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

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 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

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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

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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

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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

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 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

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 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

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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	
Chloride	352	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		
DRO >C10-C28*	3470	50.0	11/02/2019	ND	228	114	200	1.28		
EXT DRO >C28-C36	995	50.0	11/02/2019	ND						

Surrogate: 1-Chlorooctane 96.0 % 41-142

Surrogate: 1-Chlorooctadecane 199 % 37.6-147

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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

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 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

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 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

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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

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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

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 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

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Analytical Results For:

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 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

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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

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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

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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

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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

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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

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Celey D. Keene, Lab Director/Quality Manager



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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

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Analytical Results For:

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 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

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Celey D. Keene, Lab Director/Quality Manager



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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

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Celey D. Keene, Lab Director/Quality Manager



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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

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Celest D. Keene

Celest D. Keene, Lab Director/Quality Manager



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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.

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.

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, SM4500CI-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

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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

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Celey D. Keene, Lab Director/Quality Manager



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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

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Celey D. Keene, Lab Director/Quality Manager



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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

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Coley D. Keene

Coley D. Keene, Lab Director/Quality Manager

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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. #:		BILL TO		ANALYSIS REQUEST																					
Project Manager: Joel Lowry		Company: COG																									
Address:		City:		State:		Zip:																					
City:		State:		Attn:		Address:																					
Phone #:		Fax #:		City:		State:																					
Project #: 11244		Project Owner:		City:		State:																					
Project Name: Joannie Shell #001 Spill Date 8/18/19		Project Location:		Phone #:		Zip:																					
Project Location:		Sample Name: Hilda Villa		Fax #:																							
<small>FOR LAB USE ONLY</small>																											
Lab I.D.		Sample I.D.		(G)RAB OR (C)OMP.		# CONTAINERS		MATRIX		PRESERV		SAMPLING		Chlorides		TPH 8015 M		BTEX		Texas TPH		Complete Cations/Anions		TDS			
														GROUNDWATER		WASTEWATER		SOIL		OIL		SLUDGE		OTHER :		ACID/BASE:	
1		WM1B		G		1		✓				11/5/19		12:41		✓		✓									
2		WM3B		G		1		✓				11/5/19		0:43		✓		✓									
3		FLOOR SB #1		G		1		✓				11/5/19		2:45		✓		✓									
<p><small>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.</small></p>																											
Relinquished By:		Date:		Time:		Received By:		Date:		Time:		Sample Condition		Checked By:		Phone Result:		Fax Result:		REMARKS:		email results		Add'l Phone #:		Add'l Fax #:	
Hilda Villa		11-5-19		13:10		Joanna Delatorre						Cool <input type="checkbox"/> Intact <input checked="" type="checkbox"/>		Checked By: (Initials) <i>JD</i>		☐ Yes ☑ No		☐ Yes ☑ No		email results		pm@etechnv.com					
Delivered By: (Circle One)		Date:		Time:		Received By:		Date:		Time:		Sample Condition		Checked By:		Phone Result:		Fax Result:		REMARKS:		email results		Add'l Phone #:		Add'l Fax #:	
Sampler - UPS - Bus - Other:		Date:		Time:		Date:		Time:		Time:		Cool <input type="checkbox"/> Intact <input checked="" type="checkbox"/>		Checked By: (Initials)		☐ Yes ☑ No		☐ Yes ☑ No		pm@etechnv.com							
5:50												Cool <input type="checkbox"/> Intact <input checked="" type="checkbox"/>		Checked By: (Initials)		☐ Yes ☑ No		☐ Yes ☑ No		pm@etechnv.com							

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

Rush!!

Appendix D

Photographic Log

Photographic Log

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

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

Photographic Log

Photo Number: 3	 <p>01/11/2019 09:02 +32.753883,-103.573063</p>
Photo Direction: Southwest	
Photo Description: View of portion of the excavated area.	

Photo Number: 4	 <p>01/11/2019 09:02 +32.753883,-103.573063</p>
Photo Direction: South	
Photo Description: View of portion of the excavated area.	

Photographic Log

Photo Number: 5	
Photo Direction: Southwest	
Photo Description: View of backfilling activities.	

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