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>>690</u> (ft bgs)
Did this release impact groundwater or surface water?	🗌 Yes 🖌 No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	🗌 Yes 🖌 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)?	🗌 Yes 🖌 No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	🗌 Yes 🖌 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?	🗌 Yes 🖌 No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	🗌 Yes 🖌 No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	🗌 Yes 🖌 No
Are the lateral extents of the release within 300 feet of a wetland?	🗌 Yes 🖌 No
Are the lateral extents of the release overlying a subsurface mine?	🗌 Yes 🖌 No
Are the lateral extents of the release overlying an unstable area such as karst geology?	🗌 Yes 🖌 No
Are the lateral extents of the release within a 100-year floodplain?	🗌 Yes 🖌 No
Did the release impact areas not on an exploration, development, production, or storage site?	🗌 Yes 🖌 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
- \checkmark Depth to water determination
- Determination of water sources and significant watercourses within ¹/₂-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.

Received by OCD: 11	/1/2024 12:25:32 PM			Page 2 of 299
Form C-141	State of New Mexico		Incident ID	nAPP2226128925
Page 4	Oil Conservation Division		District RP	
			Facility ID	
			Application ID	
I hereby certify that th regulations all operato public health or the er failed to adequately in addition, OCD accept and/or regulations. Printed Name: <u>Albe</u> Signature: email: <u>albert.ocho</u>	ie information given above is true and complete to the ors are required to report and/or file certain release not ivironment. The acceptance of a C-141 report by the ivestigate and remediate contamination that pose a thr ance of a C-141 report does not relieve the operator of ert Ochoa	best of my knowledge at tifications and perform cc OCD does not relieve the reat to groundwater, surfa f responsibility for compl 	nd understand that pursu prrective actions for relea coperator of liability sho ce water, human health iance with any other fed entative 42-6629	ant to OCD rules and ases which may endanger ould their operations have or the environment. In leral, state, or local laws
OCD Only				
Received by:		Date:		

Page 6

Oil Conservation Division

Incident ID	nAPP2226128925
District RP	
Facility ID	
Application ID	

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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.

<u>Closure Report Attachment Checklist</u>: 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.

Remediation Summary & Soil Closure Request (Amended)

Goodnight Midstream Permian, LLC Tanks CRP Inlet

Eddy County, New Mexico Unit Letter "M", Section 25, Township 22 South, Range 31 East Latitude 32.357620 North, Longitude 103.73682 West NMOCD Reference No. nAPP2226128925

Prepared By:

Etech Environmental & Safety Solutions, Inc. 6309 Indiana Ave, Ste. D Lubbock, Texas 79413

n J. Arguijo

Joel owrv

Environmental & Safety Solutions, Inc.

Midland • San Antonio • Lubbock • Hobbs • Lafayette

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- Appendix A Depth to Groundwater Information
- Appendix B Field Data
- Appendix C Photographic Log
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- Appendix F Basic Data Report for Drillhole SNL-15 (C-3152)

1.0 PROJECT INFORMATION

Etech Environmental & Safety Solutions, Inc. (Etech), on behalf of Goodnight Midstream Permian, LLC (Goodnight), has prepared this *Remediation Summary & Soil Closure Request (Amended)* for the release site known as the Tanks CRP Inlet. Details of the release are summarized below:

		Locati	on of Release So	urce					
Latitude:		32.357620	Longitude:		-103.73682				
		Provid	led GPS are in WGS84 form	at.					
Site Name:		Tanks CRP Inlet	Site Type:		SWD				
Date Release Dis	covered:	9/17/2022	API # (if applic	able):	N/A				
Unit Letter	Sectio	on Township	Range	County	County				
"M"	25	228	31E	Eddy					
Surface Owner:	State	X Federal Tribal	nd Volume of H	ne Release					
Crude Oil	V	/olume Released (bbls)		Volume Re	Volume Recovered (bbls)				
X Produced W	Vater V	/olume Released (bbls)	148.5	Volume Re	covered (bbls) 30				
	Is (T	the concentration of total (TDS) in the produced wate	dissolved solids er > 10,000 mg/L?	X Yes	No N/A				
Condensate	V	/olume Released (bbls)		covered (bbls)					
Natural Gas	s V	/olume Released (Mcf)		Volume Recovered (Mcf)					
Other (desc	ribe) V	olume/Weight Released		Volume/We	eight Recovered				
Cause of Releas The release was of an active SW	e: attribute D facility	ed to a 6-inch inlet poly pip y and did not impact the a	pe rupture. The relea djacent pasture.	se was limited	to the bermed production pad				
		I	nitial Response						
X The source ofX The impactedX Release mat	of the rele ed area has erials hav	ease has been stopped. s been secured to protect hu re been contained via the us	uman health and the e se of berms or dikes, a	nvironment. bsorbent pad, o	or other containment devices				
X All free liqu	ids and re	ecoverable materials have b	een removed and mar	aged appropria	itely				

Previously submitted portions of the NMOCD Form C-141 are available in 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 depth to groundwater was determined using data generated by numeric models based on available water well data and published information. Based on well gauging data included in the "Basic Data Report For Drillhole SNL-15 (C-3152) (Waste Isolation Pilot Plant)" published by the United States Department of Energy (US DOE) in September 2008, the depth to groundwater in the vicinity of the release site is greater than 690 feet below ground surface (bgs). Per the data report, "the initial depth to water was 692.65 ft below the top of casing", and "there were no indications of water inflow or accumulation above the Rustler during drilling" (page 26, US DOE, 2008). Based on Figure 1-3 on page 5 of the data report, the upper limit of the Rustler Formation is approximately 624 feet bgs.

Additional 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 in Figures 1, 2, 4, and 5. Depth to groundwater information is provided in Appendix A. The complete text of the DOE drillhole data report is provided in Appendix F.

What is the shallowest depth to groundwater beneath the area affected by the release?	>	590'
Did the release impact groundwater or surface water?	Yes	X No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	Yes	X 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?	Yes	X No
Are the lateral extents of the release within 300 feet of any occupied permanent residence, school, hospital, institution or church?	Yes	X 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?	Yes	X No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	Yes	X No
Are the lateral extents of the release within the incorporated municipal boundaries or within a defined municipal fresh water well field?	Yes	X No
Are the lateral extents of the release within 300 feet of a wetland?	Yes	X No
Are the lateral extents of the release overlying a subsurface mine?	Yes	X No
Are the lateral extents of the release overlying an unstable area such as karst geology?	Yes	X No
Are the lateral extents of the release within a 100-year floodplain?	Yes	X No
Did the release impact areas not on an exploration, development, production or storage site?	Yes	X No

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 and NMOCD Reclamation Standards for the release site are as listed in the table on the following page:

Probable Depth to Groundwater	Constituent	Laboratory Analytical Method	Closure Criteria*†	Reclamation Standard*‡
	Chloride (Cl-)	EPA 300.0 or SM4500 Cl B	20,000	600
>690'	Total Petroleum Hydrocarbons (TPH)	EPA SW-846 Method 8015M Ext	2,500	100
	Gas Range Organics + Diesel Range Organics (GRO + DRO)	EPA SW-846 Method 8015M	1,000	N/A
	Benzene	EPA SW-846 Methods 8021b or 8260b	10	10
	Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX)	EPA SW-846 Methods 8021b or 8260b	50	50

Closure Criteria for Soils Impacted by a Release

* Measured in milligrams per kilogram (mg/kg)

† Table I, Section 19.15.29.12 of the New Mexico Administrative Code (NMAC).

The NMOCD Reclamation Standard applies only to the top 4' of soil in non-production areas. Section 19.15.29.13 D.(1) NMAC.

4.0 **REMEDIATION ACTIVITIES SUMMARY**

On September 22, 2022, remediation activities commenced at the release site. In accordance with NMOCD regulatory guidelines, impacted soil affected above the NMOCD Closure Criteria was excavated and stockpiled on-site, pending transfer to an NMOCD-permitted surface waste facility for disposal. Olfactory/visual senses and/or a Hach Quantab® chloride test kit were utilized to field-screen the horizontal extent of impacted soil and to guide the excavation. The sidewalls and floors of the excavation were advanced until field tests and field observations suggested BTEX, TPH, and chloride concentrations were below the applicable NMOCD Closure Criteria. Representative five-point composite confirmation soil samples were collected every 200 square feet from the sidewalls and floor of the excavated area to be submitted for laboratory analysis.

On September 22, 2022, Etech collected 18 confirmation soil samples (FS 1 @ 0"-6" through FS 18 @ 0"-6") from the floor of the excavated area. The soil samples were submitted to a certified, commercial laboratory (henceforth, "the laboratory") for analysis of BTEX, TPH, and chloride. Laboratory analytical results indicated BTEX and chloride concentrations were below the applicable NMOCD Closure Criteria in each of the submitted soil samples. BTEX concentrations were also below the laboratory method detection limit (MDL). TPH concentrations ranged from less than the laboratory MDL in soil samples FS 1 @ 0"-6", FS 4 @ 0"-6", FS 5 @ 0"-6", FS 6 @ 0"-6", and FS 11 @ 0"-6" to 1,510 mg/kg in soil sample FS 17 @ 0"-6", which exceeded the NMOCD Closure Criterion. Chloride concentrations ranged from 7,200 mg/kg in soil sample FS 1 @ 0"-6" to 18,400 mg/kg in soil sample FS 17 @ 0"-6".

On September 23, 2022, Etech collected 24 confirmation soil samples (SW 1, SW 2, WW 1, WW 2, and FS 19 @ 0"-6" through FS 38 @ 0"-6") from the sidewalls and floor of the excavated area. The soil samples were submitted to the laboratory for analysis of BTEX, TPH, and chloride. Laboratory analytical results indicated BTEX and TPH concentrations were below the applicable NMOCD Closure Criteria in each of the submitted soil samples. BTEX concentrations were also below the laboratory MDL. TPH concentrations ranged from less than the laboratory MDL in soil sample FS 25 @ 0"-6" to 934 mg/kg in soil sample FS 37 @ 0"-6". Chloride concentrations ranged from 3,330 mg/kg in soil sample SW 2 to 36,800 mg/kg in soil sample FS 37 @ 0"-6". The chloride concentrations in soil samples FS 37 @ 0"-6" and FS 38 @ 0"-6" exceeded the NMOCD Closure Criterion.

On September 26, 2022, Etech collected 23 confirmation soil samples (FS 39 @ 0"-6" through FS 60 @ 0"-6" and FS 62 @ 0"-6") from the floor of the excavated area. The soil samples were submitted to the laboratory for analysis of BTEX, TPH, and chloride. Laboratory analytical results indicated BTEX and TPH concentrations were below the applicable NMOCD Closure Criteria in each of the submitted soil samples. BTEX concentrations were also below the laboratory MDL. TPH concentrations ranged from less than the laboratory MDL in soil samples FS 41 @ 0"-6", FS 49 @ 0"-6", and FS 50 @ 0"-6" to 506 mg/kg in soil sample FS 54 @ 0"-6". Chloride concentrations ranged from 9,000 mg/kg in soil sample FS 44 @ 0"-6", FS 46 @ 0"-6", FS 51 @ 0"-6", FS 57 @ 0"-6", and FS 58 @ 0"-6" exceeded the NMOCD Closure Criterion.

On September 27, 2022, Etech collected 28 confirmation soil samples (NW 1 through NW 5, EW 1, EW 2, SW 3, SW 4, SW 5, FS 61 @ 0"-6", and FS 63 @ 0"-6" through FS 79 @ 0"-6") from the sidewalls and floor of the excavated area. The soil samples were submitted to the laboratory for analysis of BTEX, TPH, and chloride. Laboratory analytical results indicated

BTEX and TPH concentrations were below the applicable NMOCD Closure Criteria in each of the submitted soil samples. BTEX concentrations were also below the laboratory MDL. TPH concentrations ranged from less than the laboratory MDL in soil samples FS 63 @ 0"-6" and FS 67 @ 0"-6" to 930 mg/kg in soil sample FS 72 @ 0"-6". Chloride concentrations ranged from 6,160 mg/kg in soil sample NW 5 to 24,400 mg/kg in soil sample FS 70 @ 0"-6". The chloride concentrations in soil samples FS 68 @ 0"-6", FS 70 @ 0"-6", and FS 71 @ 0"-6" exceeded the NMOCD Closure Criterion.

On September 29, 2022, based on laboratory analytical results, the excavation was further advanced in the areas characterized by soil samples FS 17 @ 0"-6", FS 37 @ 0"-6", FS 38 @ 0"-6", FS 68 @ 0"-6", FS 70 @ 0"-6", and FS 71 @ 0"-6". Etech collected six (6) confirmation soil samples (FS 17 @ 7"-12", FS 37 @ 7"-12", FS 38 @ 7"-12", FS 68 @ 7"-12", FS 68 @ 7"-12", FS 70 @ 7"-12", and FS 71 @ 7"-12") from the floor of the newly excavated area. Soil sample FS 17 @ 7"-12" was submitted to the laboratory for analysis of TPH. Soil samples FS 37 @ 7"-12", FS 38 @ 7"-12", FS 68 @ 7"-12", FS 70 @ 7"-12", and FS 71 @ 7"-12", and FS 71 @ 7"-12" were submitted for analysis of chloride. Laboratory analytical results indicated the TPH concentration in soil sample FS 17 @ 7"-12" was below the NMOCD Closure Criterion and the laboratory MDL. Chloride concentrations were below the NMOCD Closure Criterion in each of the submitted soil samples and ranged from 976 mg/kg in soil sample FS 38 @ 7"-12".

On October 11, 2022, based on laboratory analytical results, the excavation was further advanced in the areas characterized by soil samples FS 40 @ 0"-6", FS 43 @ 0"-6", FS 46 @ 0"-6", FS 51 @ 0"-6", FS 57 @ 0"-6", and FS 58 @ 0"-6". Etech collected six (6) confirmation soil samples (FS 40 @ 7"-12", FS 43 @ 7"-12", FS 46 @ 7"-12", FS 51 @ 7"-12", FS 57 @ 7"-12", FS 58 @ 7"-12") from the floor of the newly excavated area. The soil samples were submitted to the laboratory for analysis of chloride. Laboratory analytical results indicated chloride concentrations were below the NMOCD Closure Criterion in each of the submitted soil samples and ranged from 320 mg/kg in soil sample FS 40 @ 7"-12" to 9,200 mg/kg in soil sample FS 57 @ 7"-12".

On November 17, 2022, based on laboratory analytical results and field activities conducted to that point, a *Remediation Summary & Soil Closure Request* was submitted to the NMOCD requesting regulatory closure of the release. The request was subsequently denied by the NMOCD on the basis that the edges of the release had not been delineated to the Reclamation Standards of 600 mg/kg for chloride and 100 mg/kg for TPH.

On February 15, 2023, pursuant to the NMOCD, Etech advanced a series of hand-augered soil bores (NH1, NH2, EH1, EH2, SH1, SH2, WH1, and WH2) outside the footprint of the excavated area and along the inferred margins of the release in an effort to confirm that horizontal delineation of the spill had been achieved. A total of eight (8) delineation soil samples (NH1 @ 1', NH2 @ 1', EH1 @ 1', EH2 @ 1', SH1 @ 1', SH2 @ 1', WH1 @ 1', and WH2 @ 1') were submitted 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 and NMOCD Reclamation Standards in each of the submitted soil samples. BTEX and TPH concentrations were also below the applicable laboratory MDL. Chloride concentrations ranged from 16.0 mg/kg in soil sample EH1 @ 1' to 336 mg/kg in soil sample EH2 @ 1'. Based on these laboratory analytical results, the horizontal extent of the release was adequately defined.

On July 24, 2023, based on laboratory analytical results and field activities conducted to that point, a *Remediation Summary & Soil Closure Request (Amended)* was submitted to the NMOCD requesting regulatory closure of the release. The request was subsequently denied by the NMOCD on the basis that the edges of the release had not been delineated to the Reclamation Standards of 600 mg/kg for chloride and 100 mg/kg for TPH.

On September 12, 2023, pursuant to the NMOCD, Etech advanced two (2) additional hand-augered soil bores (NH-3B and NH-4B) in the north central portion of the site proximate to above ground surface equipment in an effort to confirm that horizontal delineation of the release had been achieved. Two (2) delineation soil samples (NH-3B and NH-4B) were submitted 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 and NMOCD Reclamation Standards in each of the submitted soil samples. BTEX and TPH concentrations were also below the applicable laboratory MDL. Chloride concentrations were 80.0 mg/kg in soil sample NH-3B and 112 mg/kg in soil sample NH-4B. Based on these laboratory analytical results, the horizontal extent of the release was adequately defined.

The final dimensions of the excavated area were approximately 210 to 334 feet in length, 15 to 205 feet in width, and six (6) inches to one (1) foot in depth. During the course of remediation activities, Etech transported approximately 200 cubic yards of impacted soil to an NMOCD-permitted surface waste facility for disposal and imported approximately 160 cubic yards of locally sourced, non-impacted material to the site for use as backfill.

Soil sample locations and the extent of the excavated area are depicted in Figure 3, "Site & Sample Location Map". Soil chemistry data is summarized in Table 1. Field data and soil profile logs are provided in Appendix B. General photographs of the site are provided in Appendix C. Laboratory analytical reports are provided in Appendix D. Copies of all regulatory correspondence are included in Appendix E.

5.0 RESTORATION, RECLAMATION & RE-VEGETATION PLAN

The release was limited to the bermed production pad of an active SWD facility and did not impact the adjacent pasture. 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 compacted and contoured to fit the needs of the facility. Final reclamation and revegetation will be conducted upon decommissioning and abandonment of the SWD.

6.0 SOIL CLOSURE REQUEST

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

Based on laboratory analytical results and field activities conducted to date, Etech recommends Goodnight provide copies of this *Remediation Summary & Soil Closure Request (Amended)* to the appropriate agencies and request closure be granted to the Tanks CRP Inlet release site.

7.0 LIMITATIONS

Etech Environmental & Safety Solutions, Inc., has prepared this *Remediation Summary & Soil Closure Request (Amended)* to the best of its ability. No other warranty, expressed or implied, is made or intended. Etech has examined and relied upon documents referenced in the report and on oral statements made by certain individuals. Etech 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 Goodnight Midstream Permian, LLC. Use of the information contained in this report is prohibited without the consent of Etech and/or Goodnight Midstream Permian, LLC.

8.0 **DISTRIBUTION**

Goodnight Midstream Permian, LLC 5910 N Central Expy Suite 800

New Mexico Energy, Minerals and Natural Resources Department

Oil Conservation Division, District 2 811 S. First Street Artesia, NM 88210

(Electronic Submission)

Figure 1 Topographic Map



Figure 2 Site Characterization Map



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Figure 3 Site & Sample Location Map



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Table 1Concentrations of BTEX, TPH & Chloride in Soil

Table 1											
			Concentr	ations of 1	BTEX, TP	'H & Chlo	ride in So	il			
			Go	odnight N	lidstream	Permian,	LLC				
				Ta	nks CRP	Inlet					
			Ν	MOCD R	ef. #: nAP	P2226128	925				
NMC	OCD Closure C	riteria		10	50	N/A	N/A	1,000	N/A	2,500	20,000
NMOC	D Reclamation	Standard		10	50	N/A	600				
				SW 84	6 8021B		SW	846 8015M	Ext.		4500 Cl
Samula ID	Data	Depth	Soil Status	_		GRO	DRO	GRO +	ORO	ТРН	
Sample ID	Date	(Feet)	Son Status	Benzene (mg/kg)	BTEX (mg/kg)	C6-C10	C ₁₀ -C ₂₈	DRO CaCu	C ₂₈ -C ₃₆	C6-C36	Chloride (mg/kg)
				(ing/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ing/kg)
	•			Ex	cavation Sar	nples					-
NW 1	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	83.5	83.5	25.7	109	17,000
NW 2	9/27/2022	0-0.6	In-Situ	< 0.050	< 0.300	<10.0	51.2	51.2	14.0	65.2	15,800
NW 3	9/27/2022	0-0.7	In-Situ	< 0.050	< 0.300	<10.0	34.7	34.7	<10.0	34.7	13,400
NW 4	9/27/2022	0-0.8	In-Situ	< 0.050	< 0.300	<10.0	685	685	186	871	12,000
NW 5	9/27/2022	0-0.9	In-Situ	< 0.050	< 0.300	<10.0	648	648	175	823	6,160
EW 1	9/27/2022	0-0.10	In-Situ	< 0.050	< 0.300	<10.0	36.6	36.6	10.3	46.9	7,200
EW 2	9/27/2022	0-0.11	In-Situ	< 0.050	< 0.300	<10.0	43.0	43.0	10.8	53.8	11,100
SW 1	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	39.2	39.2	10.8	50.0	5,460
SW 2	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	25.6	25.6	<10.0	25.6	3,330
SW 3	9/27/2022	0-0.12	In-Situ	< 0.050	< 0.300	<10.0	105	105	27.8	133	17,200
SW 4	9/27/2022	0-0.13	In-Situ	< 0.050	< 0.300	<10.0	14.0	14.0	<10.0	14.0	16,200
SW 5	9/27/2022	0-0.14	In-Situ	< 0.050	< 0.300	<10.0	262	262	111	373	19,400
WW 1	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	12.4	12.4	<10.0	12.4	9,060
WW 2	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	73.9	73.9	17.3	91.2	12,000
FS 1 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	7,200
FS 2 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	40.6	40.6	<10.0	40.6	8,320
FS 3 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	11.6	11.6	<10.0	11.6	9,040
FS 4 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	12,100
FS 5 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	10,900
FS 6 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	9,860
FS 7 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	28.8	28.8	<10.0	28.8	10,500
FS 8 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	117	117	27.8	145	12,000
FS 9 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	16.5	16.5	<10.0	16.5	12,800
FS 10 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	181	181	39.8	221	18,200
FS 11 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	13,500
FS 12 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	41.9	41.9	<10.0	41.9	9,860
FS 13 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	246	246	45.2	291	14,600
FS 14 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	15.1	15.1	<10.0	15.1	9,730
FS 15 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	209	209	43.9	253	17,000
FS 16 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	102	102	25.7	128	16,000
FS 17 @ 0"-6"	9/22/2022	0-0.5	Excavated	< 0.050	< 0.300	<10.0	1,280	1,280	230	1,510	18,400
FS 17 @ 7"-12"	9/29/2022	0.58-1	In-Situ	-	-	<10.0	<10.0	<20.0	<10.0	<30.0	-
FS 18 @ 0"-6"	9/22/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	127	127	38.2	165	16,000
FS 19 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	120	120	<10.0	120	7,600
FS 20 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	36.9	36.9	<10.0	36.9	15,200
FS 21 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	132	132	<10.0	132	16,400
FS 22 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	45.2	45.2	<10.0	45.2	15,200
FS 23 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	241	241	27.2	268	14,000
FS 24 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	28.5	28.5	<10.0	28.5	10,000
FS 25 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	11,200
FS 26 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	15.3	15.3	<10.0	15.3	11,500
FS 27 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	37.1	37.1	<10.0	37.1	17,500
FS 28 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	73.2	73.2	<10.0	73.2	12,700

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I able I											
			Concentr	ations of l	BTEX, TP	H & Chlo	ride in So	il			
			Go	odnight M	lidstream	Permian,	LLC				
				Ta	inks CRP	Inlet					
			N	MOCD R	ef. #: nAP	P2226128	925	-			
NMO	OCD Closure C	riteria		10	50	N/A	N/A	1,000	N/A	2,500	20,000
NMOC	D Reclamation	Standard	1	10	50	N/A	N/A	N/A	N/A	100	600
				SW 840	6 8021B		SW	846 8015M	Ext.		4500 Cl
Sample ID	Date	Depth	Soil Status	Donzono	DTEV	GRO	DRO	GRO +	ORO	TPH	Chlorido
~~~ <b>.F</b>		(Feet)		(mg/kg)	(mg/kg)	C ₆ -C ₁₀	C ₁₀ -C ₂₈	$C_6-C_{28}$	C ₂₈ -C ₃₆	C ₆ -C ₃₆	(mg/kg)
						(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
FS 29 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	88.0	88.0	<10.0	88.0	10,000
FS 30 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	63.7	63.7	<10.0	63.7	12,700
FS 31 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	59.0	59.0	<10.0	59.0	11,200
FS 32 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	77.8	77.8	14.6	92.4	9,860
FS 33 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	30.9	30.9	<10.0	30.9	15,300
FS 34 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	66.8	66.8	11.0	77.8	15,200
FS 35 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	196	196	46.1	242	18,000
FS 36 @ 0"-6"	9/23/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	139	139	33.7	173	19,600
FS 37 @ 0"-6"	9/23/2022	0-0.5	Excavated	< 0.050	< 0.300	<10.0	743	743	191	934	36,800
FS 37 @ 7"-12"	9/29/2022	0.58-1	In-Situ	-	-	-	-	-	-	-	1,500
FS 38 @ 0"-6"	9/23/2022	0-0.5	Excavated	< 0.050	< 0.300	<10.0	188	188	47.4	235	20,400
FS 38 @ 7"-12"	9/29/2022	0.58-1	In-Situ	-	-	-	-	-	-	-	976
FS 39 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	319	319	48.8	368	12,800
FS 40 @ 0"-6"	9/26/2022	0-0.5	Excavated	< 0.050	< 0.300	<10.0	100	100	20.8	121	20,600
FS 40 @ 7"-12"	10/11/2022	0.58-1	In-Situ	-	-	-	-	-	-	-	320
FS 41 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	18,400
FS 42 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	18.6	18.6	<10.0	18.6	12,400
FS 43 @ 0"-6"	9/26/2022	0-0.5	Excavated	< 0.050	< 0.300	<10.0	58.4	58.4	15.4	73.8	32,800
FS 43 @ 7"-12"	10/11/2022	0.58-1	In-Situ	-	-	-	-	-	-	-	1,710
FS 44 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	57.5	57.5	13.6	71.1	9,000
FS 45 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	166	166	31.6	198	16,400
FS 46 @ 0"-6"	9/26/2022	0-0.5	Excavated	< 0.050	< 0.300	<10.0	55.2	55.2	<10.0	55.2	22,400
FS 46 @ 7"-12"	10/11/2022	0.58-1	In-Situ	-	-	-	-	-	-	-	336
FS 47 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	22.3	22.3	<10.0	22.3	12,000
FS 48 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	227	227	48.2	275	9,400
FS 49 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	14,000
FS 50 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	9,400
FS 51 @ 0"-6"	9/26/2022	0-0.5	Excavated	< 0.050	< 0.300	<10.0	58.6	58.6	11.5	70.1	20,200
FS 51 @ 7"-12"	10/11/2022	0.58-1	In-Situ	-	-	-	-	-	-	-	6,000
FS 52 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	96.3	96.3	18.2	115	15,000
FS 53 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	150	150	26.8	177	15,400
FS 54 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	408	408	97.5	506	10,200
FS 55 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	11.4	11.4	11.5	22.9	13,000
FS 56 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	381	381	80.8	462	14,800
FS 57 @ 0"-6"	9/26/2022	0-0.5	Excavated	< 0.050	< 0.300	<10.0	26.2	26.2	15.9	42.1	21,200
FS 57 @ 7"-12"	10/11/2022	0.58-1	In-Situ	-	-	-	-	-	-	-	9,200
FS 58 @ 0"-6"	9/26/2022	0-0.5	Excavated	< 0.050	< 0.300	<10.0	249	249	63.0	312	22,000
FS 58 @ 7"-12"	10/11/2022	0.58-1	In-Situ	-	-	-	-	-	-	-	1,860
FS 59 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	62.5	62.5	12.9	75.4	15,400
FS 60 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	74.1	74.1	18.5	92.6	12,000
FS 61 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	16.7	16.7	<10.0	16.7	16,200
FS 62 @ 0"-6"	9/26/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	70.7	70.7	18.7	89.4	11,700
FS 63 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	12,900
FS 64 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	131	131	35.2	166	19,400

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Table 1													
<b>Concentrations of BTEX, TPH &amp; Chloride in Soil</b>													
	Goodnight Midstream Permian, LLC												
				Ta	inks CRP	Inlet							
			Ν	MOCD R	ef. #: nAP	P2226128	925						
NMO	OCD Closure C	riteria		10	50	N/A	N/A 1,000		N/A	2,500	20,000		
NMOC	D Reclamation	Standard	1	10	50	N/A	N/A	N/A	N/A	100	600		
				SW 84	6 8021B		SW	846 8015M	Ext.		4500 Cl		
Sample ID	Date	Depth (Feet)	Soil Status	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)		
FS 65 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	93.9	93.9	25.2	119	19,200		
FS 66 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	51.8	51.8	13.9	65.7	10,900		
FS 67 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	13,200		
FS 68 @ 0"-6"	9/27/2022	0-0.5	Excavated	< 0.050	< 0.300	<10.0	374	374	76.4	450	20,800		
FS 68 @ 7"-12"	9/29/2022	0.58-1	In-Situ	-	-	-	-	-	-	-	1,880		
FS 69 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	39.7	39.7	14.9	54.6	14,600		
FS 70 @ 0"-6"	9/27/2022	0-0.5	Excavated	< 0.050	< 0.300	<10.0	123	123	38.9	162	24,400		
FS 70 @ 7"-12"	9/29/2022	0.58-1	In-Situ	-	-	-	-	-	-	-	4,000		
FS 71 @ 0"-6"	9/27/2022	0-0.5	Excavated	< 0.050	< 0.300	<10.0	11.5	11.5	<10.0	11.5	22,200		
FS 71 @ 7"-12"	9/29/2022	0.58-1	In-Situ	-	-	-	-	-	-	-	3,520		
FS 72 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	689	689	241	930	19,600		
FS 73 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	48.4	48.4	24.1	72.5	11,800		
FS 74 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	179	179	46.2	225	18,000		
FS 75 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	45.2	45.2	13.5	58.7	19,200		
FS 76 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	14.6	14.6	<10.0	14.6	17,400		
FS 77 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	26.2	26.2	<10.0	26.2	15,600		
FS 78 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	65.4	65.4	16.1	81.5	13,000		
FS 79 @ 0"-6"	9/27/2022	0-0.5	In-Situ	< 0.050	< 0.300	<10.0	128	128	39.0	167	18,600		
				De	elineation Sar	nples							
NH1 @ 1'	2/15/2023	1	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	32.0		
NH2 @ 1'	2/15/2023	1	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	48.0		
NH-3B	9/12/2023	1	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	80.0		
NH-4B	9/12/2023	1	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	112		
EH1 @ 1'	2/15/2023	1	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	16.0		
EH2 @ 1'	2/15/2023	1	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	336		
SH1 @ 1'	2/15/2023	1	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	48.0		
SH2 @ 1'	2/15/2023	1	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	64.0		
WH1 @ 1'	2/15/2023	1	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	32.0		
WH2 @ 1'	2/15/2023	1	In-Situ	< 0.050	< 0.300	<10.0	<10.0	<20.0	<10.0	<30.0	32.0		

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# Appendix A Depth to Groundwater Information









(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)	(qu (qu	arte	ers ers	are 1 are s	=NW	2=NE 3	3=SW 4=S gest) (	SE) NAD83 UTM in	meters)	(1	In feet)
POD Number	POD Sub- Code basin Co	C ounty 6	20 41	ຊ 64	Sec	: Tws	Rng	)	(Y	Distance	Depth Well	Depth Water Water Column
C 02756	CUB E	ED :	3 4	44	26	22S	31E	61825	0 3580606* 🄇	626	1998	
<u>C 03152</u>	CUB E	ED (	3 4	44	- 26	22S	31E	618250	0 3580606* 🄇	626	938	
									Av	erage Depth to	Water:	
										Minimum	Depth:	
										Maximum	Depth:	
Record Count: 2												

UTMNAD83 Radius Search (in meters):

Easting (X): 618852.81

Northing (Y): 3580777.55

Radius: 804.67

*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.

# New Mexico Office of the State Engineer Point of Diversion Summary

				(quart (quart	ers ar rters a	are s	malles	t to larg	) (NAD83 U ⁻	)		
Well Tag	PC	D Number		Q64	Q16	Q4	Sec	Tws	Rng	Х	Y	r
	С	02756		3	4	4	26	22S	31E	618250	3580606	٠ 🌍
Driller Licens	se:		Dril	ler Co	ompa	any	:					
Driller Name:		SANDIA NATIO	NAL L	ABS/l	JSG	S						
Drill Start Da	te:		Dril	l Fini	sh D	ate	•	12/3	81/1976	Plug	Date:	
Log File Date	:		PC	N Rcv	/ Dat	te:				Source:		
Pump Type:			Pipe Discharge Size:							Esti	mated Yie	ld:
Casing Size:		4.50	Dep	oth W	ell:			199	8 feet	Dep	th Water:	

*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.

# New Mexico Office of the State Engineer Point of Diversion Summary

			(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) (NAD83 UTM in meters)											
Well Tag	PC	D Number		Q64	Q16	Q4	Sec	Tws	Rng	(	Х		Y	
_	С	03152		3	4	4	26	22S	31E	618	3250	35806	06* 🍯	)
Driller License: 1184 C			Dril	ler Co	omp	any	: W	EST 1	FEXAS	WATI	ER W	ELL SE	ERVIC	E
Driller Name:		BROCKMAN, BE	RNA	RD J.										
Drill Start Da	te:	06/01/2005	Dril	l Fini	sh C	)ate	:	06/0	07/2005	5	Plug	Date:		
Log File Date	):	06/10/2005	PC۱	N Rc	v Da	te:					Sour	ce:		Shallow
Pump Type:			Pip	e Dis	char	ge S	Size:				Estir	nated \	Yield:	
Casing Size:		8.00	Dep	oth W	ell:			938	feet		Dept	h Wate	er:	

*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.



#### Legend

- Site Location
- O Well USGS
- CO 500-Ft Radius
- 1,000-Ft Radius
- 0.5-Mi Radius

Released to Imaging: 12/2/2024 3:30:35 PM

Figure 5 USGS Well Proximity Map Goodnight Midstream Permian, LLC Tanks CRP Inlet GPS: 32.35762,-103.73682 Eddy County



Drafted: bja

Checked: jwl

Date: 10/13/22



#### θ

Click forNews Bulletins

Groundwater levels for the Nation

Important: <u>Next Generation Monitoring Location Page</u>

#### Search Results -- 1 sites found

Agency code = usgs site_no list = • 322046103460301

#### Minimum number of levels = 1

Save file of selected sites to local disk for future upload

#### USGS 322046103460301 22S.31E.34.321

Eddy County, New Mexico Latitude 32°20'46", Longitude 103°46'03" NAD27 Land-surface elevation 3,448 feet above NGVD29 This well is completed in the Other aquifers (N99990THER) national aquifer. This well is completed in the Delaware Mountain Group (313DLRM) local aquifer.

 Output formats

 Table of data

 Tab-separated data

 Graph of data

 Reselect period

Date \$	Time \$	? Water- level ≎ date- time accuracy	? Parameter ^{\$} code	Water level, feet below land surface	Water level, feet above \$ specific vertical datum	Referenced vertical ≎ datum	? Status	? Method of measurement	? Measuring ^{\$} agency	? Source of measurement	? Water- level approval status
1975-12-18		D	72019	493.20			1	0	USGS	S	А

#### Received by OCD: 11/1/2024 12:25:32 PM

Explanation							
Section \$	Code ≎	Description					
Water-level date-time accuracy	D	Date is accurate to the Day					
Parameter code	62610	Groundwater level above NGVD 1929, feet					
Parameter code	62611	Groundwater level above NAVD 1988, feet					
Parameter code	72019	Depth to water level, feet below land surface					
Referenced vertical datum	NAVD88	North American Vertical Datum of 1988					
Referenced vertical datum	NGVD29	National Geodetic Vertical Datum of 1929					
Status	1	Static					
Method of measurement	0	Observed.					
Measuring agency	USGS	U.S. Geological Survey					
Source of measurement	S	Measured by personnel of reporting agency.					
Water-level approval status	А	Approved for publication Processing and review completed.					

Questions about sites/data? Feedback on this web site Automated retrievals Help Data Tips Explanation of terms Subscribe for system changes News

#### Accessibility FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey Title: Groundwater for USA: Water Levels URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

Page Contact Information: <u>USGS Water Data Support Team</u> Page Last Modified: 2022-11-03 21:10:29 EDT 0.29 0.24 nadww01 USA.gov

# Appendix B Field Data



Sample Log

Date:

9-22-22

Project:	Tanks CRP Inlet	
Project Nul	mber:	16739

Latitude:

32.35762 L

Longitude: -103.73682

Sample ID	PID/Odor	Chloride Conc.	GPS
FS100-6		9,080	
FS200-6"	-	9.080	
FS300-6"	-	9.080	
FS400-6"	-	9,836	
FS 500-6	-	10.668	
FS 6e O-6	-	9.836	
FS7e0-6"	-	13.784	
FS800-6"		11,592	
FS9e0=6"	-	10,668	
FS 10e0=6"	-	13,784	
ts 11e B-6"	-	12,624	
FS 1200-6	-	10.668	
FS 1300-6"	-	10:268	
FS 1400-6"	-	16.636	
FS15e0-6	~	16,668	
FS1600-6	-	13,748	
FS 17e0-6"	-	18,428	
FS18e0-6"	-	16.636 -	
SW1 67	-	3,780	
SWA 67	-	6636	
WWI 55	-	9.080	
WW2 55	-	1,5,108	
FS 19 e 0'-6"	-	7,756	
FS 2000-6"	-	13.784	
FS2100-6"	-	13,784	
FS 220 0-6	-	7.176	_
FS 230 0-6	-	10,868	
FS 240 0-6	-	9.080	
FS 2500-6	-	1 0.668	
FS: 26@ 0"-6"	-	4464	
FS270 0-6"	-	7176	
FS2800-6	-	11.592	
FS2400-6"	-	0.668	
+ 5 3000-6	-	18,428	
FS 3100-6"	-	11,592	
rs 3200-6"	-	13,784	
ANST 3 Sample Point = SP #1 @ ## etc		11,592 Test Trench = TT #1@##	Resamples= SP #1 @ 5b or SW #1b
Floor = FL #1 etc +1 3 3 C		Refusal = SP #1 @ 4'-R	Stockpile = Stockpile #1

Sidewall = 5W #1 etc

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

GPS Sample Points, Center of Comp Areas

V JAFence

Received by OCD: 11/1/2024 12:25:32 PM

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## Sample Log

Date:

9-23-22

Project: Tanker CRP Inlet Project Number:

16739

Latitude: 32.35762 Longitude: -103.73682

	Sample ID	PID/Odor	Chloride Conc.	GPS
	FS 3300-6"	-	11.592	
I	FS 340 0-6"		12952	
	FS 3500-6"	-	16940	
t	FS 3600-6"	_	18716	
1	FS3700-6"	-	11,940	
	FS3800-6"	-	16940	
1	FS 390 0-6"	~	27100-14112	1
-	FS 40e A-L	-	27436.12940	
ł	FS 41e A-L	-	20824.15428	+
t	FS 4200-6"	-	15428	
ł	FS 4300-1"	-	15428	
t	FS 4400-6"	-	27600-11916	
-	FS 4 500-2"	-	15428	
	FS 460-1		18716	
- Contractor	FS 4700-6"	-	27/00-9772	1
	FS 4800-6	-	27600.11916	
a second	FS 49e0-1	-	15428	
-	FS 5000-6"	-	27436.15428	
1	FS 5100-6"	-	27650.16940	1
1	FS 5200-6"	-	27436.15428	
T	FS 5300-6"	-	20864-15.428	
-	FS 5400-6"	-	12952	
T	FS5500-6"	-	15.428	
	FS56e0-6	u	12952	
Γ	FS 57e 0-6"	-	15.428	
T	FS58e0-6"	-	18.716	
	FS 59e0-6	-	15,428	
	FS60e0-6	-	11.916	
	FS6100-6"	-	15428	
	FS 6200-6	-	16940	
Ad	FS63e0-6"		11.916	
33	FS6400-6	-	16940	
25.	FS6500-6"	-	16940	
12	FS6600-6	-	14/12	
024	FS 67@0-6"	-	15,428	
1/2	FS 6800-6"	-	12,940	
11	Sample Point = SP #1 @ ## etc		Test Trench = TT #1 @ ##	Resamples= SP #1 @ 5b or SW #1b
5	Floor = FL #1 etc		Refusa! = SP #1 @ 4'-R	Stockpile = Stockpile #1
0 0	Sidewall = SW #1 etc		Soil Intended to be Deferred = SP #1 @ 4' In-Situ	GPS Sample Points, Center of Comp Areas
d p				
ovio				
PPC				

Refusal = SP #1 @ 4'-R



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# Sample Log

Date:

Project: Tanks CRP Inlet Project Number: 16739

Latitude: <u>32.35762</u> Longitude: <u>-/03.73682</u>

9-26-22

Sample ID	PID/Odor	Chloride Conc.	GPS
FS 690 0-6"	-	14112	
FS7000-6"	-	18.716	
FS7100-6"	-	16940	
FS 7200-6	-	18716	
FS7300-1		) 0.984	
FS7400-6	-	14/12	
FS 75 °0 -6"	-	16.940	
FS7600-6	-	15.428	
FS7700-6	-	15 428	
FS 7800-6"	-	12,952	
FS 79@0-6	-	15428	
NWI	-	15.428	
NW2	-	14.112	
NW3	-	11.916	
NW4	-	5'904	
NW 5	-	[11.9]6	
EWI	-	6,834	
EW2	-	10,984	
We date of the		,	
SW3	-	16940	
SW4	-	15.428	
15W5	-	12952	
Fa 3707-12	~	1636	
F& 38e7-12"	-	1:100	
F\$ 6807-12"	-	2404	
F\$ 7007-12	~	4324	
F\$ 7/07-12	-	3680	
- F& 17e7-12		1,996	
F-5 4007-12	-	416	
F2 43@7-12	-	2192	
F2 46e 7-12	-	612	
37251e7-12		6,884	
7725707-12	-	9,374	
F2 5807-12		2192	
Sample Point = SP #1 @ ## etc		Test Trench = TT #1 @ ##	Resamples= St #1 @ St U W #20
Floor = FL #1 etc		Refusal = SP #1 @ 4'-R	Stockpile = Stockpile #1
Sidewall = SW #1 etc		Soil Intended to be Deferred = SP #1 @ 4' in-Situ	GPS Sample Points, Center of Comp Areas
q p:			
eive			
Rec			

# Appendix C Photographic Log










## Photographic Log













View of the excavated area.

Released to Imaging: 12/2/2024 3:30:35 PM





# Appendix D Laboratory Analytical Reports



September 23, 2022

JOEL LOWRY

Etech Environmental & Safety Solutions

2617 W MARLAND

HOBBS, NM 88240

**RE: TANKS CRP INLET** 

Enclosed are the results of analyses for samples received by the laboratory on 09/22/22 16:13.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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 <a href="https://www.tceq.texas.gov/field/ga/lab_accred_certif.html">www.tceq.texas.gov/field/ga/lab_accred_certif.html</a>.

Cardinal Laboratories is accreditated 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. Keine

Celey D. Keene Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/22/2022	Sampling Date:	09/22/2022
Reported:	09/23/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 1 @ 0" - 6" (H224420-01)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/23/2022	ND	2.15	107	2.00	13.0	
Toluene*	<0.050	0.050	09/23/2022	ND	2.13	106	2.00	14.1	
Ethylbenzene*	<0.050	0.050	09/23/2022	ND	2.04	102	2.00	14.0	
Total Xylenes*	<0.150	0.150	09/23/2022	ND	6.36	106	6.00	14.3	
Total BTEX	<0.300	0.300	09/23/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	7200	16.0	09/23/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/23/2022	ND	185	92.5	200	3.81	
DRO >C10-C28*	<10.0	10.0	09/23/2022	ND	198	99.1	200	3.39	
EXT DRO >C28-C36	<10.0	10.0	09/23/2022	ND					
Surrogate: 1-Chlorooctane	89.0 %	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	107 %	6.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/22/2022	Sampling Date:	09/22/2022
Reported:	09/23/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 2 @ 0" - 6" (H224420-02)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/23/2022	ND	2.15	107	2.00	13.0	
Toluene*	<0.050	0.050	09/23/2022	ND	2.13	106	2.00	14.1	
Ethylbenzene*	<0.050	0.050	09/23/2022	ND	2.04	102	2.00	14.0	
Total Xylenes*	<0.150	0.150	09/23/2022	ND	6.36	106	6.00	14.3	
Total BTEX	<0.300	0.300	09/23/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	8320	16.0	09/23/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/23/2022	ND	185	92.5	200	3.81	
DRO >C10-C28*	40.6	10.0	09/23/2022	ND	198	99.1	200	3.39	
EXT DRO >C28-C36	<10.0	10.0	09/23/2022	ND					
Surrogate: 1-Chlorooctane	112 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	137 %	46.3-17	8						

### **Cardinal Laboratories**

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/22/2022	Sampling Date:	09/22/2022
Reported:	09/23/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 3 @ 0" - 6" (H224420-03)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/23/2022	ND	2.15	107	2.00	13.0	
Toluene*	<0.050	0.050	09/23/2022	ND	2.13	106	2.00	14.1	
Ethylbenzene*	<0.050	0.050	09/23/2022	ND	2.04	102	2.00	14.0	
Total Xylenes*	<0.150	0.150	09/23/2022	ND	6.36	106	6.00	14.3	
Total BTEX	<0.300	0.300	09/23/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9040	16.0	09/23/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/23/2022	ND	185	92.5	200	3.81	
DRO >C10-C28*	11.6	10.0	09/23/2022	ND	198	99.1	200	3.39	
EXT DRO >C28-C36	<10.0	10.0	09/23/2022	ND					
Surrogate: 1-Chlorooctane	99.4	% 45.3-16	51						
Surrogate: 1-Chlorooctadecane	119 9	46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/22/2022	Sampling Date:	09/22/2022
Reported:	09/23/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

### Sample ID: FS 4 @ 0" - 6" (H224420-04)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/23/2022	ND	2.15	107	2.00	13.0	
Toluene*	<0.050	0.050	09/23/2022	ND	2.13	106	2.00	14.1	
Ethylbenzene*	<0.050	0.050	09/23/2022	ND	2.04	102	2.00	14.0	
Total Xylenes*	<0.150	0.150	09/23/2022	ND	6.36	106	6.00	14.3	
Total BTEX	<0.300	0.300	09/23/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12100	16.0	09/23/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/23/2022	ND	185	92.5	200	3.81	
DRO >C10-C28*	<10.0	10.0	09/23/2022	ND	198	99.1	200	3.39	
EXT DRO >C28-C36	<10.0	10.0	09/23/2022	ND					
Surrogate: 1-Chlorooctane	105 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	124 9	46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/22/2022	Sampling Date:	09/22/2022
Reported:	09/23/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

### Sample ID: FS 5 @ 0" - 6" (H224420-05)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/23/2022	ND	2.15	107	2.00	13.0	
Toluene*	<0.050	0.050	09/23/2022	ND	2.13	106	2.00	14.1	
Ethylbenzene*	<0.050	0.050	09/23/2022	ND	2.04	102	2.00	14.0	
Total Xylenes*	<0.150	0.150	09/23/2022	ND	6.36	106	6.00	14.3	
Total BTEX	<0.300	0.300	09/23/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	10900	16.0	09/23/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/23/2022	ND	185	92.5	200	3.81	
DRO >C10-C28*	<10.0	10.0	09/23/2022	ND	198	99.1	200	3.39	
EXT DRO >C28-C36	<10.0	10.0	09/23/2022	ND					
Surrogate: 1-Chlorooctane	92.9 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	110 %	6 46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/22/2022	Sampling Date:	09/22/2022
Reported:	09/23/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

### Sample ID: FS 6 @ 0" - 6" (H224420-06)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/23/2022	ND	2.15	107	2.00	13.0	
Toluene*	<0.050	0.050	09/23/2022	ND	2.13	106	2.00	14.1	
Ethylbenzene*	<0.050	0.050	09/23/2022	ND	2.04	102	2.00	14.0	
Total Xylenes*	<0.150	0.150	09/23/2022	ND	6.36	106	6.00	14.3	
Total BTEX	<0.300	0.300	09/23/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9860	16.0	09/23/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/23/2022	ND	185	92.5	200	3.81	
DRO >C10-C28*	<10.0	10.0	09/23/2022	ND	198	99.1	200	3.39	
EXT DRO >C28-C36	<10.0	10.0	09/23/2022	ND					
Surrogate: 1-Chlorooctane	101 %	45.3-16	1						
Surrogate: 1-Chlorooctadecane	119 %	6.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/22/2022	Sampling Date:	09/22/2022
Reported:	09/23/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 7 @ 0" - 6" (H224420-07)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/23/2022	ND	2.15	107	2.00	13.0	
Toluene*	<0.050	0.050	09/23/2022	ND	2.13	106	2.00	14.1	
Ethylbenzene*	<0.050	0.050	09/23/2022	ND	2.04	102	2.00	14.0	
Total Xylenes*	<0.150	0.150	09/23/2022	ND	6.36	106	6.00	14.3	
Total BTEX	<0.300	0.300	09/23/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	10500	16.0	09/23/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/23/2022	ND	185	92.5	200	3.81	
DRO >C10-C28*	28.8	10.0	09/23/2022	ND	198	99.1	200	3.39	
EXT DRO >C28-C36	<10.0	10.0	09/23/2022	ND					
Surrogate: 1-Chlorooctane	99.5 %	45.3-16	1						
Surrogate: 1-Chlorooctadecane	122 %	6 46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/22/2022	Sampling Date:	09/22/2022
Reported:	09/23/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 8 @ 0" - 6" (H224420-08)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/23/2022	ND	2.15	107	2.00	13.0	
Toluene*	<0.050	0.050	09/23/2022	ND	2.13	106	2.00	14.1	
Ethylbenzene*	<0.050	0.050	09/23/2022	ND	2.04	102	2.00	14.0	
Total Xylenes*	<0.150	0.150	09/23/2022	ND	6.36	106	6.00	14.3	
Total BTEX	<0.300	0.300	09/23/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	105 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12000	16.0	09/23/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/23/2022	ND	185	92.5	200	3.81	
DRO >C10-C28*	117	10.0	09/23/2022	ND	198	99.1	200	3.39	
EXT DRO >C28-C36	27.8	10.0	09/23/2022	ND					
Surrogate: 1-Chlorooctane	97.7 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	126 %	6 46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/22/2022	Sampling Date:	09/22/2022
Reported:	09/23/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 9 @ 0" - 6" (H224420-09)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/23/2022	ND	2.15	107	2.00	13.0	
Toluene*	<0.050	0.050	09/23/2022	ND	2.13	106	2.00	14.1	
Ethylbenzene*	<0.050	0.050	09/23/2022	ND	2.04	102	2.00	14.0	
Total Xylenes*	<0.150	0.150	09/23/2022	ND	6.36	106	6.00	14.3	
Total BTEX	<0.300	0.300	09/23/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12800	16.0	09/23/2022	ND	416	104	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	09/23/2022	ND	185	92.5	200	3.81	
DRO >C10-C28*	16.5	10.0	09/23/2022	ND	198	99.1	200	3.39	
EXT DRO >C28-C36	<10.0	10.0	09/23/2022	ND					
Surrogate: 1-Chlorooctane	101 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	120 9	46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/22/2022	Sampling Date:	09/22/2022
Reported:	09/23/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 10 @ 0" - 6" (H224420-10)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/23/2022	ND	2.15	107	2.00	13.0	
Toluene*	<0.050	0.050	09/23/2022	ND	2.13	106	2.00	14.1	
Ethylbenzene*	<0.050	0.050	09/23/2022	ND	2.04	102	2.00	14.0	
Total Xylenes*	<0.150	0.150	09/23/2022	ND	6.36	106	6.00	14.3	
Total BTEX	<0.300	0.300	09/23/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	18200	16.0	09/23/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/23/2022	ND	185	92.5	200	3.81	
DRO >C10-C28*	181	10.0	09/23/2022	ND	198	99.1	200	3.39	
EXT DRO >C28-C36	39.8	10.0	09/23/2022	ND					
Surrogate: 1-Chlorooctane	126 %	45.3-16	1						
Surrogate: 1-Chlorooctadecane	164 %	46.3-17	8						

### Cardinal Laboratories

*=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### **Notes and Definitions**

QR-04	The RPD for the BS/BSD was outside of historical limits.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

#### **Cardinal Laboratories**

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager

Company Name:	Etech Environmental & Safety	Solutions	Inc				2		B	IL	LTO	14.1.2	5				ANAL	YSIS	REO	LIECT	-		
Project Manager:	Joel Lowry						-	<b></b>	(	G.	ed ais	ht	I				T	T		0231		T	
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City: Hobbs	State: N	VI Zip:	882	240			Att	n: /	llbe	the	Och	ea.											
Phone #: (575) 2	64-9884 Fax #:	0					Ad	dres	S:														
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September 26, 2022

JOEL LOWRY

Etech Environmental & Safety Solutions

2617 W MARLAND

HOBBS, NM 88240

**RE: TANKS CRP INLET** 

Enclosed are the results of analyses for samples received by the laboratory on 09/23/22 15:44.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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 <a href="https://www.tceq.texas.gov/field/ga/lab_accred_certif.html">www.tceq.texas.gov/field/ga/lab_accred_certif.html</a>.

Cardinal Laboratories is accreditated 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. Keine

Celey D. Keene Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/22/2022
Reported:	09/26/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 11 @ 0"-6" (H224440-01)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2022	ND	2.13	107	2.00	10.8	
Toluene*	<0.050	0.050	09/24/2022	ND	2.07	103	2.00	10.6	
Ethylbenzene*	<0.050	0.050	09/24/2022	ND	2.01	100	2.00	11.5	
Total Xylenes*	<0.150	0.150	09/24/2022	ND	6.19	103	6.00	11.1	
Total BTEX	<0.300	0.300	09/24/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	95.5	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	13500	16.0	09/26/2022	ND	432	108	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/23/2022	ND	183	91.7	200	0.704	
DRO >C10-C28*	<10.0	10.0	09/23/2022	ND	200	100	200	2.66	
EXT DRO >C28-C36	<10.0	10.0	09/23/2022	ND					
Surrogate: 1-Chlorooctane	90.3	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	107 9	46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/22/2022
Reported:	09/26/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 12 @ 0"-6" (H224440-02)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2022	ND	2.13	107	2.00	10.8	
Toluene*	<0.050	0.050	09/24/2022	ND	2.07	103	2.00	10.6	
Ethylbenzene*	<0.050	0.050	09/24/2022	ND	2.01	100	2.00	11.5	
Total Xylenes*	<0.150	0.150	09/24/2022	ND	6.19	103	6.00	11.1	
Total BTEX	<0.300	0.300	09/24/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	95.2 9	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9860	16.0	09/26/2022	ND	416	104	400	0.00	QM-07
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/23/2022	ND	183	91.7	200	0.704	
DRO >C10-C28*	41.9	10.0	09/23/2022	ND	200	100	200	2.66	
EXT DRO >C28-C36	<10.0	10.0	09/23/2022	ND					
Surrogate: 1-Chlorooctane	111 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	135 %	46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/22/2022
Reported:	09/26/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 13 @ 0"-6" (H224440-03)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2022	ND	2.13	107	2.00	10.8	
Toluene*	<0.050	0.050	09/24/2022	ND	2.07	103	2.00	10.6	
Ethylbenzene*	<0.050	0.050	09/24/2022	ND	2.01	100	2.00	11.5	
Total Xylenes*	<0.150	0.150	09/24/2022	ND	6.19	103	6.00	11.1	
Total BTEX	<0.300	0.300	09/24/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	95.6	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	14600	16.0	09/26/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/23/2022	ND	183	91.7	200	0.704	
DRO >C10-C28*	246	10.0	09/23/2022	ND	200	100	200	2.66	
EXT DRO >C28-C36	45.2	10.0	09/23/2022	ND					
Surrogate: 1-Chlorooctane	114 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	153 %	46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/22/2022
Reported:	09/26/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 14 @ 0"-6" (H224440-04)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2022	ND	2.13	107	2.00	10.8	
Toluene*	<0.050	0.050	09/24/2022	ND	2.07	103	2.00	10.6	
Ethylbenzene*	<0.050	0.050	09/24/2022	ND	2.01	100	2.00	11.5	
Total Xylenes*	<0.150	0.150	09/24/2022	ND	6.19	103	6.00	11.1	
Total BTEX	<0.300	0.300	09/24/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	95.8 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9730	16.0	09/26/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/24/2022	ND	183	91.7	200	0.704	
DRO >C10-C28*	15.1	10.0	09/24/2022	ND	200	100	200	2.66	
EXT DRO >C28-C36	<10.0	10.0	09/24/2022	ND					
Surrogate: 1-Chlorooctane	103 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	124 %	6 46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/22/2022
Reported:	09/26/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 15 @ 0"-6" (H224440-05)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2022	ND	2.13	107	2.00	10.8	
Toluene*	<0.050	0.050	09/24/2022	ND	2.07	103	2.00	10.6	
Ethylbenzene*	<0.050	0.050	09/24/2022	ND	2.01	100	2.00	11.5	
Total Xylenes*	<0.150	0.150	09/24/2022	ND	6.19	103	6.00	11.1	
Total BTEX	<0.300	0.300	09/24/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	94.1 9	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	17000	16.0	09/26/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/24/2022	ND	183	91.7	200	0.704	
DRO >C10-C28*	209	10.0	09/24/2022	ND	200	100	200	2.66	
EXT DRO >C28-C36	43.9	10.0	09/24/2022	ND					
Surrogate: 1-Chlorooctane	97.4 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	132 %	46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/22/2022
Reported:	09/26/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 16 @ 0"-6" (H224440-06)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2022	ND	2.13	107	2.00	10.8	
Toluene*	<0.050	0.050	09/24/2022	ND	2.07	103	2.00	10.6	
Ethylbenzene*	<0.050	0.050	09/24/2022	ND	2.01	100	2.00	11.5	
Total Xylenes*	<0.150	0.150	09/24/2022	ND	6.19	103	6.00	11.1	
Total BTEX	<0.300	0.300	09/24/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	94.7 9	69.9-14	0						
Chloride, SM4500CI-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16000	16.0	09/26/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/24/2022	ND	183	91.7	200	0.704	
DRO >C10-C28*	102	10.0	09/24/2022	ND	200	100	200	2.66	
EXT DRO >C28-C36	25.7	10.0	09/24/2022	ND					
Surrogate: 1-Chlorooctane	103 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	129 %	6 46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/22/2022
Reported:	09/26/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 17 @ 0"-6" (H224440-07)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2022	ND	2.13	107	2.00	10.8	
Toluene*	<0.050	0.050	09/24/2022	ND	2.07	103	2.00	10.6	
Ethylbenzene*	<0.050	0.050	09/24/2022	ND	2.01	100	2.00	11.5	
Total Xylenes*	<0.150	0.150	09/24/2022	ND	6.19	103	6.00	11.1	
Total BTEX	<0.300	0.300	09/24/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	94.4 9	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	18400	16.0	09/26/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyzed By: CK						S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/24/2022	ND	183	91.7	200	0.704	
DRO >C10-C28*	1280	10.0	09/24/2022	ND	200	100	200	2.66	
EXT DRO >C28-C36	230	10.0	09/24/2022	ND					
Surrogate: 1-Chlorooctane	102 %	45.3-16	1						
Surrogate: 1-Chlorooctadecane	184 %	46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/22/2022
Reported:	09/26/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 18 @ 0"-6" (H224440-08)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2022	ND	2.09	104	2.00	3.92	
Toluene*	<0.050	0.050	09/24/2022	ND	2.05	103	2.00	3.88	
Ethylbenzene*	<0.050	0.050	09/24/2022	ND	1.97	98.4	2.00	2.93	
Total Xylenes*	<0.150	0.150	09/24/2022	ND	6.13	102	6.00	2.28	
Total BTEX	<0.300	0.300	09/24/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16000	16.0	09/26/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/24/2022	ND	183	91.7	200	0.704	
DRO >C10-C28*	127	10.0	09/24/2022	ND	200	100	200	2.66	
EXT DRO >C28-C36	38.2	10.0	09/24/2022	ND					
Surrogate: 1-Chlorooctane	98.3 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	125 %	6 46.3-17	8						

### **Cardinal Laboratories**

### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/26/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: SW 1 (H224440-09)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2022	ND	2.09	104	2.00	3.92	
Toluene*	<0.050	0.050	09/24/2022	ND	2.05	103	2.00	3.88	
Ethylbenzene*	<0.050	0.050	09/24/2022	ND	1.97	98.4	2.00	2.93	
Total Xylenes*	<0.150	0.150	09/24/2022	ND	6.13	102	6.00	2.28	
Total BTEX	<0.300	0.300	09/24/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5460	16.0	09/26/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/24/2022	ND	183	91.7	200	0.704	
DRO >C10-C28*	39.2	10.0	09/24/2022	ND	200	100	200	2.66	
EXT DRO >C28-C36	10.8	10.0	09/24/2022	ND					
Surrogate: 1-Chlorooctane	88.4	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	107 9	46.3-17	8						

#### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/26/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	Goodnight Midstream - Eddy Co NN		

### Sample ID: SW 2 (H224440-10)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2022	ND	2.09	104	2.00	3.92	
Toluene*	<0.050	0.050	09/24/2022	ND	2.05	103	2.00	3.88	
Ethylbenzene*	<0.050	0.050	09/24/2022	ND	1.97	98.4	2.00	2.93	
Total Xylenes*	<0.150	0.150	09/24/2022	ND	6.13	102	6.00	2.28	
Total BTEX	<0.300	0.300	09/24/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3330	16.0	09/26/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/24/2022	ND	183	91.7	200	0.704	
DRO >C10-C28*	25.6	10.0	09/24/2022	ND	200	100	200	2.66	
EXT DRO >C28-C36	<10.0	10.0	09/24/2022	ND					
Surrogate: 1-Chlorooctane	106 %	45.3-16	1						
Surrogate: 1-Chlorooctadecane	126 %	46.3-17	8						

#### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/26/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: WW 1 (H224440-11)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2022	ND	2.09	104	2.00	3.92	
Toluene*	<0.050	0.050	09/24/2022	ND	2.05	103	2.00	3.88	
Ethylbenzene*	<0.050	0.050	09/24/2022	ND	1.97	98.4	2.00	2.93	
Total Xylenes*	<0.150	0.150	09/24/2022	ND	6.13	102	6.00	2.28	
Total BTEX	<0.300	0.300	09/24/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	101 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9060	16.0	09/26/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/24/2022	ND	183	91.7	200	0.704	
DRO >C10-C28*	12.4	10.0	09/24/2022	ND	200	100	200	2.66	
EXT DRO >C28-C36	<10.0	10.0	09/24/2022	ND					
Surrogate: 1-Chlorooctane	102 %	45.3-16	1						
Surrogate: 1-Chlorooctadecane	121 %	46.3-17	8						

#### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/26/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	Goodnight Midstream - Eddy Co NN		

### Sample ID: WW 2 (H224440-12)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/24/2022	ND	2.09	104	2.00	3.92	
Toluene*	<0.050	0.050	09/24/2022	ND	2.05	103	2.00	3.88	
Ethylbenzene*	<0.050	0.050	09/24/2022	ND	1.97	98.4	2.00	2.93	
Total Xylenes*	<0.150	0.150	09/24/2022	ND	6.13	102	6.00	2.28	
Total BTEX	<0.300	0.300	09/24/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12000	16.0	09/26/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/24/2022	ND	183	91.7	200	0.704	
DRO >C10-C28*	73.9	10.0	09/24/2022	ND	200	100	200	2.66	
EXT DRO >C28-C36	17.3	10.0	09/24/2022	ND					
Surrogate: 1-Chlorooctane	95.0 9	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	122 %	46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



### **Notes and Definitions**

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

#### **Cardinal Laboratories**

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager

Company Name: Etech Environmental & Safety Solutions. Inc.									•		177	11 20		-	- POT LY										
Project Manager: Joel Lowry     Address: 2617 W Marland     City: Hobbs   State: NM     Phone #: (575) 264-9884							P	-0	#	C	ad i	14	-	-		1 1	A	NALY	SIS F	REQU	EST				
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Project Location:								P	hon	ne #:					orid	801	802								
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Page 15 of 16

(575) 393-2326 FAX (575) 393-2476 NUS Company Name: Etech Environmental & Safety Solutions, Inc.											-				d tot									
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sampler Name: Eric Mojica										PRE	SER	VI	SAMPI	ING	0	Id	E							
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September 28, 2022

JOEL LOWRY

Etech Environmental & Safety Solutions

2617 W MARLAND

HOBBS, NM 88240

**RE: TANKS CRP INLET** 

Enclosed are the results of analyses for samples received by the laboratory on 09/23/22 15:44.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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 <a href="https://www.tceq.texas.gov/field/ga/lab_accred_certif.html">www.tceq.texas.gov/field/ga/lab_accred_certif.html</a>.

Cardinal Laboratories is accreditated 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. Keine

Celey D. Keene Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 19 @ 0"-6" (H224441-01)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/27/2022	ND	1.97	98.6	2.00	1.03	
Toluene*	<0.050	0.050	09/27/2022	ND	2.20	110	2.00	1.02	
Ethylbenzene*	<0.050	0.050	09/27/2022	ND	2.10	105	2.00	1.34	
Total Xylenes*	<0.150	0.150	09/27/2022	ND	6.37	106	6.00	1.44	
Total BTEX	<0.300	0.300	09/27/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	107 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	7600	16.0	09/27/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/26/2022	ND	209	105	200	4.11	
DRO >C10-C28*	120	10.0	09/26/2022	ND	187	93.3	200	3.23	
EXT DRO >C28-C36	<10.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	76.2 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	102 %	46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 20 @ 0"-6" (H224441-02)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/27/2022	ND	1.97	98.6	2.00	1.03	
Toluene*	<0.050	0.050	09/27/2022	ND	2.20	110	2.00	1.02	
Ethylbenzene*	<0.050	0.050	09/27/2022	ND	2.10	105	2.00	1.34	
Total Xylenes*	<0.150	0.150	09/27/2022	ND	6.37	106	6.00	1.44	
Total BTEX	<0.300	0.300	09/27/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	107 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	15200	16.0	09/27/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/26/2022	ND	209	105	200	4.11	
DRO >C10-C28*	36.9	10.0	09/26/2022	ND	187	93.3	200	3.23	
EXT DRO >C28-C36	<10.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	75.2 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	84.4 9	46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 21 @ 0"-6" (H224441-03)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/27/2022	ND	1.97	98.6	2.00	1.03	
Toluene*	<0.050	0.050	09/27/2022	ND	2.20	110	2.00	1.02	
Ethylbenzene*	<0.050	0.050	09/27/2022	ND	2.10	105	2.00	1.34	
Total Xylenes*	<0.150	0.150	09/27/2022	ND	6.37	106	6.00	1.44	
Total BTEX	<0.300	0.300	09/27/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	105 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16400	16.0	09/27/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/26/2022	ND	209	105	200	4.11	
DRO >C10-C28*	132	10.0	09/26/2022	ND	187	93.3	200	3.23	
EXT DRO >C28-C36	<10.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	77.3 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	91.69	46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 22 @ 0"-6" (H224441-04)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/27/2022	ND	1.97	98.6	2.00	1.03	
Toluene*	<0.050	0.050	09/27/2022	ND	2.20	110	2.00	1.02	
Ethylbenzene*	<0.050	0.050	09/27/2022	ND	2.10	105	2.00	1.34	
Total Xylenes*	<0.150	0.150	09/27/2022	ND	6.37	106	6.00	1.44	
Total BTEX	<0.300	0.300	09/27/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	106 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	15200	16.0	09/27/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/26/2022	ND	209	105	200	4.11	
DRO >C10-C28*	45.2	10.0	09/26/2022	ND	187	93.3	200	3.23	
EXT DRO >C28-C36	<10.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	77.0 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	91.4 9	46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

#### Sample ID: FS 23 @ 0"-6" (H224441-05)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/27/2022	ND	1.97	98.6	2.00	1.03	
Toluene*	<0.050	0.050	09/27/2022	ND	2.20	110	2.00	1.02	
Ethylbenzene*	<0.050	0.050	09/27/2022	ND	2.10	105	2.00	1.34	
Total Xylenes*	<0.150	0.150	09/27/2022	ND	6.37	106	6.00	1.44	
Total BTEX	<0.300	0.300	09/27/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	107 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	14000	16.0	09/27/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/26/2022	ND	209	105	200	4.11	
DRO >C10-C28*	241	10.0	09/26/2022	ND	187	93.3	200	3.23	
EXT DRO >C28-C36	27.2	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	70.2 9	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	87.3 9	% 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

#### Sample ID: FS 24 @ 0"-6" (H224441-06)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/27/2022	ND	1.97	98.6	2.00	1.03	
Toluene*	<0.050	0.050	09/27/2022	ND	2.20	110	2.00	1.02	
Ethylbenzene*	<0.050	0.050	09/27/2022	ND	2.10	105	2.00	1.34	
Total Xylenes*	<0.150	0.150	09/27/2022	ND	6.37	106	6.00	1.44	
Total BTEX	<0.300	0.300	09/27/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	106 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	10000	16.0	09/27/2022	ND	416	104	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	09/26/2022	ND	209	105	200	4.11	
DRO >C10-C28*	28.5	10.0	09/26/2022	ND	187	93.3	200	3.23	
EXT DRO >C28-C36	<10.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	81.2 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	94.4 9	46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 25 @ 0"-6" (H224441-07)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/26/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/26/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/26/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/26/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	101 9	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	11200	16.0	09/27/2022	ND	416	104	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	09/26/2022	ND	209	105	200	4.11	
DRO >C10-C28*	<10.0	10.0	09/26/2022	ND	187	93.3	200	3.23	
EXT DRO >C28-C36	<10.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	81.3 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	91.0 \$	% 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 26 @ 0"-6" (H224441-08)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/26/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/26/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/26/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/26/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	11500	16.0	09/27/2022	ND	416	104	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	09/26/2022	ND	209	105	200	4.11	
DRO >C10-C28*	15.3	10.0	09/26/2022	ND	187	93.3	200	3.23	
EXT DRO >C28-C36	<10.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	76.5 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	87.9 9	46.3-17	8						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

#### Sample ID: FS 27 @ 0"-6" (H224441-09)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/26/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/26/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/26/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/26/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	17500	16.0	09/27/2022	ND	416	104	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	09/26/2022	ND	209	105	200	4.11	
DRO >C10-C28*	37.1	10.0	09/26/2022	ND	187	93.3	200	3.23	
EXT DRO >C28-C36	<10.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	74.1 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	85.7 9	% 46.3-17	8						

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

#### Sample ID: FS 28 @ 0"-6" (H224441-10)

BTEX 8021B	mg/l	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/26/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/26/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/26/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/26/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12700	16.0	09/27/2022	ND	416	104	400	3.77	
TPH 8015M	mg/l	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	09/26/2022	ND	209	105	200	4.11	
DRO >C10-C28*	73.2	10.0	09/26/2022	ND	187	93.3	200	3.23	
EXT DRO >C28-C36	<10.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	74.8 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	89.8 %	6 46.3-17	8						

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 29 @ 0"-6" (H224441-11)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/26/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/26/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/26/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/26/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	10000	16.0	09/27/2022	ND	416	104	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	09/26/2022	ND	209	105	200	4.11	
DRO >C10-C28*	88.0	10.0	09/26/2022	ND	187	93.3	200	3.23	
EXT DRO >C28-C36	<10.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	79.5 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	94.8 %	46.3-17	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 30 @ 0"-6" (H224441-12)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/26/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/26/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/26/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/26/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12700	16.0	09/27/2022	ND	416	104	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	09/26/2022	ND	209	105	200	4.11	
DRO >C10-C28*	63.7	10.0	09/26/2022	ND	187	93.3	200	3.23	
EXT DRO >C28-C36	<10.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	71.9 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	88.8 9	46.3-17	8						

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 31 @ 0"-6" (H224441-13)

BTEX 8021B	mg/l	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/26/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/26/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/26/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/26/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	11200	16.0	09/27/2022	ND	400	100	400	3.92	QM-07
TPH 8015M	mg/l	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	09/26/2022	ND	192	96.2	200	1.81	
DRO >C10-C28*	59.0	10.0	09/26/2022	ND	197	98.5	200	3.63	
EXT DRO >C28-C36	<10.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	98.6%	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	107 %	<i>46.3-17</i>	8						

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Celey D. Keene, Lab Director/Quality Manager



Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 32 @ 0"-6" (H224441-14)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/26/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/26/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/26/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/26/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9860	16.0	09/27/2022	ND	400	100	400	3.92	
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	09/26/2022	ND	192	96.2	200	1.81	
DRO >C10-C28*	77.8	10.0	09/26/2022	ND	197	98.5	200	3.63	
EXT DRO >C28-C36	14.6	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	83.8	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	91.9	% 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 33 @ 0"-6" (H224441-15)

BTEX 8021B	mg/l	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/26/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/26/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/26/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/26/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	15300	16.0	09/27/2022	ND	400	100	400	3.92	
TPH 8015M	mg/l	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	09/26/2022	ND	192	96.2	200	1.81	
DRO >C10-C28*	30.9	10.0	09/26/2022	ND	197	98.5	200	3.63	
EXT DRO >C28-C36	<10.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	89.5 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	95.6%	6 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

#### Sample ID: FS 34 @ 0"-6" (H224441-16)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/26/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/26/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/26/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/26/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	15200	16.0	09/27/2022	ND	400	100	400	3.92	
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	09/26/2022	ND	192	96.2	200	1.81	
DRO >C10-C28*	66.8	10.0	09/26/2022	ND	197	98.5	200	3.63	
EXT DRO >C28-C36	11.0	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	102 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	110 %	6 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 35 @ 0"-6" (H224441-17)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/26/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/26/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/26/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/26/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	18000	16.0	09/27/2022	ND	400	100	400	3.92	
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	09/26/2022	ND	192	96.2	200	1.81	
DRO >C10-C28*	196	10.0	09/26/2022	ND	197	98.5	200	3.63	
EXT DRO >C28-C36	46.1	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	92.5 9	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	120 %	46.3-17	8						

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 36 @ 0"-6" (H224441-18)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/26/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/26/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/26/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/26/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	101 9	% 69.9-14	0						
Chloride, SM4500Cl-B	, SM4500Cl-B mg/kg								
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	19600	16.0	09/27/2022	ND	400	100	400	3.92	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/26/2022	ND	192	96.2	200	1.81	
DRO >C10-C28*	139	10.0	09/26/2022	ND	197	98.5	200	3.63	
EXT DRO >C28-C36	33.7	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	94.0	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	115 %	46.3-17	8						

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 37 @ 0"-6" (H224441-19)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/26/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/26/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/26/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/26/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	101 %	69.9-14	0						
Chloride, SM4500Cl-B	SM4500Cl-B mg/kg								
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	36800	16.0	09/27/2022	ND	400	100	400	3.92	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/26/2022	ND	192	96.2	200	1.81	
DRO >C10-C28*	743	10.0	09/26/2022	ND	197	98.5	200	3.63	
EXT DRO >C28-C36	191	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	92.1 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	122 %	6 46.3-17	8						

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/23/2022	Sampling Date:	09/23/2022
Reported:	09/28/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Shalyn Rodriguez
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 38 @ 0"-6" (H224441-20)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/27/2022	ND	2.04	102	2.00	1.31	
Toluene*	<0.050	0.050	09/27/2022	ND	2.01	101	2.00	0.0414	
Ethylbenzene*	<0.050	0.050	09/27/2022	ND	1.92	96.2	2.00	0.414	
Total Xylenes*	<0.150	0.150	09/27/2022	ND	5.95	99.2	6.00	0.0460	
Total BTEX	<0.300	0.300	09/27/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 9	69.9-14	0						
Chloride, SM4500Cl-B	e, SM4500Cl-B mg/kg								
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	20400	16.0	09/27/2022	ND	400	100	400	3.92	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/26/2022	ND	192	96.2	200	1.81	
DRO >C10-C28*	188	10.0	09/26/2022	ND	197	98.5	200	3.63	
EXT DRO >C28-C36	47.4	10.0	09/26/2022	ND					
Surrogate: 1-Chlorooctane	90.4	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	99.1	% 46.3-17	8						

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



# **Notes and Definitions**

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

#### **Cardinal Laboratories**

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager

1	01 East Marland, Hobbs, NA (575) 393-2326 FAX (575) 3	88240 93-2476		K	0	ut	in	e											3	fot	4		
Company Name:	Etech Environmental & Safety	Solutions	s, In	2.					32	BI	LL TO	4				AN	ALYS	IS R	S REQUEST				
Project Manager:	JoelLowry						-	P.0	#:	(	Tooday	alt											
ddress: 2617	W Marland							Con	npar	ny M	idsta	erm											
ity: Hobbs	State: N	M Zip	: 88	240		+ /	_	Attn	:A	the	rt Oc	IDA											
Phone #: (575) 264-9884 Fax #: Gogd right			_	Add	ress	5:																	
Project #: 16	739 Project (	wner:	1:0	5+	ice	m	_	City	:					-	â								
roject Name:	anks CRY Inlet						_	Stat	te:		Zip:		8	15M	021E		1						
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FOR LAB USE ONLY	5	e.		T	RA.	ATRD		ľ	RES	SERV.	SAMPL	NG		-	0								
Lab I.D.	Sample I.D.	(G)RAB OR (C)O	# CONTAINERS	GROUNDWATER	WASTEWATER	OIL	SLUDGE	OTHER :	ACID/BASE:	OTHER :	DATE	TIME											
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Z	FS 2000-6"	C	1		1	1				1			1	1	V								
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19 FS	3700-6"	С	1			1				V				V	V		1								L
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September 29, 2022

JOEL LOWRY

Etech Environmental & Safety Solutions

2617 W MARLAND

HOBBS, NM 88240

**RE: TANKS CRP INLET** 

Enclosed are the results of analyses for samples received by the laboratory on 09/26/22 16:22.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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 <a href="https://www.tceq.texas.gov/field/ga/lab_accred_certif.html">www.tceq.texas.gov/field/ga/lab_accred_certif.html</a>.

Cardinal Laboratories is accreditated 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. Keine

Celey D. Keene Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 39 @ 0" - 6" (H224464-01)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	1.91	95.6	2.00	3.82	
Toluene*	<0.050	0.050	09/28/2022	ND	1.88	93.8	2.00	4.07	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.78	89.2	2.00	4.16	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.53	92.1	6.00	4.42	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	100 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12800	16.0	09/28/2022	ND	432	108	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/27/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	319	10.0	09/27/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	48.8	10.0	09/27/2022	ND					
Surrogate: 1-Chlorooctane	101 %	45.3-16	1						
Surrogate: 1-Chlorooctadecane	140 %	46.3-17	8						

### Cardinal Laboratories

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

#### Sample ID: FS 40 @ 0" - 6" (H224464-02)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	1.91	95.6	2.00	3.82	
Toluene*	<0.050	0.050	09/28/2022	ND	1.88	93.8	2.00	4.07	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.78	89.2	2.00	4.16	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.53	92.1	6.00	4.42	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 % 69.9-14		0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	20600	16.0	09/28/2022	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	09/27/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	100	10.0	09/27/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	20.8	10.0	09/27/2022	ND					
Surrogate: 1-Chlorooctane	98.6 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	123 %	46.3-17	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 41 @ 0" - 6" (H224464-03)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	1.91	95.6	2.00	3.82	
Toluene*	<0.050	0.050	09/28/2022	ND	1.88	93.8	2.00	4.07	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.78	89.2	2.00	4.16	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.53	92.1	6.00	4.42	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	101 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	18400	16.0	09/28/2022	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	09/27/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	<10.0	10.0	09/27/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	<10.0	10.0	09/27/2022	ND					
Surrogate: 1-Chlorooctane	97.0 \$	45.3-16	1						
Surrogate: 1-Chlorooctadecane	108 9	46.3-17	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 42 @ 0" - 6" (H224464-04)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	1.91	95.6	2.00	3.82	
Toluene*	<0.050	0.050	09/28/2022	ND	1.88	93.8	2.00	4.07	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.78	89.2	2.00	4.16	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.53	92.1	6.00	4.42	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12400	16.0	09/28/2022	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	09/27/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	18.6	10.0	09/27/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	<10.0	10.0	09/27/2022	ND					
Surrogate: 1-Chlorooctane	100 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	112 %	6 46.3-17	8						

#### Cardinal Laboratories

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 43 @ 0" - 6" (H224464-05)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	1.91	95.6	2.00	3.82	
Toluene*	<0.050	0.050	09/28/2022	ND	1.88	93.8	2.00	4.07	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.78	89.2	2.00	4.16	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.53	92.1	6.00	4.42	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	101 % 69.9-14		0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32800	16.0	09/28/2022	ND	432	108	400	3.77	
TPH 8015M	mg/	kg	Analyze	Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/27/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	58.4	10.0	09/27/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	15.4	10.0	09/27/2022	ND					
Surrogate: 1-Chlorooctane	102 %	45.3-16	1						
Surrogate: 1-Chlorooctadecane	123 %	46.3-17	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

#### Sample ID: FS 44 @ 0" - 6" (H224464-06)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	1.91	95.6	2.00	3.82	
Toluene*	<0.050	0.050	09/28/2022	ND	1.88	93.8	2.00	4.07	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.78	89.2	2.00	4.16	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.53	92.1	6.00	4.42	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9000	16.0	09/28/2022	ND	432	108	400	3.77	
TPH 8015M	mg/	kg	Analyze	Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/27/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	57.5	10.0	09/27/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	13.6	10.0	09/27/2022	ND					
Surrogate: 1-Chlorooctane	100 %	45.3-16	1						
Surrogate: 1-Chlorooctadecane	120 %	46.3-17	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 45 @ 0" - 6" (H224464-07)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	1.91	95.6	2.00	3.82	
Toluene*	<0.050	0.050	09/28/2022	ND	1.88	93.8	2.00	4.07	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.78	89.2	2.00	4.16	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.53	92.1	6.00	4.42	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	101 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16400	16.0	09/28/2022	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	09/27/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	166	10.0	09/27/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	31.6	10.0	09/27/2022	ND					
Surrogate: 1-Chlorooctane	97.0	45.3-16	1						
Surrogate: 1-Chlorooctadecane	136 9	46.3-17	8						

### **Cardinal Laboratories**

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

#### Sample ID: FS 46 @ 0" - 6" (H224464-08)

BTEX 8021B	mg/kg		Analyzed By: JH/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	1.91	95.6	2.00	3.82	
Toluene*	<0.050	0.050	09/28/2022	ND	1.88	93.8	2.00	4.07	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.78	89.2	2.00	4.16	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.53	92.1	6.00	4.42	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	22400	16.0	09/28/2022	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	09/27/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	55.2	10.0	09/27/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	<10.0	10.0	09/27/2022	ND					
Surrogate: 1-Chlorooctane	101 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	115 %	6 46.3-17	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

#### Sample ID: FS 47 @ 0" - 6" (H224464-09)

BTEX 8021B	mg/kg		Analyzed By: JH/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	1.91	95.6	2.00	3.82	
Toluene*	<0.050	0.050	09/28/2022	ND	1.88	93.8	2.00	4.07	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.78	89.2	2.00	4.16	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.53	92.1	6.00	4.42	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	101 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12000	16.0	09/28/2022	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	09/27/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	22.3	10.0	09/27/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	<10.0	10.0	09/27/2022	ND					
Surrogate: 1-Chlorooctane	108 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	123 %	6 46.3-17	8						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

#### Sample ID: FS 48 @ 0" - 6" (H224464-10)

BTEX 8021B	mg/kg		Analyzed By: JH/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	1.91	95.6	2.00	3.82	
Toluene*	<0.050	0.050	09/28/2022	ND	1.88	93.8	2.00	4.07	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.78	89.2	2.00	4.16	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.53	92.1	6.00	4.42	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9400	16.0	09/28/2022	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	09/27/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	227	10.0	09/27/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	48.2	10.0	09/27/2022	ND					
Surrogate: 1-Chlorooctane	100 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	124 9	46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

#### Sample ID: FS 49 @ 0" - 6" (H224464-11)

BTEX 8021B	mg/kg		Analyzed By: JH/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	1.91	95.6	2.00	3.82	
Toluene*	<0.050	0.050	09/28/2022	ND	1.88	93.8	2.00	4.07	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.78	89.2	2.00	4.16	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.53	92.1	6.00	4.42	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	14000	16.0	09/28/2022	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	09/27/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	<10.0	10.0	09/27/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	<10.0	10.0	09/27/2022	ND					
Surrogate: 1-Chlorooctane	111 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	122 %	6 46.3-17	8						

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# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 50 @ 0" - 6" (H224464-12)

BTEX 8021B	mg/l	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	2.00	100	2.00	1.72	
Toluene*	<0.050	0.050	09/28/2022	ND	1.97	98.5	2.00	1.55	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.85	92.6	2.00	0.350	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.74	95.7	6.00	0.202	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/l	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9400	16.0	09/28/2022	ND	432	108	400	3.77	
TPH 8015M	mg/l	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/27/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	<10.0	10.0	09/27/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	<10.0	10.0	09/27/2022	ND					
Surrogate: 1-Chlorooctane	97.0 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	109 %	<i>46.3-17</i>	8						

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# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: FS 51 @ 0" - 6" (H224464-13)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	2.00	100	2.00	1.72	
Toluene*	<0.050	0.050	09/28/2022	ND	1.97	98.5	2.00	1.55	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.85	92.6	2.00	0.350	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.74	95.7	6.00	0.202	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 9	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	20200	16.0	09/28/2022	ND	432	108	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/27/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	58.6	10.0	09/27/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	11.5	10.0	09/27/2022	ND					
Surrogate: 1-Chlorooctane	101 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	123 9	46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: FS 52 @ 0" - 6" (H224464-14)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	2.00	100	2.00	1.72	
Toluene*	<0.050	0.050	09/28/2022	ND	1.97	98.5	2.00	1.55	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.85	92.6	2.00	0.350	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.74	95.7	6.00	0.202	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	100 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	15000	16.0	09/28/2022	ND	432	108	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	96.3	10.0	09/28/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	18.2	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	103 %	6 45.3-16	51						
Surrogate: 1-Chlorooctadecane	130 %	6 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: FS 53 @ 0" - 6" (H224464-15)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	2.00	100	2.00	1.72	
Toluene*	<0.050	0.050	09/28/2022	ND	1.97	98.5	2.00	1.55	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.85	92.6	2.00	0.350	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.74	95.7	6.00	0.202	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	15400	16.0	09/28/2022	ND	432	108	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	189	94.5	200	1.75	
DRO >C10-C28*	150	10.0	09/28/2022	ND	213	107	200	3.85	
EXT DRO >C28-C36	26.8	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	95.8 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	115 %	6 46.3-17	8						

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# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: FS 54 @ 0" - 6" (H224464-16)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	2.00	100	2.00	1.72	
Toluene*	<0.050	0.050	09/28/2022	ND	1.97	98.5	2.00	1.55	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.85	92.6	2.00	0.350	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.74	95.7	6.00	0.202	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	100 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	10200	16.0	09/28/2022	ND	432	108	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	200	100	200	2.73	
DRO >C10-C28*	408	10.0	09/28/2022	ND	206	103	200	5.40	
EXT DRO >C28-C36	97.5	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	105 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	164 %	6 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: FS 55 @ 0" - 6" (H224464-17)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	2.00	100	2.00	1.72	
Toluene*	<0.050	0.050	09/28/2022	ND	1.97	98.5	2.00	1.55	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.85	92.6	2.00	0.350	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.74	95.7	6.00	0.202	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	99.8 9	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	13000	16.0	09/28/2022	ND	432	108	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	200	100	200	2.73	
DRO >C10-C28*	11.4	10.0	09/28/2022	ND	206	103	200	5.40	
EXT DRO >C28-C36	11.5	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	106 %	6 45.3-16	51						
Surrogate: 1-Chlorooctadecane	121 %	6 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: FS 56 @ 0" - 6" (H224464-18)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	2.00	100	2.00	1.72	
Toluene*	<0.050	0.050	09/28/2022	ND	1.97	98.5	2.00	1.55	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.85	92.6	2.00	0.350	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.74	95.7	6.00	0.202	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	14800	16.0	09/28/2022	ND	416	104	400	0.00	QM-07
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	200	100	200	2.73	
DRO >C10-C28*	381	10.0	09/28/2022	ND	206	103	200	5.40	
EXT DRO >C28-C36	80.8	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	98.8 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	121 %	6 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: FS 57 @ 0" - 6" (H224464-19)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	2.00	100	2.00	1.72	
Toluene*	<0.050	0.050	09/28/2022	ND	1.97	98.5	2.00	1.55	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.85	92.6	2.00	0.350	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.74	95.7	6.00	0.202	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	101 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	21200	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	200	100	200	2.73	
DRO >C10-C28*	26.2	10.0	09/28/2022	ND	206	103	200	5.40	
EXT DRO >C28-C36	15.9	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	<i>99.7</i> 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	115 %	6 46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/26/2022	Sampling Date:	09/26/2022
Reported:	09/29/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: FS 58 @ 0" - 6" (H224464-20)

BTEX 8021B r		kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/28/2022	ND	2.00	100	2.00	1.72	
Toluene*	<0.050	0.050	09/28/2022	ND	1.97	98.5	2.00	1.55	
Ethylbenzene*	<0.050	0.050	09/28/2022	ND	1.85	92.6	2.00	0.350	
Total Xylenes*	<0.150	0.150	09/28/2022	ND	5.74	95.7	6.00	0.202	
Total BTEX	<0.300	0.300	09/28/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	22000	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	200	100	200	2.73	
DRO >C10-C28*	249	10.0	09/28/2022	ND	206	103	200	5.40	
EXT DRO >C28-C36	63.0	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	99.6	45.3-16	1						
Surrogate: 1-Chlorooctadecane	116 %	6 46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# **Notes and Definitions**

QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

## **Cardinal Laboratories**

### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager

(575) 393-232	6 FAX (575) 393-	2476		50	U	in	e		_							_	_			1 - )	a		_
Company Name: Etech Environ	mental & Safety Sol	utions,	Inc.				1		B	ILI	LTO					AN	ALYS	IS RI	EQUE	EST	-		_
Project Manager: Joe Lo	wry						P.	0. #:	6	790	drigt	14	1										
Address: 2617 W Marland							C	ompa	ny /	Mie	Istre	m											
City: Hobbs	State: NM	Zip:	8824	40	1.		A	ttn:/	116	ert	Och	00							1				
Phone #: (575) 264-9884	Fax #:	6	bod	Aig	ht		Address:												1				
Project #: 16739	Project Own	er: M	ids	tre	hm		City:							-					1				
Project Name: Tanks CR	P Inlet						State: Zip:						8	5M	21E								
Project Location:							Phone #:						oric	801	80								
Sampler Name: Eric Moji	Impler Name: Eric Mojich						Fax #:							H	NH NH				1				
FOR LAB USE ONLY				-1-	MA	TRIX	1-	PRE	SER	V.	SAMPLI	NG	1	F	6								1
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Z FS 4000	)-6	C	1		V				1	K	_		1	1	1								1
3 FS 41e (	)-6	C	1	-	V		_		1	F	>	_	1	1	1	_	-	-	-	-		-	4
4 FS 420 C	)-6	C	1	-	1		-		1	K	_		V	1	1			-				-	+
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CEC ILLO	<u>)-0</u>	6	H	+	V	$\left  \right $	+		1	+	>		1	1	1		+-	+	+	+	+	-	+
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LEASE NOTE: Liability and Damages. Cardinal's liability	and client's exclusive remedy fo	any claim	ariting	whethe	r basec	l in cont	ract or to	rt, shell	be ämite	id to the	amount paid	by the client for	the	V		_	-	-	-	-			-
hatyses. All claims including those for negligence and a prvice. In no event shall Cardinal be liable for incidential	y onver cause whatsoever shall be r consequential damages, includ	ing without	i universit	n, bush	mages int	e waang	and ree ns, 1000 (	of use, o	r loss of	l prolite	incurred by cl	compression of a lient, its subsidia	Ne appace										
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Page 119 of 299

Page 23 of 24

Released to Imaging: 12/2/2024 3:30:35 PM

101 East Marland, Hobbs, NM 88 (575) 393-2326 FAX (575) 393-2	240 476		R	00	ti	ne										2 .	F2		
Company Name: Etech Environmental & Safety Solu	tions, I	inc.						BI	LL TO		ANALYSIS REQUEST								
Project Manager: Joe Lowry						F	P.O. #: Good night												
Address: 2617 W Marland						C	Com	pany M	idstri	am									
City: Hobbs State: NM	Zip: 8	382	40			A	ttn	Albe	t Oc	hoa									
Phone #: (575) 264-9884 Fax #:	Good	da	igh	17		A	dd	ress:											
Project #: 16739 Project Owne	r: Mie	ds	te	60		C	lity												
Project Name: Tunks CRP Inlet						s	stat	e:	Zip:			5M)	218						
Project Location:						P	ho	ne #:			orio	801	(80)						
Sampler Name: Eric Molica						F	ax	#:			Ğ	H	EX						
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Received by OCD: 11/1/2024 12:25:32 PM



October 03, 2022

JOEL LOWRY Etech Environmental & Safety Solutions 2617 W MARLAND HOBBS, NM 88240

**RE: TANKS CRP INLET** 

Enclosed are the results of analyses for samples received by the laboratory on 09/27/22 14:48.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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 <a href="https://www.tceq.texas.gov/field/qa/lab_accred_certif.html">www.tceq.texas.gov/field/qa/lab_accred_certif.html</a>.

Cardinal Laboratories is accreditated 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. Keine

Celey D. Keene Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/26/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: FS 59 @ 0"-6" (H224482-01)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.08	104	2.00	4.40	
Toluene*	<0.050	0.050	09/29/2022	ND	2.01	100	2.00	2.94	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	1.89	94.4	2.00	2.74	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	5.84	97.3	6.00	2.29	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	15400	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	62.5	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	12.9	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	90.3 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	109 %	6.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/26/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: FS 60 @ 0"-6" (H224482-02)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.08	104	2.00	4.40	
Toluene*	<0.050	0.050	09/29/2022	ND	2.01	100	2.00	2.94	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	1.89	94.4	2.00	2.74	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	5.84	97.3	6.00	2.29	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12000	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	74.1	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	18.5	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	90.2 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	106 %	6 46.3-17	8						

## Cardinal Laboratories

### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

### Sample ID: FS 61 @ 0"-6" (H224482-03)

BTEX 8021B	mg/kg		Analyzed By: JH/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.08	104	2.00	4.40	
Toluene*	<0.050	0.050	09/29/2022	ND	2.01	100	2.00	2.94	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	1.89	94.4	2.00	2.74	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	5.84	97.3	6.00	2.29	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16200	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	16.7	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	<10.0	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	94.8 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	105 %	6 46.3-17	8						

## Cardinal Laboratories

### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/26/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: FS 62 @ 0"-6" (H224482-04)

BTEX 8021B	mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	101 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	11700	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	70.7	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	18.7	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	88.3 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	101 %	6 46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: FS 63 @ 0"-6" (H224482-05)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12900	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	<10.0	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	<10.0	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	91.2 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	103 %	46.3-17	8						

### Cardinal Laboratories

### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

## Sample ID: FS 64 @ 0"-6" (H224482-06)

BTEX 8021B	mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	19400	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	131	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	35.2	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	82.9 %	45.3-16	1						
Surrogate: 1-Chlorooctadecane	95.3 %	46.3-17	8						

## **Cardinal Laboratories**

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

## Sample ID: FS 65 @ 0"-6" (H224482-07)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	19200	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	93.9	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	25.2	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	88.9 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	102 %	46.3-17	8						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: FS 66 @ 0"-6" (H224482-08)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	10900	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	51.8	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	13.9	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	94.6 %	45.3-16	1						
Surrogate: 1-Chlorooctadecane	113 %	6 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

## Sample ID: FS 67 @ 0"-6" (H224482-09)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	13200	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	<10.0	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	<10.0	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	84.3 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	94.0 9	46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

### Sample ID: FS 68 @ 0"-6" (H224482-10)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	20800	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	374	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	76.4	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	101 %	45.3-16	1						
Surrogate: 1-Chlorooctadecane	143 %	46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

## Sample ID: FS 69 @ 0"-6" (H224482-11)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 9	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	14600	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	39.7	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	14.9	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	97.8	45.3-16	1						
Surrogate: 1-Chlorooctadecane	114 %	6 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

## Sample ID: FS 70 @ 0"-6" (H224482-12)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	24400	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	123	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	38.9	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	87.1	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	109 9	46.3-17	8						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

## Sample ID: FS 71 @ 0"-6" (H224482-13)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	22200	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	11.5	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	<10.0	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	93.3 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	104 %	46.3-17	8						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: FS 72 @ 0"-6" (H224482-14)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	19600	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	689	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	241	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	95.3 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	135 %	6 46.3-17	8						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

## Sample ID: FS 73 @ 0"-6" (H224482-15)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 9	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	11800	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	48.4	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	24.1	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	89.1	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	103 9	46.3-17	8						

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

### Sample ID: FS 74 @ 0"-6" (H224482-16)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	18000	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	179	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	46.2	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	98.0 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	128 %	6 46.3-17	8						

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### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

## Sample ID: FS 75 @ 0"-6" (H224482-17)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 9	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	19200	16.0	09/28/2022	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	45.2	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	13.5	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	88.1	45.3-16	1						
Surrogate: 1-Chlorooctadecane	104 9	46.3-17	8						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

## Sample ID: FS 76 @ 0"-6" (H224482-18)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	17400	16.0	09/28/2022	ND	432	108	400	0.00	QM-07
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	14.6	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	<10.0	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	95.3 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	106 %	6 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

## Sample ID: FS 77 @ 0"-6" (H224482-19)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	15600	16.0	09/28/2022	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/28/2022	ND	196	97.8	200	2.77	
DRO >C10-C28*	26.2	10.0	09/28/2022	ND	185	92.5	200	1.19	
EXT DRO >C28-C36	<10.0	10.0	09/28/2022	ND					
Surrogate: 1-Chlorooctane	94.0 %	45.3-16	1						
Surrogate: 1-Chlorooctadecane	106 %	6 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

## Sample ID: FS 78 @ 0"-6" (H224482-20)

BTEX 8021B	mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 9	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	13000	16.0	09/28/2022	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/30/2022	ND	212	106	200	0.201	
DRO >C10-C28*	65.4	10.0	09/30/2022	ND	221	111	200	0.499	
EXT DRO >C28-C36	16.1	10.0	09/30/2022	ND					
Surrogate: 1-Chlorooctane	88.6	45.3-16	1						
Surrogate: 1-Chlorooctadecane	95.4	46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

# Sample ID: NW 1 (H224482-21)

BTEX 8021B	mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 % 69.9-1-		0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	17000	16.0	09/28/2022	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/30/2022	ND	212	106	200	0.201	
DRO >C10-C28*	83.5	10.0	09/30/2022	ND	221	111	200	0.499	
EXT DRO >C28-C36	25.7	10.0	09/30/2022	ND					
Surrogate: 1-Chlorooctane	93.6	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	99.8	% 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

# Sample ID: NW 2 (H224482-22)

BTEX 8021B	mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	104 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	15800	16.0	09/28/2022	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/30/2022	ND	212	106	200	0.201	
DRO >C10-C28*	51.2	10.0	09/30/2022	ND	221	111	200	0.499	
EXT DRO >C28-C36	14.0	10.0	09/30/2022	ND					
Surrogate: 1-Chlorooctane	80.4 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	85.7 9	46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

## Sample ID: NW 3 (H224482-23)

BTEX 8021B	mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/29/2022	ND	2.00	99.8	2.00	0.813	
Toluene*	<0.050	0.050	09/29/2022	ND	2.19	109	2.00	1.12	
Ethylbenzene*	<0.050	0.050	09/29/2022	ND	2.00	100	2.00	1.32	
Total Xylenes*	<0.150	0.150	09/29/2022	ND	6.02	100	6.00	1.03	
Total BTEX	<0.300	0.300	09/29/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	13400	16.0	09/28/2022	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/30/2022	ND	212	106	200	0.201	
DRO >C10-C28*	34.7	10.0	09/30/2022	ND	221	111	200	0.499	
EXT DRO >C28-C36	<10.0	10.0	09/30/2022	ND					
Surrogate: 1-Chlorooctane	86.3	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	91.4 9	% 46.3-17	8						

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Celey D. Keene, Lab Director/Quality Manager


# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

# Sample ID: NW 4 (H224482-24)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/30/2022	ND	2.03	101	2.00	6.73	
Toluene*	<0.050	0.050	09/30/2022	ND	2.19	110	2.00	5.86	
Ethylbenzene*	<0.050	0.050	09/30/2022	ND	2.02	101	2.00	5.16	
Total Xylenes*	<0.150	0.150	09/30/2022	ND	6.10	102	6.00	5.69	
Total BTEX	<0.300	0.300	09/30/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12000	16.0	09/28/2022	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/30/2022	ND	212	106	200	0.201	
DRO >C10-C28*	685	10.0	09/30/2022	ND	221	111	200	0.499	
EXT DRO >C28-C36	186	10.0	09/30/2022	ND					
Surrogate: 1-Chlorooctane	93.8 9	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	128 %	46.3-17	8						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

# Sample ID: NW 5 (H224482-25)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/30/2022	ND	2.03	101	2.00	6.73	
Toluene*	<0.050	0.050	09/30/2022	ND	2.19	110	2.00	5.86	
Ethylbenzene*	<0.050	0.050	09/30/2022	ND	2.02	101	2.00	5.16	
Total Xylenes*	<0.150	0.150	09/30/2022	ND	6.10	102	6.00	5.69	
Total BTEX	<0.300	0.300	09/30/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6160	16.0	09/28/2022	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/30/2022	ND	212	106	200	0.201	
DRO >C10-C28*	648	10.0	09/30/2022	ND	221	111	200	0.499	
EXT DRO >C28-C36	175	10.0	09/30/2022	ND					
Surrogate: 1-Chlorooctane	87.6	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	116 9	46.3-17	8						

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

# Sample ID: EW 1 (H224482-26)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/30/2022	ND	2.03	101	2.00	6.73	
Toluene*	<0.050	0.050	09/30/2022	ND	2.19	110	2.00	5.86	
Ethylbenzene*	<0.050	0.050	09/30/2022	ND	2.02	101	2.00	5.16	
Total Xylenes*	<0.150	0.150	09/30/2022	ND	6.10	102	6.00	5.69	
Total BTEX	<0.300	0.300	09/30/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	100 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	7200	16.0	09/28/2022	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/30/2022	ND	212	106	200	0.201	
DRO >C10-C28*	36.6	10.0	09/30/2022	ND	221	111	200	0.499	
EXT DRO >C28-C36	10.3	10.0	09/30/2022	ND					
Surrogate: 1-Chlorooctane	86.3 9	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	93.1 9	% 46.3-17	8						

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

# Sample ID: EW 2 (H224482-27)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/30/2022	ND	2.03	101	2.00	6.73	
Toluene*	<0.050	0.050	09/30/2022	ND	2.19	110	2.00	5.86	
Ethylbenzene*	<0.050	0.050	09/30/2022	ND	2.02	101	2.00	5.16	
Total Xylenes*	<0.150	0.150	09/30/2022	ND	6.10	102	6.00	5.69	
Total BTEX	<0.300	0.300	09/30/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	11100	16.0	09/28/2022	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/30/2022	ND	212	106	200	0.201	
DRO >C10-C28*	43.0	10.0	09/30/2022	ND	221	111	200	0.499	
EXT DRO >C28-C36	10.8	10.0	09/30/2022	ND					
Surrogate: 1-Chlorooctane	88.9 9	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	95.0 \$	46.3-17	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: SW 3 (H224482-28)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/30/2022	ND	2.03	101	2.00	6.73	
Toluene*	<0.050	0.050	09/30/2022	ND	2.19	110	2.00	5.86	
Ethylbenzene*	<0.050	0.050	09/30/2022	ND	2.02	101	2.00	5.16	
Total Xylenes*	<0.150	0.150	09/30/2022	ND	6.10	102	6.00	5.69	
Total BTEX	<0.300	0.300	09/30/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 9	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	17200	16.0	09/28/2022	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/30/2022	ND	212	106	200	0.201	
DRO >C10-C28*	105	10.0	09/30/2022	ND	221	111	200	0.499	
EXT DRO >C28-C36	27.8	10.0	09/30/2022	ND					
Surrogate: 1-Chlorooctane	93.8	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	101 9	46.3-17	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

# Sample ID: SW 4 (H224482-29)

BTEX 8021B	mg/kg		Analyze	Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/30/2022	ND	2.03	101	2.00	6.73	
Toluene*	<0.050	0.050	09/30/2022	ND	2.19	110	2.00	5.86	
Ethylbenzene*	<0.050	0.050	09/30/2022	ND	2.02	101	2.00	5.16	
Total Xylenes*	<0.150	0.150	09/30/2022	ND	6.10	102	6.00	5.69	
Total BTEX	<0.300	0.300	09/30/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16200	16.0	09/28/2022	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/30/2022	ND	212	106	200	0.201	
DRO >C10-C28*	14.0	10.0	09/30/2022	ND	221	111	200	0.499	
EXT DRO >C28-C36	<10.0	10.0	09/30/2022	ND					
Surrogate: 1-Chlorooctane	87.4 9	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	91.1 9	46.3-17	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

### Sample ID: SW 5 (H224482-30)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/30/2022	ND	2.03	101	2.00	6.73	
Toluene*	<0.050	0.050	09/30/2022	ND	2.19	110	2.00	5.86	
Ethylbenzene*	<0.050	0.050	09/30/2022	ND	2.02	101	2.00	5.16	
Total Xylenes*	<0.150	0.150	09/30/2022	ND	6.10	102	6.00	5.69	
Total BTEX	<0.300	0.300	09/30/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	19400	16.0	09/28/2022	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/30/2022	ND	212	106	200	0.201	
DRO >C10-C28*	262	10.0	09/30/2022	ND	221	111	200	0.499	
EXT DRO >C28-C36	111	10.0	09/30/2022	ND					
Surrogate: 1-Chlorooctane	99.9 9	% 45.3-16	1						
Surrogate: 1-Chlorooctadecane	108 %	46.3-17	8						

#### **Cardinal Laboratories**

#### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/27/2022	Sampling Date:	09/27/2022
Reported:	10/03/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	Goodnight Midstream - Eddy Co NN		

#### Sample ID: FS 79 @ 0"-6" (H224482-31)

BTEX 8021B	mg/	kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/30/2022	ND	2.03	101	2.00	6.73	
Toluene*	<0.050	0.050	09/30/2022	ND	2.19	110	2.00	5.86	
Ethylbenzene*	<0.050	0.050	09/30/2022	ND	2.02	101	2.00	5.16	
Total Xylenes*	<0.150	0.150	09/30/2022	ND	6.10	102	6.00	5.69	
Total BTEX	<0.300	0.300	09/30/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	18600	16.0	09/28/2022	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/30/2022	ND	212	106	200	0.201	
DRO >C10-C28*	128	10.0	09/30/2022	ND	221	111	200	0.499	
EXT DRO >C28-C36	39.0	10.0	09/30/2022	ND					
Surrogate: 1-Chlorooctane	96.5 9	45.3-16	1						
Surrogate: 1-Chlorooctadecane	104 %	46.3-17	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# **Notes and Definitions**

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

#### **Cardinal Laboratories**

#### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager

	(575) 393-2326 FA	X (575) 393-24	76	_		_				-										_	1	•4	4				
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1	East	Marland,	Hobbs,	NM	88240
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FORM-000 **Revision 1.0** 

Released to Imaging: 12/2/2024 3:30:35 PM

AI	RDINAL LABOR	ATORIES bbs, NM 88240 (575) 393-2476							Ţ		-01-		5101			3	+4	REG	UES	
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FORM-006

e	ARD	INA	LLAB	ORAT	OR	IES
	101	East	Marland,	Hobbs,	NM	88240

<b>Company Name</b>	: Etech Environment	al & Safety Solu	tions	, Inc							1	3/1	LTO		-			AN	ALYS	IS R	EQU	ST		
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Address: 261	7 W Marland	.9							Co	mpa	nv	M	Jete				e							
City: Hobbs		State: NM	Zip	882	240		_		Att	n: /	411	ar	+ 0,1	a.	St	4	÷							
Phone #: (575	5) 264-9884	Fax #:	6	-	J.	in	14	-	Ad	dres	S:	ic i	1 001	-h	R	2	200							
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September 30, 2022

JOEL LOWRY

Etech Environmental & Safety Solutions

2617 W MARLAND

HOBBS, NM 88240

**RE: TANKS CRP INLET** 

Enclosed are the results of analyses for samples received by the laboratory on 09/29/22 15:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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 <a href="https://www.tceq.texas.gov/field/ga/lab_accred_certif.html">www.tceq.texas.gov/field/ga/lab_accred_certif.html</a>.

Cardinal Laboratories is accreditated 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. Keine

Celey D. Keene Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/29/2022	Sampling Date:	09/29/2022
Reported:	09/30/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

# Sample ID: FS 37 @ 7"-12" (H224537-01)

Chloride, SM4500Cl-B	mg/	kg	Analyzed	By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1500	16.0	09/30/2022	ND	416	104	400	0.00	

# Sample ID: FS 38 @ 7"-12" (H224537-02)

Chloride, SM4500Cl-B	mg	/kg	Analyze	Analyzed By: GM								
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier			
Chloride	976	16.0	09/30/2022	ND	416	104	400	0.00				

# Sample ID: FS 68 @ 7"-12" (H224537-03)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1880	16.0	09/30/2022	ND	416	104	400	0.00	

# Sample ID: FS 70 @ 7"-12" (H224537-04)

Chloride, SM4500Cl-B	mg/l	kg	Analyzed	By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4000	16.0	09/30/2022	ND	416	104	400	0.00	

#### **Cardinal Laboratories**

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/29/2022	Sampling Date:	09/29/2022
Reported:	09/30/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

#### Sample ID: FS 71 @ 7"-12" (H224537-05)

Chloride, SM4500CI-B	mg/	'kg	Analyzed	l By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3520	16.0	09/30/2022	ND	416	104	400	0.00	

# Sample ID: FS 17 @ 7"-12" (H224537-06)

TPH 8015M	mg/k	(g	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/30/2022	ND	220	110	200	5.38	
DRO >C10-C28*	<10.0	10.0	09/30/2022	ND	206	103	200	7.03	
EXT DRO >C28-C36	<10.0	10.0	09/30/2022	ND					
Surrogate: 1-Chlorooctane	68.6 %	6 45.3-16	1						
Surrogate: 1-Chlorooctadecane	76.9 %	6 46.3-17	8						

#### **Cardinal Laboratories**

*=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



# **Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

#### Cardinal Laboratories

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager

Company Name:	Etech Environmenta	al & Safety Solution	ms,	Inc.				T		B	IL	LTO						ANA	LYSIS	S RE	QUES	Т		
Project Manager:	Joel Lou	Prv						Ρ.	0. #:	Go	od	night											T	T
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ARDINAL LABORATORIES



October 11, 2022

JOEL LOWRY Etech Environmental & Safety Solutions 2617 W MARLAND HOBBS, NM 88240

**RE: TANKS CRP INLET** 

Enclosed are the results of analyses for samples received by the laboratory on 10/10/22 14:48.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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 <a href="https://www.tceq.texas.gov/field/ga/lab_accred_certif.html">www.tceq.texas.gov/field/ga/lab_accred_certif.html</a>.

Cardinal Laboratories is accreditated 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. Keine

Celey D. Keene Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	10/10/2022	Sampling Date:	10/10/2022
Reported:	10/11/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

# Sample ID: FS 40 @ 7"- 12" (H224742-01)

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	10/11/2022	ND	400	100	400	3.92	

# Sample ID: FS 43 @ 7"- 12" (H224742-02)

Chloride, SM4500CI-B	mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1710	16.0	10/11/2022	ND	400	100	400	3.92	

#### Sample ID: FS 46 @ 7"- 12" (H224742-03)

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	10/11/2022	ND	400	100	400	3.92	

# Sample ID: FS 51 @ 7"- 12" (H224742-04)

Chloride, SM4500Cl-B	mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6000	16.0	10/11/2022	ND	400	100	400	3.92	

#### **Cardinal Laboratories**

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	10/10/2022	Sampling Date:	10/10/2022
Reported:	10/11/2022	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - EDDY CO NN		

#### Sample ID: FS 57 @ 7"- 12" (H224742-05)

Chloride, SM4500Cl-B mg/kg		kg	Analyzed	l By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9200	16.0	10/11/2022	ND	400	100	400	3.92	

# Sample ID: FS 58 @ 7"- 12" (H224742-06)

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	10/11/2022	ND	400	100	400	3.92	

#### Cardinal Laboratories

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# **Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

#### Cardinal Laboratories

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager

Company Name: Etech Environmental & Safety Solutions. Inc.	1031	[] []	II TO	8		_	ANAL YSIS	REOUR	TZ	····
Project Manager: Tool Journal		P.O. #: (	End It	1	1					
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City: Hobbs State: NM Zip: 88240		Attn: Alb	ert Ochen							
Phone #: (575) 264-9884 Fax #: Gooda	: alt	Address:	ent estimate							
Project #: 16739 Project Owner: Midst	1911	City:	- +-	1						
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satyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unlew srvice. In no ovent shall Cardinal be liable for incluential or consequential demages, including willhout limitation, bus	t made in writing ar úneas interruptions,	nd received by Cardinal v , Ions difuse, or Ions of p	within 30 days after completion o relie incurred by client, its subsi	if the opplica diaties,	able					
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Page 5 of 5



February 22, 2023

JOEL LOWRY Etech Environmental & Safety Solutions 2617 W MARLAND HOBBS, NM 88240

**RE: TANKS CRP INLET** 

Enclosed are the results of analyses for samples received by the laboratory on 02/16/23 15:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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 <a href="https://www.tceq.texas.gov/field/qa/lab_accred_certif.html">www.tceq.texas.gov/field/qa/lab_accred_certif.html</a>.

Cardinal Laboratories is accreditated 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. Keine

Celey D. Keene Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	02/16/2023	Sampling Date:	02/15/2023
Reported:	02/22/2023	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - LEA CO NM		

# Sample ID: NH 1 @ 1' (H230744-01)

BTEX 8021B	mg/	kg	Analyze	d By: ZZZ					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/21/2023	ND	2.10	105	2.00	2.72	
Toluene*	<0.050	0.050	02/21/2023	ND	2.12	106	2.00	1.99	
Ethylbenzene*	<0.050	0.050	02/21/2023	ND	2.32	116	2.00	0.362	
Total Xylenes*	<0.150	0.150	02/21/2023	ND	7.00	117	6.00	1.59	
Total BTEX	<0.300	0.300	02/21/2023	ND					
Surrogate: 4-Bromofluorobenzene (PID	103 9	71.5-13	4						
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	02/21/2023	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	02/21/2023	ND	209	104	200	6.03	
DRO >C10-C28*	<10.0	10.0	02/21/2023	ND	230	115	200	5.27	
EXT DRO >C28-C36	<10.0	10.0	02/21/2023	ND					
Surrogate: 1-Chlorooctane	80.9	% 48.2-13	4						
Surrogate: 1-Chlorooctadecane	92.4	% 49.1-14	8						

#### Cardinal Laboratories

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	02/16/2023	Sampling Date:	02/15/2023
Reported:	02/22/2023	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - LEA CO NM		

#### Sample ID: NH 2 @ 1' (H230744-02)

BTEX 8021B	mg/	kg	Analyze	d By: ZZZ					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/21/2023	ND	2.10	105	2.00	2.72	
Toluene*	<0.050	0.050	02/21/2023	ND	2.12	106	2.00	1.99	
Ethylbenzene*	<0.050	0.050	02/21/2023	ND	2.32	116	2.00	0.362	
Total Xylenes*	<0.150	0.150	02/21/2023	ND	7.00	117	6.00	1.59	
Total BTEX	<0.300	0.300	02/21/2023	ND					
Surrogate: 4-Bromofluorobenzene (PID	107 9	% 71.5-13	4						
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	02/21/2023	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	02/21/2023	ND	209	104	200	6.03	
DRO >C10-C28*	<10.0	10.0	02/21/2023	ND	230	115	200	5.27	
EXT DRO >C28-C36	<10.0	10.0	02/21/2023	ND					
Surrogate: 1-Chlorooctane	88.7	% 48.2-13	4						
Surrogate: 1-Chlorooctadecane	101 9	49.1-14	8						

#### **Cardinal Laboratories**

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	02/16/2023	Sampling Date:	02/15/2023
Reported:	02/22/2023	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - LEA CO NM		

### Sample ID: EH 1 @ 1' (H230744-03)

BTEX 8021B	mg/	'kg	Analyze	d By: ZZZ					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/21/2023	ND	2.10	105	2.00	2.72	
Toluene*	<0.050	0.050	02/21/2023	ND	2.12	106	2.00	1.99	
Ethylbenzene*	<0.050	0.050	02/21/2023	ND	2.32	116	2.00	0.362	
Total Xylenes*	<0.150	0.150	02/21/2023	ND	7.00	117	6.00	1.59	
Total BTEX	<0.300	0.300	02/21/2023	ND					
Surrogate: 4-Bromofluorobenzene (PID	116 % 71.5-13		4						
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	02/21/2023	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	02/21/2023	ND	231	116	200	7.25	
DRO >C10-C28*	<10.0	10.0	02/21/2023	ND	225	113	200	3.46	
EXT DRO >C28-C36	<10.0	10.0	02/21/2023	ND					
Surrogate: 1-Chlorooctane	108 9	48.2-13	4						
Surrogate: 1-Chlorooctadecane	107 9	% 49.1-14	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	02/16/2023	Sampling Date:	02/15/2023
Reported:	02/22/2023	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - LEA CO NM		

#### Sample ID: EH 2 @ 1' (H230744-04)

BTEX 8021B	mg/	kg	Analyze	d By: ZZZ					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/21/2023	ND	2.10	105	2.00	2.72	
Toluene*	<0.050	0.050	02/21/2023	ND	2.12	106	2.00	1.99	
Ethylbenzene*	<0.050	0.050	02/21/2023	ND	2.32	116	2.00	0.362	
Total Xylenes*	<0.150	0.150	02/21/2023	ND	7.00	117	6.00	1.59	
Total BTEX	<0.300	0.300	02/21/2023	ND					
Surrogate: 4-Bromofluorobenzene (PID	105 9	6 71.5-13	4						
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	02/21/2023	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	02/21/2023	ND	231	116	200	7.25	
DRO >C10-C28*	<10.0	10.0	02/21/2023	ND	225	113	200	3.46	
EXT DRO >C28-C36	<10.0	10.0	02/21/2023	ND					
Surrogate: 1-Chlorooctane	106 9	48.2-13	4						
Surrogate: 1-Chlorooctadecane	105 9	49.1-14	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	02/16/2023	Sampling Date:	02/15/2023
Reported:	02/22/2023	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - LEA CO NM		

#### Sample ID: SH 1 @ 1' (H230744-05)

BTEX 8021B	mg/	kg	Analyze	d By: ZZZ					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/21/2023	ND	2.10	105	2.00	2.72	
Toluene*	<0.050	0.050	02/21/2023	ND	2.12	106	2.00	1.99	
Ethylbenzene*	<0.050	0.050	02/21/2023	ND	2.32	116	2.00	0.362	
Total Xylenes*	<0.150	0.150	02/21/2023	ND	7.00	117	6.00	1.59	
Total BTEX	<0.300	0.300	02/21/2023	ND					
Surrogate: 4-Bromofluorobenzene (PID	110 %	6 71.5-13	4						
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	02/21/2023	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	02/21/2023	ND	231	116	200	7.25	
DRO >C10-C28*	<10.0	10.0	02/21/2023	ND	225	113	200	3.46	
EXT DRO >C28-C36	<10.0	10.0	02/21/2023	ND					
Surrogate: 1-Chlorooctane	106 %	6 48.2-13	4						
Surrogate: 1-Chlorooctadecane	105 %	6 49.1-14	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	02/16/2023	Sampling Date:	02/15/2023
Reported:	02/22/2023	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - LEA CO NM		

#### Sample ID: SH 2 @ 1' (H230744-06)

BTEX 8021B	mg/	kg	Analyze	d By: ZZZ					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/21/2023	ND	2.10	105	2.00	2.72	
Toluene*	<0.050	0.050	02/21/2023	ND	2.12	106	2.00	1.99	
Ethylbenzene*	<0.050	0.050	02/21/2023	ND	2.32	116	2.00	0.362	
Total Xylenes*	<0.150	0.150	02/21/2023	ND	7.00	117	6.00	1.59	
Total BTEX	<0.300	0.300	02/21/2023	ND					
Surrogate: 4-Bromofluorobenzene (PID	115 %	6 71.5-13	4						
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	02/21/2023	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	02/21/2023	ND	231	116	200	7.25	
DRO >C10-C28*	<10.0	10.0	02/21/2023	ND	225	113	200	3.46	
EXT DRO >C28-C36	<10.0	10.0	02/21/2023	ND					
Surrogate: 1-Chlorooctane	108 9	48.2-13	4						
Surrogate: 1-Chlorooctadecane	110 %	6 49.1-14	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	02/16/2023	Sampling Date:	02/15/2023
Reported:	02/22/2023	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - LEA CO NM		

#### Sample ID: WH 1 @ 1' (H230744-07)

BTEX 8021B	mg/	kg	Analyze	d By: ZZZ					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/21/2023	ND	2.10	105	2.00	2.72	
Toluene*	<0.050	0.050	02/21/2023	ND	2.12	106	2.00	1.99	
Ethylbenzene*	<0.050	0.050	02/21/2023	ND	2.32	116	2.00	0.362	
Total Xylenes*	<0.150	0.150	02/21/2023	ND	7.00	117	6.00	1.59	
Total BTEX	<0.300	0.300	02/21/2023	ND					
Surrogate: 4-Bromofluorobenzene (PID	-Bromofluorobenzene (PID 112 % 71.5-1		4						
Chloride, SM4500Cl-B	ide, SM4500Cl-B mg/kg								
Analyte	Result Reporting Limit		Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	02/21/2023	ND	416	104	400	3.92	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/21/2023	ND	231	116	200	7.25	
DRO >C10-C28*	<10.0	10.0	02/21/2023	ND	225	113	200	3.46	
EXT DRO >C28-C36	<10.0	10.0	02/21/2023	ND					
Surrogate: 1-Chlorooctane	108 %	6 48.2-13	4						
Surrogate: 1-Chlorooctadecane	109 %	6 49.1-14	8						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	02/16/2023	Sampling Date:	02/15/2023
Reported:	02/22/2023	Sampling Type:	Soil
Project Name:	TANKS CRP INLET	Sampling Condition:	Cool & Intact
Project Number:	16739	Sample Received By:	Tamara Oldaker
Project Location:	GOODNIGHT MIDSTREAM - LEA CO NM		

#### Sample ID: WH 2 @ 1' (H230744-08)

BTEX 8021B	mg/	kg	Analyze	d By: ZZZ					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/21/2023	ND	2.10	105	2.00	2.72	
Toluene*	<0.050	0.050	02/21/2023	ND	2.12	106	2.00	1.99	
Ethylbenzene*	<0.050	0.050	02/21/2023	ND	2.32	116	2.00	0.362	
Total Xylenes*	<0.150	0.150	02/21/2023	ND	7.00	117	6.00	1.59	
Total BTEX	<0.300	0.300	02/21/2023	ND					
Surrogate: 4-Bromofluorobenzene (PID	ngate: 4-Bromofluorobenzene (PID 111 % 71.5-13		4						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: AC					
Analyte	Result Reporting Limit		Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	02/21/2023	ND	416	104	400	3.92	
TPH 8015M	8015M mg/kg								
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/21/2023	ND	231	116	200	7.25	
DRO >C10-C28*	<10.0	10.0	02/21/2023	ND	225	113	200	3.46	
EXT DRO >C28-C36	<10.0	10.0	02/21/2023	ND					
Surrogate: 1-Chlorooctane	106 9	48.2-13	4						
Surrogate: 1-Chlorooctadecane	107 9	49.1-14	8						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# **Notes and Definitions**

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

#### **Cardinal Laboratories**

#### *=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager

ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240

Company Name: Etech Environmental & Safety Solutions, Inc.						BILL TO										-	ANA	LYS	IS R	EQU	EST					
Project Manager: Joe Lowry						P.O. #:										Ι	T									
Address: 261	ddress: 2617 W Marland						Company Acordia by																			
City: Hobbs	State: NM	Zip	: 88	240				Attn	A	ther	f	och	ra													
Phone #: (575	5) 264-9884 Fax #: _						-	Add	ress	:	. h															
Project #: 16	739 Project Owne	r:G	coa	A.4	28			City						1				1	1		1					
Project Name:	Tanks CRP Intel	~		-	-			State	e:		Zip					(WS	18									
Project Location	: Rural IPA CO. Line							Pho	ne il	t:					orid	301	803									
Sampler Name:	Mixiel Roman				_		-	Fax	#:						ch	H	EX					1				
FOR LAB USE ONLY	Sect Principle				M	ATRI	x	P	RES	ERV.		SAMPL	ING			F	BT									
Lab I.D. HZ36744	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	GROUNDWATER	WASTEWATER	OIL	SLUDGE	OTHER :		OTHER :		DATE	п	ME	Ŧ				ž							
1	NHIGI	2	)		1	K				1	21	5/23	04'	00	X	X	X		-		-	-	-	-		-
2	NH2Q1	1	1		19	1					2	15 23	09	:10	X	×	x		1	-	-	-	-	-		-
3	EALCI	0	1		-	(					2	15/23	09	20	X	X	X	-	-		-	-	-	-		-
4	EN2 CI	6	1			N		+	-		2	15/23	09	:30	X	X	X	-	-	-	-	-	-	-		-
5	SHIGI	G	1		_	X		4	-	8	2	15/13	10	:00	X	X	15	-	+	+	+	-	-	-	-	-
4	SKI (M)	Ø	P.		-			-	+	-	7	15125	10:	10	X	X		+	+	+	+	+	-	+	-	+
7	WAIDI	4	1	$\vdash$			-	+	+	+	2	11512	10.	10	X	L	1	-	+	+	+	+	-	+	+	+
8	MULMI	4	1		-	y	-	-	+		12/	15 2	110	.70	*	X	X	-	+	+-	+	+	+	+	+	+
		+	⊢	$\vdash$	-	-			+		⊢		+			-	-	+	+	+	+	+	+	+	+	+
PLEASE NOTE: Liability an analyses. All claims Includin service. In no event shall Ci- affiliates or successfors arise Relinquished By Relinquished By Delivered By: Sampler - UPS	d Damages. Cardinal's liability and client's exclusive remody for ng those for negligence and any other cause whatbower shall be ardinal be liable for incidential or consequential damages, includie gout of or related to the performance of services hereunder by Date:	any chai deama g witho Cardina 3 Re (( Re 4	n arisi d wuw ut limit ceiv ceiv	ng whet ed union ation, bu rdless o ved I ved I	A more than the term of term o	ed in co e in will interrup er such le Co int es	ontract ing and stors, is claim in claim in the store of	or tort, s recession set of us based	hell be d by C so, or k upon r C C	HECH	(ED tials)	emount po to days all sourced by re stated of BY:	id by the or complex client, its complex criteria is second or client, its complex or Photo Fax REM	client for then of the subsidiar otherwise ne Result LARKS	the example of the applications on the applications of the applica		es D es D s and	I No No	Add Add	I Phon I Fax # OC to J	e #: : pm@	etech	env.co	em.		



September 18, 2023

JOEL LOWRY Etech Environmental & Safety Solutions 2617 W MARLAND HOBBS, NM 88240

RE: TANKS CRP TK - 111 WATER LEG RELEASE

Enclosed are the results of analyses for samples received by the laboratory on 09/13/23 14:41.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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 <a href="https://www.tceq.texas.gov/field/qa/lab_accred_certif.html">www.tceq.texas.gov/field/qa/lab_accred_certif.html</a>.

Cardinal Laboratories is accreditated 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. Keine

Celey D. Keene Lab Director/Quality Manager



# Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/13/2023	Sampling Date:	09/12/2023
Reported:	09/18/2023	Sampling Type:	Soil
Project Name:	TANKS CRP TK - 111 WATER LEG RELEA	Sampling Condition:	Cool & Intact
Project Number:	18480	Sample Received By:	Dionica Hinojos
Project Location:	GOODNIGHT UL/ M SEC 25 T22S - R31E		

# Sample ID: NH - 4B (H234949-01)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/15/2023	ND	1.94	96.8	2.00	0.428	
Toluene*	<0.050	0.050	09/15/2023	ND	2.06	103	2.00	0.334	
Ethylbenzene*	<0.050	0.050	09/15/2023	ND	2.05	102	2.00	1.29	
Total Xylenes*	<0.150	0.150	09/15/2023	ND	6.04	101	6.00	2.07	
Total BTEX	<0.300	0.300	09/15/2023	ND					
Surrogate: 4-Bromofluorobenzene (PID	rrogate: 4-Bromofluorobenzene (PID 115 % 71.5-1.		4						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	09/14/2023	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/14/2023	ND	194	96.9	200	2.42	
DRO >C10-C28*	<10.0	10.0	09/14/2023	ND	193	96.5	200	5.31	
EXT DRO >C28-C36	<10.0	10.0	09/14/2023	ND					
Surrogate: 1-Chlorooctane	96.6 9	% 48.2-13	4						
Surrogate: 1-Chlorooctadecane	106 %	49.1-14	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager


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

#### Analytical Results For:

Etech Environmental & Safety Solutions JOEL LOWRY 2617 W MARLAND HOBBS NM, 88240 Fax To:

Received:	09/13/2023	Sampling Date:	09/12/2023
Reported:	09/18/2023	Sampling Type:	Soil
Project Name:	TANKS CRP TK - 111 WATER LEG RELEA	Sampling Condition:	Cool & Intact
Project Number:	18480	Sample Received By:	Dionica Hinojos
Project Location:	GOODNIGHT UL/ M SEC 25 T22S - R31E		

#### Sample ID: NH - 3B (H234949-02)

BTEX 8021B	mg/	kg	Analyze	d By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/15/2023	ND	1.94	96.8	2.00	0.428	
Toluene*	<0.050	0.050	09/15/2023	ND	2.06	103	2.00	0.334	
Ethylbenzene*	<0.050	0.050	09/15/2023	ND	2.05	102	2.00	1.29	
Total Xylenes*	<0.150	0.150	09/15/2023	ND	6.04	101	6.00	2.07	
Total BTEX	<0.300	0.300	09/15/2023	ND					
Surrogate: 4-Bromofluorobenzene (PID	115 %	6 71.5-13	4						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	09/14/2023	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/14/2023	ND	194	96.9	200	2.42	
DRO >C10-C28*	23.1	10.0	09/14/2023	ND	193	96.5	200	5.31	
EXT DRO >C28-C36	<10.0	10.0	09/14/2023	ND					
Surrogate: 1-Chlorooctane	103 %	48.2-13	4						
Surrogate: 1-Chlorooctadecane	112 %	6 49.1-14	8						

#### Cardinal Laboratories

#### *=Accredited Analyte

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

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



#### **Notes and Definitions**

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

#### **Cardinal Laboratories**

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager

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# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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# **Appendix E Regulatory Correspondence**

From: OCDOnline@state.nm.us <OCDOnline@state.nm.us>
Sent: Sunday, September 18, 2022 9:02 AM
To: Albert Ochoa <<u>albert.ochoa@goodnightmidstream.com</u>>
Subject: The Oil Conservation Division (OCD) has accepted the application, Application ID: 144270

**[EXTERNAL EMAIL NOTIFICATION]** This message was received from outside the Goodnight Midstream Organization, do not click links or attachments unless you recognize the sender and know the content is safe.

To whom it may concern (c/o Albert Ochoa for GOODNIGHT MIDSTREAM PERMIAN, LLC),

The OCD has accepted the submitted *Notification of a release* (NOR), for incident ID (n#) nAPP2226128925, with the following conditions:

• When submitting future reports regarding this release, please submit the calculations used or specific justification for the volumes reported on the initial C-141.

Please reference nAPP2226128925, on all subsequent C-141 submissions and communications regarding the remediation of this release.

**NOTE:** As of December 2019, NMOCD has discontinued the use of the "RP" number.

If you have any questions regarding this application, or don't know why you have received this email, please contact us.

ocd.enviro@state.nm.us

New Mexico Energy, Minerals and Natural Resources Department 1220 South St. Francis Drive Santa Fe, NM 87505 From: OCDOnline@state.nm.us <OCDOnline@state.nm.us>
Sent: Tuesday, February 14, 2023 3:01 PM
To: Albert Ochoa <albert.ochoa@goodnightmidstream.com>
Subject: The Oil Conservation Division (OCD) has rejected the application, Application ID: 159774

**[EXTERNAL EMAIL NOTIFICATION]** This message was received from outside the Goodnight Midstream Organization, do not click links or attachments unless you recognize the sender and know the content is safe.

To whom it may concern (c/o Albert Ochoa for GOODNIGHT MIDSTREAM PERMIAN, LLC),

The OCD has rejected the submitted *Application for administrative approval of a release notification and corrective action* (C-141), for incident ID (n#) nAPP2226128925, for the following reasons:

• The Closure Report is denied. Delineation of edges/sidewalls of a release requires samples equal to or less than 600 mg/kg for chlorides and 100 mg/kg for TPH. If the edge of the spill has been visually identified, a sample will need to be pulled from the clean side to prove extent. Once that is accomplished, you can excavate to the table 1 criteria. This will define the edge of the release and ensure the release did not leave the pad. Please make sure this is accomplished on all future reports.

The rejected C-141 can be found in the OCD Online: Permitting - Action Status, under the Application ID: 159774.

Please review and make the required correction(s) prior to resubmitting. If you have any questions why this application was rejected or believe it was rejected in error, please contact me prior to submitting an additional C-141.

Thank you, Robert Hamlet 575-748-1283 Robert.Hamlet@emnrd.nm.gov

**New Mexico Energy, Minerals and Natural Resources Department** 1220 South St. Francis Drive Santa Fe, NM 87505

Date	Detail
07/24/2023	The Closure Report is Denied. The "step-out" samples on pad to verify the edge of the release should only be a maximum of 1-2 feet from the observed edge of the release. Stepping out away from the release area to conduct horizontal delineation samples may tell us whether or not the release left the active well pad, but it does not tell us where the actual edge of the release is located. Please make sure that the edge of the release extent is accurately defined. Additionally, when equipment is located in and around the release area, samples must come from the sidewalls of the release area excavation. The OCD needs to know if the release went in, around, or under equipment/tanks/pipelines. Not having sidewall samples from the actual excavation won't give us those sampling data points that we need. "Step-out" samples should never be conducted if equipment is in the vicinity of the release area. Please make sure sidewalls are taken from the excavation adjacent to the battery/equipment.
07/24/2023	The (07/24/2023, C-141) application [197494] was rejected by OCD. The operator was emailed with details of this event.
07/24/2023	An application [ <u>197494</u> ] was submitted to OCD for review. It was submitted, indicating that it was an: [C-141] Application for administrative approval of a release notification and corrective action The operator was emailed confirmation of this event.

# Appendix F Basic Data Report for Drillhole SNL-15 (C-3152)

# DOE/WIPP-05-3325

# Basic Data Report For Drillhole SNL-15 (C-3152) (Waste Isolation Pilot Plant)

September 2008



This document has been submitted as required to:

Office of Scientific and Technical Information P.O. Box 62 Oak Ridge, TN 37831 Prices available from (865) 576-8401

Additional information about this document may be obtained by calling (800) 336-9477. Copies may be obtained by contacting the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161

Processing and final preparation of this report was performed by the Waste Isolation Pilot Plant Management and Operating Contractor for the U.S. Department of Energy under Contract No. DE-AC29-01AL66444.

## DOE/WIPP-05-3325

Basic Data Report For Drillhole SNL-15 (C-3152)

(Waste Isolation Pilot Plant)

Dennis W. Powers Consulting Geologist 140 Hemley Road Anthony, TX 79821

and

Ronald G. Richardson Washington Regulatory and Environmental Services P.O. Box 2078 Carlsbad, NM 88220

September 2008

Received by OCD: 11/1/2024 12:25:32 PM

#### Basic Data Report for Drillhole SNL-15 (C-3152) DOE/WIPP-05-3325



West Texas Water Well Service, Rig #15 at SNL-15, viewed toward the west. The 7.875-inch rotary bit has been laid down, and the crew is tripping in to begin coring using compressed air. Photo taken June 5, 2005, by Dennis W. Powers.

### **EXECUTIVE SUMMARY**

SNL-15 (permitted by the New Mexico State Engineer as C-3152) was drilled and completed in early June 2005 to provide geological data and hydrological testing of the Culebra Dolomite Member of the Permian Rustler Formation in an area east of the Waste Isolation Pilot Plant (WIPP) site where data are sparse and where Culebra transmissivity is expected to be very low. SNL-15 is located near the southeast corner of section 26, T22S, R31E, in eastern Eddy County, New Mexico. SNL-15 was drilled to a total depth of 950 ft below ground level (bgl), based on driller's measurements. Below the caliche pad, SNL-15 encountered the Mescalero caliche, Gatuña, Santa Rosa, Dewey Lake, and Rustler Formations. The Rustler was cored from the lower Tamarisk Member through the Culebra Dolomite and into the upper Los Medaños Member. Geophysical logs were acquired from the open hole to a depth of ~938 ft. No water was observed

The upper part of the Los Medaños has normal lithology, thickness, and stratigraphic sequence for areas east of WIPP. The upper clastic-halite unit of the Los Medaños (M-2/H-2) at SNL-15 was well preserved in cores, and it was dominated by halite, consistent with expectations based on previous drilling at this location. The halite is medium-tocoarse crystalline, generally white to brown, and it is bedded and interbedded with thin mudstone layers. The halite displays both displacive and incorporative growth. The contact with the overlying Culebra was recovered as a single core, and the uppermost core from M-2 is welllaminated gray silty claystone, does not indicate signi cant deformation, and grades sharply into the overlying dolomite.

Core recovery from the Culebra was complete, revealing a unit with no observable open porosity. There are some narrow fractures within the core, and they are lled or lined with halite that is generally brous. Some sulfate vug llings also exhibits coarse, clear halite cements. Smaller vugs are present in the lower third of the Culebra, below ~924 ft (as marked on the core), but they also are

lled with dolomite(?) silt. Some subhorizontal bedding occurs throughout the core, and there are concentrated laminae at ~923 ft and 910 ft. Small sulfate nodules are more abundant in the upper 1 ft of the Culebra than in most such cores, and the more organic-rich zone that commonly marks the top of dolomite is just below the nodular zone. The Culebra is 30.5 ft thick in core and 30 ft thick as interpreted by geophysical logs. This is thicker than normal for the WIPP site, but it is consistent with modest thickening toward the east and southeast previously interpreted. Given the presence of halite and fractures and porosity, the Culebra will have low transmissivity compared to most wells tested at WIPP.

The Tamarisk has a normal stratigraphic sequence for the area east of WIPP and greater thickness than at the WIPP site because of halite beds. Only the lower few feet of the Tamarisk were recoverd as core. Geophysical logs and cuttings are the basis for interpreting the rest of the unit. The basal sulfate unit (A-2) includes horizontal beds and laminae near the base. The geophysical log shows a thin argillaceous zone in the upper part of A-2 that is persistent across the WIPP area. At SNL-15, halite (H-3) dominates over mudstone (M-3). Halite overlies A-2, followed by mixed halite and mudstone that is ~16 ft thick. Above the mixed zone, a sulfate and halite bed ~12 ft thick includes ~2-4 ft of polyhalite at the top. This sulfate bed persists east and southeast of the WIPP site as a stratigraphic unit. Nearly 50 ft of halite, with another thin sulfate bed, cap the polyhalite and are the nal deposit of the M-3/H-3 complex. The upper Tamarisk sulfate (A-3) is nearly 55 ft thick, consistent with other encounters in the area.

The Magenta Dolomite is ~24 ft thick, based on geophysical logs. The Magenta was not cored, and cuttings revealed only general composition of dolomite and some sulfate. Resistivity logs showed the Magenta to be more conductive than underlying and overlying anhydrite beds. There are some modest differences in resistivity in the upper part of the Magenta, but no indications of

The Forty-niner is represented by a sequence of sulfate-halite and mudstone-sulfate sequence. The basal anhydrite (A-4) is ~16 ft thick and shows little evidence of M-4/H-4 is dominated by halite, with a more argillaceous zone, ~10 ft thick in the middle. At 660 ft, a thin, higher density bed is likely to be sulfatic and may even be somewhat polyhalitic, given a modestly elevated natural gamma. There are upper and lower halite zones in M-4/H-4 that show little natural gamma and should be nearly pure halite. The upper anhydrite (A-5) of the Forty-niner is 28 ft thick, and the contact with the overlying Dewey Lake appears sharp on the logs.

The Dewey Lake is thicker at SNL-15 than in drillholes farther west where the upper part of the formation has been eroded. Cuttings showed more gypsum and probable sulfate cement below 250 ft, and induction resistivity increased and remained higher below that point. This is among the higher stratigraphic positions where this cement has been encountered in WIPP drillholes.

The remaining Santa Rosa Formation at SNL-15 is represented by interbedded reddishbrown siltstones and sandstones.

The Gatuña at SNL-15 is mainly calcareous sandstone, with carbonate at the top. Manganese oxide stains found here in the Gatuña are also common elsewhere in the formation.

The Mescalero caliche is moderately inducated at SNL-15, but cuttings were to determine the stage of development.

SNL-15 was drilled (and reamed through cored intervals) with an original diameter of 7.875 inches to the depth for completion. Fiberglass reinforced plastic (FRP) tubing (2.48 inches inside diameter) was placed in the hole, with a screen interval across the Culebra Dolomite from 928.5–902.0 ft below the top of the connector on the conductor casing.

Because of the low transmissivity of the Culebra in this area, no pumping test is anticipated that would require larger casing. Approximately 2.5 ft of FRP casing was left above the connector. HolePlug® (bentonite) was placed in the bottom of the hole to 935 ft, and the annulus was lled with 4/10 gravel to 896 ft, above the Culebra. HolePlug® was placed from 896–891 ft to separate the Culebra from the Tamarisk mudstone. The annulus above the bentonite was cemented to the surface.

SNL-15 was completed June 7, 2005. SNL (Sandia National Laboratories) installed a miniTroll on June 23, 2005, to monitor pressure changes in response to testing at other wells and recovery after drilling. The water level recorded by Washington Regulatory and Environmental Services (WRES) was measured April 11, 2006; water was 692.67 ft below the top of the casing.

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In keeping with practice at the WIPP site, the basic data for SNL-15 are reported in the inchpound, or English, system; metric equivalents are given in one The following conversion factors for metric equivalents may be useful:

MULTIPLY ENGLISH UNIT	BY	TO OBTAIN METRIC UNIT
foot (ft)	0.3048	meter (m)
inch (in.)	25.4	millimeter (mm)
inch (in.)	2.54	centimeter (cm)
pounds (lb)	0.4536	kilogram (kg)



Drilling Crew for West Texas Water Well Service on SNL-15: Luis Armendariz (l: driller), Israel Galván (c), and Reuben Bugarin (r). Photo by Dennis W. Powers, June 5, 2005.

## 1.0 Introduct Ion

SNL-15 was drilled near the southeast corner of section 26, T22S, R31E, in eastern Eddy County, New Mexico (Fig. 1-1). It is located 102 ft from the south line (fsl) and 807 ft from the east line (fel) of the section (Fig. 1-2). This location places the drillhole east of the WIPP site and on the drillpad used for P-18 (Jones, 1978), which has now been plugged and abandoned. SNL-15 was begun on June 1, 2005, and was completed June 7. SNL-15 will be used to monitor groundwater levels of the Culebra Dolomite Member of the Permian Rustler Formation for the WIPP in an area of very low transmissivity.

SNL-15 was permitted by the New Mexico State Engineer as C-3152. Of cial correspondence regarding permitting and regulatory information must reference this permit number.

Most drillholes at WIPP have been described after completion to provide an account of the geology, hydrology, or other basic data acquired during drilling and immediate completion of the drillhole. In addition, the basic data report provides an account of the drilling procedures and activities that may be helpful to later interpretations of data or for further work in the drillhole, including test activities and eventual plugging and abandoning activities. The basic data report also provides a convenient means of reporting information about administrative activities necessary to drill the hole.

#### 1.1 Purpose of WIPP

WIPP is a U.S. Department of Energy (DOE) facility disposing of transuranic and mixed waste, byproducts of U.S. defense programs, as certi ed by the U.S. Environmental Protection Agency (EPA) and under a permit issued by the New Mexico Environment Department. WIPP is located about 25 miles east of Carlsbad, New Mexico, in eastern Eddy County (Fig. 1-1). Disposal panels are being excavated in the Permian Salado Formation at a depth of about 2,150 ft bgl.

#### 1.2 Purpose of SnL-15

SNL-15 was designed and located to provide information for the integrated hydrology program for the WIPP (Sandia National Laboratories [SNL], 2003). Among the objectives of the integrated hydrology program, SNL-15 will help "... resolve questions related to observed waterlevel changes around the WIPP site, provide data needed for comprehensive modeling of WIPP groundwater hydrology, [and] construct a groundwater monitoring network that can be maintained throughout the operational period of WIPP ..." (p. 1).

Culebra water levels in many of the wells monitored for WIPP have been rising in recent years, contrasting with the conditions used to calibrate models of the Culebra across the site area (SNL, 2003) for the Compliance Cert ation Application (CCA; U.S. DOE, 1996). Hydraulic properties of the Culebra vary spatially, and three factors (overburden, upper Salado dissolution, and Rustler halite distribution) appear to explain most of the variability in transmissivity (Holt and Yarbrough, 2002; Holt and Powers, 2002; Powers and others, 2003). The Compliance Recerti cation Application (CRA; U.S. DOE, 2004) submitted to the EPA models release scenarios through the Culebra using transmissivity based on these factors.

SNL-15 was located east of WIPP where data are sparse and where Culebra transmissivity is believed to be very low, although hydraulic data from P-18 are poorly constrained (Beauheim, 1987). In addition, geologic data obtained from the drillhole would help confirm the effects of Rustler halite on Culebra hydraulic properties. No well designated SNL-15 was included in the program plan (SNL, 2003), but it is located at the site designated WTS-3. From the program plan (SNL, 2003) and other documents (Appendix A),







SNL-15 is to:

- 1. Provide water-level data in a key area east of the WIPP site;
- 2. Provide a location for monitoring a large-scale (multipad) pumping test south of WIPP; and
- 3. Provide a possible location for a slug test of Culebra hydraulic properties.

#### 1.3 SnL-15 drilling and c ompletion

The basic information about drilling and completion of SNL-15 is presented here in tabular form (Table 1-1) and graphics (Figs. 1-3, 1-4, and 1-5) for ease of reference. Appendix B includes details based on daily drilling logs.

SNL-15 was rotary drilled and cored to a total depth of 950 ft bgl (Fig. 1-3) as measured during drilling. Coring recovery was complete, and the measured, and marked core was 1.5 ft more than the depth measured during drilling, reaching 951.5 ft. The total depth of the drillhole may be 951.5 ft, as shown by () in some diagrams. For practical purposes, 950 ft is taken as the total depth. The bottom of the hole was plugged before reaming the cored interval to 940 ft and then logging for completion activities. Geophysical logging indicated ~3 ft less depth to stratigraphic contacts in the lower part of SNL-15; geological logs (Appendix C) show greater depths for the Culebra than are indicated by geophysical logs. SNL-15 was drilled using compressed air (two compressors). Cuttings from SNL-15 were of useful size because of these methods.

Core recovery was complete through the Culebra, with recovered lengths slightly exceeding the cored interval as measured during drilling (Table 1-1; Appendix C). Complete core recovery is rare through the Culebra (e.g., Powers, 2002b; Mercer and others, 1998).

In keeping with recent practice at WIPP, SNL-15 was cased with FRP casing rather than steel to provide longer utility of the well for monitoring and testing. Steel-cased wells at WIPP are expected to be plugged and abandoned and, where necessary, replaced with wells completed with FRP casing (SNL, 2003).

SNL-15 was completed with a single screened interval for monitoring and testing of only the Culebra Dolomite (Fig. 1-4). With a single completion interval, some of the difficulties associated with multiple completions can be avoided: expense of buying, placing, and maintaining packers; loss of water-level data when packers fail; mixing of waters of differing qualities when packers fail; and the increased complexity of testing in a well completed to multiple intervals. If warranted, additional wells can be completed to other intervals, such as the Magenta Dolomite Member of the Rustler Formation, on the SNL-15 wellpad (SNL, 2003).

Geophysical logs, especially the natural gamma and caliper logs, were used to make the nal decisions regarding completion of SNL-15 (Fig. 1-4) (Appendices D and E). The drillhole penetrated the uppermost part of the lower Rustler, and HolePlug® was put into SNL-15 to prevent circulation into that interval (Fig. 1-4). The bottom of the Culebra screen interval was placed at 928.5 ft, well above the claystone below the Culebra. The Culebra is thicker than the screen interval; this avoids possible plugging of the lowermost slots and covers higher zones that are generally more porous (Fig. 1-4). The top of the screen, at 902 ft, is at the top of the Culebra. The top of the gravel pack (4/10 silica gravel) at 896 ft is below the level of the mudstone in the Tamarisk to prevent connection to the Culebra. Bentonite (HolePlug®) was placed to 891 ft, and the annulus above the bentonite was cemented to the surface. The caliper log (Fig. 1-3) after the drillhole was drilled to 940 ft at a diameter of 7.875 inches and before the casing was placed shows little sign of drillhole enlargement in the Forty-niner and Tamarisk mudstones or in the mudstone just below the Culebra.

The surface (Fig. 1-5) provides stability, security, and ready access to the casing for measurements, sampling, or other testing. The



# Table 1-1. Summary of Drilling and Well Completion Recordsfor Hydrologic Drillhole SNL-15 (C-3152)

LOCATION: Southeast ¹/₄, Section 26, Township 22 South (T22S), Range 31 East (R31E)

**SURFACE COORDINATES:** The well is located 102 ft from the south line (fsl) and 807 ft from the east line (fel) of Section 26. The New Mexico State Plane (NAD 27) horizontal coordinates in feet are 493512.95 North, 682542.25 East (Fig. 1-2 shows the survey plat). Universal Transverse Mercator (UTM) horizontal coordinates (NAD27, Zone 13) in meters were calculated for SNL-15 using Corpscon for Windows (v. 6.0): 618352.94 East, 3580336.30 North. Figure 1-1 shows UTM coordinates on a 1,000-m grid.

**ELEVATION:** All depths used in geological and geophysical data were measured from the top of the connector on the steel surface conductor casing just above the level of the drillpad surface (Fig. 1-5). Depths are reported as below ground level (bgl), which is taken as 3,478 ft above mean sea level (amsl), the rounded value for the brass tablet benchmark (3,477.94 ft amsl) adjacent to the cement well pad. [This is the resurveyed value from the plat in Fig. 1-2; the benchmark has not been replaced (Fig. 1-5) and shows the original embossed value of 3479.22 ft amsl.] The primary datum for the completed well is 3,479.93 ft amsl (NGVD 29) glass reinforced plastic casing inside the protective well pipe.

Figures

#### **DRILLING RECORD:**

**Dates:** Began drilling June 1, 2005; drillhole reached total depth (950 ft) on June 5, 2005. Geophysical logging was conducted on June 6, 2005, after reaming the cored interval. Drillhole was cased and cemented June 7, 2005.

**Circulation Fluid:** SNL-15 was drilled to TD with circulating air, discharging cuttings into a lined portable steel container. The hole was drilled (and reamed following coring) using a 7.875-inch bit and did not require additional reaming to complete.

**Cored Intervals:** 4.0-inch core was taken through these intervals (depths from drilling data):

900.0–950.0 (951.5 bottom of marked core) ft bgl: lower Tamarisk, Culebra Dolomite, and upper Los Medaños Members

**Rig and Drilling Contractor:** Gardner-Denver 1500; West Texas Water Well Service, Odessa, Texas

# Table 1-1. Summary of Drilling and Well Completion RecordsFor Hydrologic Drillhole SNL-15 (C-3152), continued.

**Drillhole Record:** 

Size (inches)	From (ft bgl)	To (ft bgl)					
12.75	0	39.5					
7.875	39.5	940					
6.75	940	950					

#### **Casing Record:**

Outside diameter (inches)	Inside diameter (inches)	Weight/ft (pounds)	From (ft bgl)*	To (ft bgl)
8.625	8.125	22.36 steel	-0.5	39.5
2.880	2.480	1.75 FRP** blank	-2.0	902.00
2.880	2.480	1.75 FRP screen	902.00	928.5
2.880	2.480	1.75 FRP blank	928.5	935.0

*Top of the casing connector is the reference for depth denoted below ground level (bgl). The FRP extends  $\sim 2$  ft (-2) above the steel casing connector.

**FRP: fiberglass reinforced plastic; specifications for SP2000 FRP tubing have changed since SNL-15 was completed

Core Run No.	Depth Int From	erval (ft) To	Inte Cored	erval (ft) Recovered	Recovered %
1	900	927	27	27.4	101.48%
2	927	950	23	24.1	104.78%
		Totals	50	51.5	103.00%

**Coring Record:** 





surface benchmark is an accessible reference point for future measurements if the well con guration is changed.

A steel surface conductor casing was cemented in place to a depth of 39.5 ft below the surface, with the top of the steel connector on the conductor casing  $\sim 6$  inches above the pad level (Fig. 1-5) serving as a common reference point for drilling; geophysical logging; and placing the screened interval, sand pack, bentonite seal, and cement. The top of the steel connector was estimated to have an elevation of 3,479 ft amsl, based on a pre-drilling survey of the well pad. The benchmark placed at the drilling pad surface next to the completed well has an elevation of 3,477.94 ft amsl (after resurvey 2007) and is very close to the elevation of the connector on the casing. Other than water-level monitoring, depths are stated as bgl, and the top of the steel connector on the surface conductor casing is taken as a proxy reference point for ground level with an elevation of  $\sim$ 3,478 ft amsl (Figs. 1-3, 1-4, and 1-5). The FRP casing projects ~2 ft above the steel connector on top of the conductor casing. This FRP casing point is surveyed (Fig. 1-5), and it provides the reference point and reference elevation (3,479.93 ft amsl; after resurvey, 2007) for monitoring water levels.

#### 1.4 o ther Background

SNL-15 was drilled and completed by the West Texas Water Well Service, 3410 Mankins, Odessa, Texas, under contract from Washington TRU Solutions LLC (WTS). Coring was done by John Wood, Diamond Oil Well Drilling Co., Inc., P.O. Box 7843, Midland, Texas. Geophysical logging was conducted by Al Henderson, Jet West Geophysical Services, LLC, 2550 La Plata Highway, Farmington, NM, 87499-3522, under contract to West Texas Water Well Service. Geological support was provided by Dennis W. Powers under contract to WTS. Mike Stapleton of the New Mexico e of the State Engineer witnessed hole completion activities (Appendix D). Well drilling wastes (cuttings) were removed from SNL-15 and disposed of at the Lea Land, Inc., land ll north of WIPP. Archeological clearances obtained from the U.S. Bureau of Land Management were based on eld work and reports by Mesa Field Services, Carlsbad, New Mexico (Appendix E). Cores from SNL-15 were photographed with a digital camera, and a photo log is included in Appendix F. Electronic images can be requested from WTS.

Formal color designations (weak red: 5YR5/4) included in the text and Appendix C are based on the 1971 edition of the Munsell Soil Color Charts. The names may differ from the general color observed; the rocks are compared when dry unless

#### 1.5 Acknowledgements

Drafts of this document were reviewed by Rick Salness, Joel Siegel, and Rick Beauheim, and their comments improved the nal report. Mark Crawley (Washington Regulatory and Environmental Services - WRES) provided field support and information on well development. Doug Lynn (WRES) obtained permits and provided permitting and regulatory information included in appendix material. Ronnie Keith and Luis Armendariz (West Texas Water Well Service) provided drilling data and daily drilling records. West Texas Water Well Service personnel were very helpful in providing access for sampling during drilling. Al Henderson (Jet West Geophysical Services) provided the printed and electronic files that were used to develop Figure 2-1. Vivian Allen (L&M) provided useful editorial guidance.

## 2.0 Geo Lo Glc AL dAt A

#### 2.1 General Geological Background

The geology and hydrology of formations at the WIPP site and surroundings have been intensively investigated since 1975, and the information and interpretations have been reported in numerous documents. The most thorough compilation is certainly the Compliance Certi cation Application (CCA) submitted in 1996 by the DOE to the EPA (U.S. DOE, 1996). Some salient features of the broader geological history, as well as more recent work on the geohydrology of the Rustler (e.g., Holt and Yarbrough, 2002; Powers, 2002a, 2003a; Powers and others, 2003), are relevant to understanding the geology and hydrology at SNL-15.

The Delaware Basin (Fig. 1-1) was a large structural feature that controlled deposition through much of the Paleozoic. By late Permian, the basin connection to the open ocean was restricted, and evaporite minerals were precipitated in abundance to fill the basin. Near the end of the Permian, circulation with the ocean improved, and some of the Rustler Formation, for example, was deposited in saline water rather than brine. As the Permian ended and Triassic began, signi cant redbeds were deposited in non-marine environments. Although surrounding areas accumulated variable thicknesses of later Mesozoic and Cenozoic age sediments, the WIPP area appears mainly to have been subject to erosion during an extended period. Some basin tilting from middle to late Cenozoic time exposed the evaporite beds to faster solution and erosion, and weathered material began to accumulate. The Pecos River drainage became integrated through the region during this period, and more recent deposits re ect such a sedimentary environment as well as sources of sediment from outside the local area. Although the region continues to be subject to some dissolution of evaporites and erosion, large areas have remained geologically stable for about the last half million years, resulting in the formation and preservation of pedogenic calcrete (caliche) deposits.

#### 2.2 Geological data From SnL-15

SNL-15 encountered a normal stratigraphic sequence from ground level to total depth for this location east of the WIPP site area, (Fig. 2-1; Table 2-1). Units encountered ranged from unconsolidated sur cial alluvium to the upper part of the Los Medaños Member of the Permian Rustler Formation. Structural, sedimentological, and diagenetic features were examined during investigation using cuttings, cores, and geophysical logs. Details of the sedimentology of the Rustler will extend understanding of that unit. There was no noticeable water produced from any unit, including the Culebra, during drilling.

The geologic units encountered in SNL-15 are described from total depth to the surface, in the order in which they were deposited rather than in the order in which they were encountered in the drillhole. Cores and cuttings were described in the eld using mainly drilling depths for depth control. Geologic logs detailing eld observations of cuttings and cores are included in Appendix C. The difference between geophysical logs and drilling depths is generally slight. The largest differences between depths determined by geophysical logging and core markings based on depths measured during drilling is approximately 3 ft through lower units in SNL-15. Decisions about placing screen intervals and annulus llings were based on depths indicated by geophysical logs (Appendix G).

Note that the descriptions that follow use depths that correspond to core markings, with basic stratigraphic intervals provided by geophysical logs, as indicated.

#### 2.2.1 Permian r ustler Formation

The Rustler was drilled and cored into the upper Los Medaños Member. The contact between the Rustler and the overlying Dewey Lake Formation is at 624 ft (Fig. 2-1), and 326 ft of the Rustler were penetrated at SNL-15 (Table 2-1).

Figure 2-1 Well Record SNL-15 (		3.0	
Company: Washington TRU Solutions LLC Well: SNL-15 (C-3152) Section: 26 Twp: T22S Rge: R31E Location: 102 ft from south line (fsl) 807 ft from east line (fel)			Radioactive Logs
Reference point Log measured from: top of connector on conductor casing (gl) Drilling measured from: gl Permanent Datum: benchmark (resurveyed 2007)	Elevation KB: DF: GL: 3478 ft amsl (benchmark: 3477.94)	eaders	tivity 100 Density 1000 Density Porosi
Drilling contractor: West Texas Well Water Service Coring contractor: Diamond Oil Well Drilling Co. Geophysical logs: Al Henderson Jet West Geophysical Services, LLC (NM) Geologist: Dennis W. Powers Spud date: June 1, 2005 Completion date: June 7, 2005 Total depth (TD): 950 ft bgl (driller log)	Casing Record Conductor: 40 ft 8.625 inch steel Casing: 2.48 inch i.d. fiberglass reinforced plastic to 935 ft bgl Screened interval: 928.5-902 ft bgl	5 Well Log He	1 aj Resistivity/Conduct monton Resistivity 0.1 Ohm-m Conductivity 1 amsl
Geophysical Logs Date: June 6, 2005 Micro/Laterolog/Induction/SP: 0-936 ft Gamma/Fluid: 0-936 ft Caliper: 0-934 ft Density/Neutron: 0-938 ft	Type fluid in hole: air Res mud: n/a Res mud filtrate: n/a Max. Rec. Temp.: not recorded	SNL-1	Llevation meters amsl heters
General Lithologic Symbol Dolomite Mudstone/siltstone + + + + + + + + Halite	ols Used Fine sandstone & siltstone Coarse sandstone Sandstone w/caliche Polyhalite		Stratigraphy Caliber 6.0 inches 9.0 inches 21.0 API units Caliber 100 API units Caliber 100 API units Caliber 100 API units Caliber 100 API units Caliber 100 API units Caliber 100 API units Caliber 100 API units Caliber 100 API units Caliber 100 API units Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Caliber Ca



Table 2-1 Geology at Drillhole SNL-15					
System/ Period/Epoch		Formation or unit	<b>Member</b> Informal units	Depth below surface (ft) ¹	
Dic	Holocene	surface dune sand and		0 - 7.5 ft	
)ZOU	Pleistocene	Mescalero caliche		7.5 - 15 ft	
Ce	Miocene-Pleistocene	Gatuña		15 ft - 35 ft	
oic	Triassic	Santa Rosa ²		35 ft - 95 ft	
Mesoz		Dewey Lake ³		95 ft - 624 ft	
	Permian	Rustler	Forty-niner <i>A-5</i> <i>M-4/H-4</i> <i>A-4</i>	624 ft - 700 ft 624 ft - 652 ft 652 ft - 684 ft 684 ft - 700 ft	
63			Magenta Dolomite	700 ft - 724 ft	
Paleozoic			Tamarisk <i>A-3</i> <i>M-3/H-3</i> <i>A-2</i>	724 ft - 902 ft 724 ft - 778 ft 778 ft - 888 ft 888 ft - 902 ft	
			Culebra Dolomite	902 ft - 932 ft	
			Los Medaños ⁴ <i>M-2/H-2</i>	932 ft - 951.5 ft 932 ft - 951.5 ft (TD) ⁵	

¹Depths are based on measurements by geophysical logging; drilling and coring provided supplemental data to total depth (TD) of 950 ft bgl by driller's log and 951.5 ft as marked on core. Geophysical logs and drilling/coring depths begin at the top of the connector on the surface steel conductor casing. This reference point is taken as 3,478 ft amsl; it is near the elevation of the surface benchmark adjacent to SNL-15. Water level depths will be measured and reported relative to the glass reinforced plastic casing (Fig. 1-5). Geological logs based

depths, mainly in the lower part of SNL-15.

- ²The Santa Rosa Formation, part of the Dockum Group or undifferentiated Triassic, is present at SNL-15, although it commonly is eroded west of the center of the WIPP site.
- ³The Dewey Lake Formation has been considered part of the Permian System in the past. Recent work (Renne and others, 1996, 2001) indicates that lithologically equivalent rocks in Texas are mostly Lower Triassic, with some Upper Permian at the base.
- ⁴The Los Medaños Member was named by Powers and Holt (1999) to replace the informal unit "unnamed lower member" of the Rustler Formation.
- ⁵The driller's total depth was 950 ft. The core recovered from 900–950 ft totaled 51.5 ft, and the lowest marked core is at 951.5 ft.

#### 2.2.1.1 Los Medaños Member

The Los Medaños was named by Powers and Holt (1999) based on the rocks described in shafts at the WIPP site. For the area around WIPP, studies of the Rustler have commonly referred to this interval from the base of the Culebra Dolomite Member to the top of the Salado Formation as the unnamed lower member of the Rustler. Holt and Powers (1988) and Powers and Holt (1999) also informally subdivided the Los Medaños into ve units (Fig. 2-2): a bioturbated clastic interval at the base, a sandy transition zone, a lower mudstonehalite 1 (M-1/H-1), anhydrite 1 (A-1), and an upper mudstone-halite 2 (M-2/H-2). Halite margins for the Los Medaños below A-1 have been treated as a single composite unit (Powers, 2002a), called M-1/H-1 (Fig. 2-2), because halite below A-1 is not restricted to the thinner zone designated M-1/H-1 in these earlier publications.

The upper part of the Los Medaños was cored (16.1 ft) in SNL-15, penetrating into halite facies (H-2) of M-2/H-2, but not reaching A-1.

The informal unit *mudstone-halite 2* (M-2/H-2; Fig. 2-2) was encountered from 935.4–951.5 ft bgl, based on coring depths, and recovery was complete. The natural gamma log shows the top of M-2/H-2 at 932 ft (Fig. 2-1). The basal contact with A-1 was not penetrated. The contact between M-2 and Culebra was recovered as continuous core, and the contact is sharp and undeformed.

From 938.7–951.5 ft, the core is clear halite that appears gray to slightly orange. Crystals are ne to very coarse, up to 1.5 inches across. Variable amounts of reddish brown (5YR5/4) silty claystone form irregular beds and zones as well as interstices between crystals (Fig. 2-3). Although halite shows displacive boundaries in mud in some zones, other halite margins are somewhat more irregular. There is some halite that incorporates mud. A few thin planes may be corrosion surfaces from exposure to fresher water in ows within the salt pan. From 943.3–945.5 ft, the halite is sulfatic, and some of the sulfate is likely polyhalite.



Figure 2-3. Coarse Halite with Reddish-Brown Mudstone, Upper H-2



Thin, silty claystone at 938.2 ft overlies a very thin sulfate and includes probable claystone clasts. Some thin sulfate marks the boundary with gray claystone.

The upper 2.9 ft of M-2 consists of gray (5Y5/1) to dark gray claystone (5Y4/1) (Fig. 2-4) that shows evidence of thin bedding and laminae that are approximately horizontal. A narrow fracture from 936–937 ft is lled with gypsum and, possibly, halite. Slickensides in some of the claystone are ~50 degrees from horizontal. The contact at 935.4 ft with the Culebra is sharp and undeformed.

#### 2.2.1.2 Culebra Dolomite Member

Based on the natural gamma log from SNL-15, the Culebra extends from 932–902 ft bgl, a thickness of 30 ft (Fig. 2-1). Based on drilling depths available at the time, the recovered Culebra core was marked from 935.4–904.9 ft bgl (as used in information in Appendices C and F). Recovered Culebra core (Fig. 2-5) totals 30.5 ft thick, and this represents all of the unit.

Holt and Powers (1988) found a range of 20–30 ft thickness in Culebra cores described from the WIPP Project, and a regional thickness exceeding 40 ft, based on geophysical log data.

core loss in the middle of the Culebra is common. Complete recovery of core at SNL-15 is likely due to the lack of porosity and the halite that lls a few fractures as well as some pore space. Drilling using compressed air may also have contributed to complete recovery.

The dolomite recovered in core from SNL-15 is generally light gray (5Y7/2) to pale yellow (5Y8/3). The Culebra at SNL-15 is thin bedded to laminar (Fig. 2-5). No open vugs were observed. Nodules are variable in size, ranging to ~2 inches, and are distributed through the unit. Nodules were composed of anhydrite with some probable gypsum. Some pore space associated with nodules also was lled with halite (Fig. 2-6). Very tiny

lled pores or spheres appear to be distributed through the lower Culebra, but they are to interpret or describe because they are visible Figure 2-4. Gray Claystone (M-2) and Overlying Culebra Dolomite



in part in a patina or case-hardened surface of the core.

Subvertical fractures occur mainly between ~917 and 925 ft, and they are filled with halite (Fig. 2-7). The fractures generally have separations less than 0.25 inch.

The hydrostratigraphic units proposed for the Culebra by Holt (1997) are less obvious in the SNL-15 core, and they may not be represented so clearly because features of these units are partly expressed by diagenesis that has not occurred at this location.

The most likely equivalent to the basal CU-4 hydrostratigraphic unit occurs from 933–935.4 ft. It has bedding, is ne-grained, and does not exhibit much in the way of lled pores. In the WIPP site area, including H-19, this zone shows some fracturing, and the basal contact is usually slightly deformed by fracturing.

From 926–933 ft, the Culebra shows thin (~0.25 inch) laminar zones spaced at 2–6 inches and abundant small pores (~0.06 inch). A few pores up to ~0.5 inch are scattered through the interval. This interval is tentatively correlated with CU-3 (Holt, 1997).

From 911–926 ft, the dolomite displays more laminar bedding, and larger vugs, up to  $\sim$ 2 inches, are common but not abundant. Some bedding-plane separations occur along darker organic- or clay-rich laminae. In addition, there are several halite- lled fractures within the lower half of this zone. The fracture between 917 and 918 ft shows some staining as well as

2-7); this fracture might have some open porosity within the formation. This is likely the most porous section of the Culebra. The entire interval is tentatively assigned to CU-2 (Holt, 1997).

From 911–904.9 ft, the dolomite is grained, silty, thin bedded to laminar, with organic-rich laminae in the upper part and gypsum nodules at the top. Vugs are limited and large (to 2 inches). This interval tentatively corresponds to CU-1 (Holt, 1997).






Figure 2-6. Halite on Fracture in Culebra Dolomite. The fracture shows black staining under the clear halite that coats much of the surface. Core has a 4-inch diameter.



Figure 2-7. Halite in Culebra at 907.8 ft. Halite (dark, clear

Core is 4 inches across.

The geophysical logs (Fig. 2-1) of the Culebra provide few additional details of the unit. The natural gamma shows a low from 909-913 ft, which is taken to correspond to the upper part of the core believed to represent upper CU-2. Resistivity remains generally high through the Culebra, with two somewhat reduced resistivity zones (905-910 ft and 914-918 ft, log depths). These correspond to ~909-914 ft and 918-922 ft core depths, based on the differences between depths at the top and base of Culebra. The upper zone includes the inferred CU-1 and CU-2 boundary, with the most strongly expressed laminar bedding and some beddingplane separations. The lower zone of lower resistivity coincides with the most fractured Culebra interval, even though fractures tend to Overall, there is not a great have halite contrast in log properties through the Culebra, and the Culebra is not likely to have either high porosity or high transmissivity based on log and core observations.

#### 2.2.1.3 Tamarisk Member

The natural gamma log of SNL-15 shows that the Tamarisk occurs from 724-902 ft bgl. The Tamarisk comprises three basic subunits: a lower anhydrite, a middle halite and mudstone, and an upper anhydrite; all three are clearly shown by geophysical logs and were recorded by cuttings during drilling. Powers and Holt (2000) labeled these A-2, M-3/H-3, and A-3, respectively, and showed that the lateral gradation from mudstone M-3 to halite H-3 generally re ects lateral changes in deposition. SNL-15 is located mainly in the saltpan or H-3 facies of these beds, although the natural gamma also indicates an argillaceous or muddy zone. The basal 4.9 ft of the Tamarisk was cored; the remainder of the unit is described on the basis of cuttings and geophysical logs.

The informal unit *anhydrite 2* (A-2; Fig. 2-2) at the base of the Tamarisk is 14 ft thick (888–902 ft) based on the geophysical

logs. The cored interval from 900.0–904.9 ft is predominantly dark gray anhydrite with some gypsum. It is generally ne to medium crystals, with clear gypsum in pores, including sulfate needles that precede cements. There may be some halite pore fillings. Thin beds and thin laminae are visible, and the core is purplish from 904.2–904.6 ft.

The informal Tamarisk unit *mudstone-halite 3* (M-3/H-3; Fig. 2-2) at SNL-15 is 164 ft thick (724–888 ft bgl), based on the natural gamma log. Halite (H-3) dominates this informal unit at SNL-15.

The geophysical log (Fig. 2-1) for M-3/H-3 illustrates subdivisions described by Holt and Powers (1988). They divided H-3 at the sulfate bed near the middle of H-3 into a lower H-3a and an upper H-3b. H-3a can be further subdivided into a lower clean halite, middle argillaceous halite, and upper clean halite below the sulfate bed. H-3a here at SNL-15 only exhibits the lower clean halite and middle argillaceous halite, similar to other drillholes (e.g., H-12; Holt and Powers, 1988) away from the middle of the halite salt pan.

The density log indicates higher density sulfate dominates from 824–836 ft, with some possible thin interbeds of halite. The upper part of the sulfate has higher natural gamma and corresponds to polyhalite that is persistent through much of the depositional basin east of the WIPP site.

H-3b at SNL-15 has very low natural gamma, indicating little clay or clastic material. A thin anhydrite from 791–792 ft is also consistent with units that are persistent through the deeper part of the depositional basin east of WIPP.

A-3 was not cored. Cuttings indicate gray to dark gray anhydrite. The density log shows the unit is 54 ft (724–778 ft) thick and persistently high

#### 2.2.1.4 Magenta Dolomite Member

Based on geophysical logs, the Magenta at SNL-15 is 24 ft thick (700–724 ft). This is

a normal thickness for the member. Cuttings from the unit ranged from powder to small chips with a grayish-purple hue (2.5YR5/2; weak red).

Geophysical log data from the Magenta show lower density than the adjacent anhydrite beds. Resistivity is much lower through the Magenta than in adjacent beds. These responses may indicate halite and some porosity with a little brine. Gypsum is not favored in the presence of halite, which exists in overlying and underlying members.

## 2.2.1.5 Forty-niner Member

Based on geophysical logs, the Forty-niner at SNL-15 is 76 ft thick (624–700 ft). The Forty-niner is described on the basis of cuttings and geophysical logs. Like the Tamarisk, the Forty-niner consists of upper and lower anhydrites with a middle unit that includes halite at SNL-15. Powers and Holt (2000) informally designated these units as A-4, M-4/H-4, and A-5, from bottom to top. They attributed the lateral relationship between clastic beds (M-4) and halite (H-4) to depositional facies of

The lower unit, *anhydrite 4* (A-4; Fig. 2-2), is gray anhydrite; cuttings include some clear halite that is from the overlying unit. A-4 is 16 ft thick (684–700 ft), based on geophysical logs, and contacts are sharp.

*Mudstone-halite 4* (M-4/H-4; Fig. 2-2) is about 32 ft thick (652–684 ft), based on the natural gamma and density log. Cuttings and geophysical log data indicate that H-4 predominates, with lower and upper clean halite with a middle more argillaceous reddish-brown zone. A thin anhydrite occurs from 660–662 ft.

The upper sulfate unit, *anhydrite 5* (A-5), is gray (5YR6/1) anhydrite that is 28 ft thick (624–652 ft bgl) at SNL-15. The upper contact with the Dewey Lake Formation is sharp.

## 2.2.2 Permo-triassic dewey Lake Formation

The Dewey Lake Formation has most commonly been assigned to the Permian System (e.g., Hills and Kottlowski, 1983), although there is no direct evidence, either paleontological or radiometric, of age in the vicinity of WIPP. More recently, Renne and others (1996, 2001) obtained radiometric (Ar-Ar) ages from ash beds near the base of lithologically equivalent red beds (Quartermaster Formation) in the Texas panhandle. These ages show that the basal Quartermaster is Permian, but most of the formation is early Triassic in age. Although lithologic contacts are not inherently isochronous, the particular relationships of evaporites to red beds suggest that the Dewey Lake is mainly Triassic in age (e.g., Schiel, 1988, 1994; Powers and Holt, 1999). Lucas and Anderson (1993) have asserted that the Quartermaster, and Dewey Lake, are Permian in age, but more recent direct evidence supersedes their discussion.

At SNL-15, the Dewey Lake is 529 ft thick (95-624 ft bgl) and is composed mainly of reddish-brown (2.5YR4/4 to 5/4) interbedded sandy siltstone, argillaceous siltstone, and ne-grained sandstone. Small white reduction spots and zones are a common characteristic of the Dewey Lake and are recorded by the cuttings at SNL-15. The Dewey Lake is generally moderately well indurated. It is slightly calcareous near the top but shows no evidence of carbonate deeper in the formation. Below 210 ft, Dewey Lake cuttings include gypsum, and there is some macroscopic indication of gypsum cements below this depth. The Dewey Lake is described on the basis of cuttings, drilling rates, and geophysical log characteristics.

Geophysical logs from SNL-15 can be interpreted to indicate different basic sedimentary regimes as well as porosity conditions (e.g., Doveton, 1986). The following information follows the basic template developed for a study of the Dewey Lake hydrogeology (Powers, 2003b) and applied to other drillholes such as C-2737 (Powers, 2002b) and SNL-2 (Powers and Richardson, 2004).

All three general depositional regimes for the Dewey Lake Formation can be distinguished on natural gamma logs of SNL-15.

The interval from 530–624 ft bgl in SNL-15 displays the natural gamma features of the lower Dewey Lake informally called the *basal bedded zone* (Powers, 2003b). Resistivity is, however, not helpful in differentiating the lower two units. The natural gamma uctuates around a similar value (~70–100 cps in this case) over this vertical interval. A short low in natural gamma indicates the top of the zone.

The interval from 174–530 ft bgl (356 ft thick) is marked by generally upward-increasing gamma above thinner low-gamma units. These are interpreted as an interval of d cycles because increasing natural gamma is frequently an indicator of ner clastic grain sizes (Doveton, 1986; Powers, 2003b). The base of this interval is de ned by sandstone from ~522–530 ft. Near the center of the site, this interval is more than 300 ft thick; at C-2737 it was 260 ft thick (Powers, 2002b). West-southwest of WIPP, sandstones of the upper

-upward cycles are removed by erosion.

Above 174 ft, natural gamma decreases, consistent with coarsening upward proposed by Powers (2003b). The contact with the Santa Rosa at 95 ft is placed where interbedded sandstones and siltstones begin to dominate.

The natural gamma log through the -upward cycles shows zones of decreased intensity over intervals from 216–222 ft and 250–258 ft, likely corresponding to very ne to medium-grained sandstones found across the site area (Powers, 2003b). The sand grains from the lower unit are typically subangular to well-rounded and include few opaque grains. This unit corresponds to sandstone 1 (*ss1*), a persistent sandstone in this stratigraphic interval (Powers, 2003b). The upper sandstone is less persistent.

There is a decrease in resistivity above 250 ft that roughly coincides with the rst observed gypsum in cuttings. Cuttings above this zone did not indicate the presence of carbonate, and it is possible the zone above 250 ft is also partially cemented by sulfate. The resistivity change is  $\sim$ 374 ft above the top of the Dewey Lake. This is stratigraphically higher in the Dewey Lake than at C-2737 (Powers, 2002b), where the boundary between sulfate and carbonate coincides with the resistivity change.

From resistivity (Fig. 2-1) and by comparison with other drillholes, the Dewey Lake is likely to be more transmissive above ~250 ft, but there were no indications of water during drilling.

## 2.2.3 t riassic Santa r osa Formation

The Santa Rosa at SNL-15 is  $\sim 60$  ft thick (35–95 ft). It is mainly interbedded siltstone and sandstone that is moderately indurated and ranges from yellowish red (5YR6/6) to light red-dish-brown (5YR6/4). The sandstone includes mica and coarser grains in the lower part of the formation.

## 2.2.4 Miocene-Pleistocene Gatuña Formation

The Gatuña is ~20 ft thick (15–35 ft). It is mainly very calcareous sandstone, ranging from red (2.5YR5/6) to pink (5YR7/3). The sandstone includes ~1% dark opaque grains and some manganese oxide stains, which is similar to in broader studies of the Gatuña (Powers and Holt, 1993).

## 2.2.5 Pleistocene Mescalero caliche

The Mescalero is an informal soil stratigraphic unit by Bachman (1973). It is widespread in southeastern New Mexico, and it is a continuous stratigraphic unit at the WIPP site. Uranium-disequilibrium ages indicate the Mescalero formed as a pedogenic unit between ~570,000 ( $\pm$  100,000) and about 420,000 ( $\pm$ 60,000) years ago (Rosholt and McKinney, 1980). The age is further bounded by the Lava Creek B ash, about 600,000 years old, which underlies the Mescalero along Livingston Ridge (Izett and Wilcox, 1982).

At SNL-15, the Mescalero is up to 7.5 ft thick (7.5–15 ft) based on shallow cuttings samples. The Mescalero is a white, very calcareous sandstone to sandy limestone. Sand grains were

Bachman and Machette (1977) classi ed six useful stages of pedogenic calcrete development, ranging from I as the least developed to VI morphologies showing multiple generations of calcrete development. ("Pedogenic calcrete" is preferred by many geologists and pedologists over the term "caliche" because of the wide variation in use of the latter term.) The Mescalero

Construction ll and sand is up to 7.5 ft thick at the drillhole location. The sand is weak red (2.5YR4/2), friable, and subround to round. The Berino soil (Chugg and others, 1971) was not established at SNL-15.

# 3.0 Pre LIMIn Ar y Hydro Lo Gic AL dAt A For S nL-15

SNL-15 was drilled speci cally to monitor water levels from the Culebra Dolomite Member of the Rustler Formation and to serve as a location for observations during pumping tests.

## 3.1 checks for Shallow Groundwater Above the r ustler Formation

The hole was drilled with compressed air, and there were no indications of water in ow or accumulation above the Rustler during drilling.

# 3.2 Initial r esults From the Magenta dolomite

The Magenta was drilled with compressed air, and there were no indications of water in ow or accumulation from the Magenta during drilling.

# 3.3 Initial r esults From the culebra dolomite

The Culebra was drilled with compressed air, and there were no indications of water in ow or accumulation from the Culebra during drilling.

On June 7, 2005, the FRP casing was placed in the hole, and the well was completed for Culebra monitoring.

After the well was completed, there was no well development.

On June 23, 2005, SNL placed a miniTroll in SNL-15 to monitor water-level changes as the well recovered after completion and to prepare for slug tests that were carried out early in 2006.

WRES began monthly water-level monitoring of the Culebra on April 11, 2006; the initial depth to water was 692.65 ft below the top of casing (US DOE, 2007).



Core photographs of Culebra Dolomite from SNL-15 representing middle (left) and lower (right) portions of the member, which has very low permeability. V

across. Photographs by Dennis Powers on 6/5/2005. These photographs are not referred to in the text.

## 4.0 SIGn IFIc Ance/ dIS cu SSIon

The materials used in completing SNL-15 are expected to be stable over a lengthy monitoring period, in contrast to steel casing in monitoring wells drilled before 1995. Newer monitoring wells provide construction experience for groundwater surveillance wells that may be drilled in the future.

The lower Rustler and upper Salado were not penetrated at SNL-15. Previous studies of thickness changes between the Culebra and Vaca Triste Sandstone Member of the Salado (Powers, 2002a, 2003a; Powers and others, 2003) indicated that SNL-15 was located far east of the upper Salado halite margin and is the area where no halite has been dissolved. SNL-15 was also located east of the margin of halite in each non-carbonate member of the Rustler (Fig. 4-1), in areas where the halite has not been dissolved.

Halite was recovered from cores in the upper M-2/H-2 interval, as expected. The contact with the overlying Culebra showed continuous deposition and no deformation. The core from SNL-15 was consistent with the proposal by Holt and Powers (1988) that Culebra was deposited over the gray claystone and siltstone without a hiatus. The gray claystone and siltstone was deposited across (above) the halite-pan salts in the depositional center of the basin rather than being a residue after halite was dissolved from the uppermost M-2/H-2.

The most significant geologic finding of SNL-15 is the presence of halite in fractures and pore spaces of the Culebra Dolomite. Holt (1997), following the development of depositional models for the Rustler by Holt and Powers (1988), predicted that halite might form cements east of WIPP. Powers and others (2006) explored the distribution of halite in the Culebra and other Rustler units, including at SNL-15.

Culebra core recovery was complete. One reason may be the lack of porosity at SNL-15 because of halite. In addition, the drilling used compressed air, and this may also have contributed to the success in core recovery. At SNL-15, pores or vugs were less abundant than in many cores from the Culebra, and the pores are lled. Fracturing was limited, and halite filled the fractures. The Culebra overall will likely have low transmissivity.

Halite in the Tamarisk can be divided into a lower and an upper part by a sulfate bed, including polyhalite. The lower halite shows a clean lower part and an argillaceous upper part that t with the model of mud at to halite pan deposition established by Holt and Powers (1988).

The Forty-niner also included halite at SNL-15, showing a position within the halite pan rather than in the mud at environment where most WIPP drillholes are located.

Cuttings and resistivity changes suggest that the sulfate cements of the Dewey Lake occur below ~250 ft bgl. This position is somewhat higher stratigraphically than at the center of the WIPP site (Powers, 2003b). The broad trend for this boundary is to be stratigraphically low west and south of the WIPP site center and stratigraphically higher in the center and eastern part of the site (Powers, 2003b). There does not appear to be a productive saturated zone at this boundary in SNL-15, or in any other part of the Dewey Lake.

The Santa Rosa is thin at SNL-15, and it was eroded before the Gatuña was deposited. Logs and cuttings indicate the Santa Rosa is interbedded sandstone and siltstones. No water was encountered in the Santa Rosa.

The Gatuña is ~20 ft thick at SNL-15. The formation tends to be thinner, or not exist, in the eastern part of WIPP. SNL-15 is located along the side of a subdued valley that trends southwest through Los Medaños to Nash Draw. It appears that the valley has developed as part of Gatuña erosion and deposition. To the north, on a topographic high, the Santa Rosa crops out and has Mescalero caliche developed on it. Gatuña may be thicker to the south in the center of the valley.





Figure 4-1. Rustler Halite Margins Near SNL-15. Halite is present east of the margins shown. SNL-15 was located in an area where Culebra transmissivity was expected to be low and halite is

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# Appendix A Drillhole Objectives

The basic document providing the basis for the drillhole and operations is the Program Plan WIPP Integrated Groundwater Hydrology Program, FY03-09 (Revision 0; Sandia National Laboratories, 2003). The main objectives are to resolve questions about water-level changes, provide data for modeling groundwater hydrology, and construct a network of wells to monitor groundwater through the WIPP operational period. Sections of this document relevant to this drillhole have been reproduced on the following pages, with the page number of the section preceding the extract and an ellipsis (...) following the end of the extracted section. A The original document

(Sandia National Laboratories, 2003) should be consulted for complete details and context for the program.

text.

SNL-15 was not designated as a location in the original groundwater hydrology program (Sandia National Laboratories, 2003). Within the program, the well designated WTS-3 was located where SNL-15 was drilled. WTS-3 was designated to replace plugged and abandoned well P-18, in a location east of WIPP where Culebra transmissivity is expected to be very low.

hydrology. Because the program to drill most of the WTS locations was abandoned, SNL-15 was designated for this location.

## Appendix A Drillhole Objectives

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## 5. Description of Field Activities

A variety of field activities are planned to address the issues discussed in Section 3 and provide data needed for the modeling activities discussed in Section 4. To the extent possible, the activities represent an integrated approach to addressing all of the issues simultaneously, rather than a piecemeal approach that addresses each issue individually. The principal components of the field activities are drilling and logging of new and replacement wells, testing in individual wells, large-scale testing involving many wells, recompletion of existing wells, and plugging and abandonment of old wells. In addition, we anticipate that various ancillary activities will be necessary to collect information to support scenario evaluation and conceptual model development. The planned schedule for the field activities, as well as for the modeling activities, is described in Section 6. The activities described below represent our best current estimate of the work that will be needed. Clearly, the activities conducted in FY04 and later years are necessarily contingent on the results of previous years' field and modeling activities. As described in Section 11, a meeting of all parties involved in the hydrology program will be held annually to evaluate progress to date and develop final plans for the coming year.

## 5.1 New and Replacement Wells

Twelve locations have been identified where data from new wells are needed. These locations are designated with "SNL-#" labels in this document. Some of these wells are expected to provide information directly relevant to the scenarios under consideration, while others will provide information needed to support our conceptual and numerical models. In addition, a long-term Culebra monitoring network consisting of fiberglass-cased wells at potentially 21 locations has been designed to provide the data needed for compliance with the requirements of the WIPP HWFP. These wells will replace the existing network of steel-cased wells that are deteriorating and in need of plugging and abandonment. The 21 locations for the long-term monitoring network are designated with "WTS-#" labels. Well locations have been optimized so that five wells can serve as both SNL and WTS wells, reducing the total to 28 locations. Preliminary locations for the wells are shown in Figure 8. However, the final number and locations of the WTS wells will be optimized based on the modeling described in Section 4. Seven other existing well locations outside the extent of the HWFP network have been identified that will likely require replacement wells in the future to continue to provide data needed for Culebra modeling. New Magenta wells will be installed at six of the SNL- and WTS-designated locations to provide data needed for scenario evaluation and modeling. Five Dewey Lake wells are planned for locations north of the WIPP site where Dewey Lake water is encountered while drilling the Culebra wells. The justifications for the 12 SNL locations are given below, followed by the justifications for the WTS locations and the "far-field" replacement locations. Table 1 shows the roles to be played by each of the wells. The sequencing of drilling and testing in the new wells is described and explained in Section 6.

## Appendix A Drillhole Objectives

#### 5.1.1 SNL Well Justifications

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Well	Addresses leakage from tailings pile	Addresses high-T conduits	Addresses leaking boreholes	Addresses Salado dissolution	Provides model boundary condition information	Provides other information needed for modeling	Provides information supporting conceptual model	Provides information on flow across WIPP site
WTS-3						Х	Х	

•••

#### 5.1.2 WTS Well Justifications

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**WTS-3**: This Culebra well will replace plugged and abandoned well P-18 east of the WIPP site, and provide needed information on transmissivity east of the m4/h4 halite margin. A Magenta well will also be installed at this location to provide information on Magenta head and transmissivity east of the site needed for modeling.

•••

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## Table 2. Testing to Be Performed in New/Replacement Wells.

mping Fest	Siug Tests	Pumping Test	Colloidal Borescope Logging	Needed— Replacement Well
	C, M			
]	mping Fest	mping Test C, M	mping Fest     Slug Tests     Pumping Test       C, M     C, M	mping Fest     Slug Tests     Pumping Pumping Test     Confidual Borescope Logging       C, M     C, M

C=Culebra well

M=Magenta well

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## 5.3.2 Multipad Pumping Tests

Large-scale (multipad) pumping tests of the Culebra are planned for three locations to provide transient response data needed for flow-model calibration. Multipad pumping tests typically involve pumping for a month or longer at one location while monitoring responses at surrounding observation wells up to several miles away. Such tests have been performed in the past within the WIPP site boundaries at the H-3, H-11, H-19, and WIPP-13 locations, greatly facilitating model calibration in the affected areas where observation wells were present. The new wells to be installed provide the opportunity to extend the increased model-calibration capability provided by multipad tests to the regions surrounding the WIPP site, which is needed to improve our understanding of how hydraulic stresses originating offsite propagate to the wells on the WIPP site. In particular, one of the primary objectives of the multipad tests will be to determine the presence or absence of high-transmissivity connections between known areas of high T, such as between H-6 and P-14, and between H-11 and H-9. These types of features are important because, if present, they provide pathways for water from Nash Draw to flow under the Livingston Ridge surface or, if absent, they prevent that flow so that the only effect of increased heads in Nash Draw is to decrease the east-to-west gradient in the Culebra, causing heads to rise. Multipad tests will be performed north, south, and west of the WIPP site. (Transmissivity is too low east of the site to sustain the necessary pumping for a multipad test, and our conceptual model assumes the Culebra does not show the heterogeneity in this region that multipad tests are designed to address. The individual well tests at the new wells east of the site should be sufficient to confirm this assumption.)

Well SNL-9/WTS-2 will be the pumping well for the western multipad test, with observation wells as shown in Figure 18. Provided that it is able to produce at least approximately 5 gpm, SNL-5 will be the pumping well for the northern multipad test, with observation wells as shown in Figure 19. If SNL-5 does not have the needed pumping capacity, SNL-11, SNL-3, and WTS-12 (in that order) will be considered as potential fallback pumping wells for the test. The pumping well for the southern multipad test will prospectively be SNL-12/WTS-10, with observation wells as shown in Figure 20. Should SNL-12/WTS-10 not have the required pumping capacity, WTS-11 and WTS-6 (in that order) will be considered as fallback pumping locations.

## Appendix A Drillhole Objectives



Figure 20. Pumping well and principal observation wells for southern multipad pumping test.

.

## Basic Data Report for Drillhole SNL-15 (C-3152) DOE/WIPP-05-3325

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Location	Culebra	Magenta	Dewey
	Well Depth	Well Depth	Lake Well
	(ft)	(ft)	Depth (ft)
WTS-3	960	750	

## Table 5. Anticipated Total Depths of Proposed Wells.

# Dennis W. Powers, Ph. D.

**Consulting Geologist** 

August 1, 2004

**Richard L. Beauheim** 

**Ronald G. Richardson** 

Hydrology Lead Sandia National Laboratories 4100 National Parks Highway Carlsbad, NM 88220 Field Lead Washington Regulatory and Environmental Services P.O. 2078 Carlsbad, NM 88220

Dear Rick and Ron:

By request from Rick Beauheim, I have re-examined geologic data in the vicinity of the following potential locations for drillholes to provide recommendations on whether the locations are appropriate, considering the objectives of the drillholes.

Drillhole	General	Hydrologic	Geologic
Name	Location	Objectives	Information
SNL-6	500' fnl & fel, 7- 21-32	Model boundary conditions; conceptual model: low T in area with H-2 and M-3	Better logs show H-3 present; move south $\sim 1$ mi
SNL-8	@ P-20; 800' fsl, 100' fel, 14-22-31	Confirm assumed low T east of WIPP, located in area of possible dissolution of halite from H-3; provide info on Culebra heads in area with many O&G wells	Logs re-examined confirm M- 3 and indicate possible thicker M-3 adjacent to inferred halite margin at P-20 and adjacent O&G wells
SNL-13	SE ¼, 1-23-30	Replace WTS-4, provide monitor well in area off SW corner of WIPP where some models show flow is forced	No halite in H-2, -3, or -4; probable H-1 halite cements in most drillholes
SNL-14	SE 1/4, 4-23-31	Examine area between P-17 and H-17 for possible high T zone indicated in CCA	No drillhole or other data helps define the mudstone- halite boundaries in M-2/H-2, M-3/H-3, and M-4/H-4
SNL-15	@P-10; 2300 fnl, 340' fwl, 26-22-31	Confirm T values in area with halite in all Rustler units along eastern boundary of WIPP	Drillhole data confirm halite present in P-10 and nearby oil and gas drillholes

Locations for SNL-6 and SNL-14 provide some challenges. From preliminary analysis, additional logs near the northeast corner of the hydrology domain indicate that halite is present farther west than was indicated in the original analysis (Powers, 2002). Although it is desirable to locate SNL-6 in an area without H-3, determining Culebra hydraulic properties near the boundary of the hydrologic domain is more important. SNL-6 would have to be located at considerable distance from this corner of the domain to assure not encountering H-3. Because SNL-14 is intended to test for the presence of a high T zone in the Culebra between H-17 and

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Dennis W. Powers, Ph. D. Consulting Geologist Assessing FY05 Drillhole Locations August 1, 2004

P-17, the drillhole should be located where H-3 is not present to minimize effects it may have on Culebra T values. Nevertheless, there are no drillholes between H-17 and P-17 to help delineate this margin. SNL-14 was therefore located approximately midway between the drillholes.

The coordinates for the drilling pads for each hole are:

Drillhole	UTM X (m)	UTM Y (m)	T,R Approximate Location (estimated)
Name	(NAD27)	(NAD27)	
SNL-6	621294	3595390	7-21-32, 1825 fsl, 1250 fel
SNL-8	618522	3583793	14-22-31, 900 fsl, 125 fel
SNL-13	610406	3577599	1-23-30, 1750 fsl, 400 fel
SNL-14	614871	3577302	4-23-31, 800 fsl, 1475 fel
SNL-15	617137	3581276	26-22-31, 2100 fnl, 500 fwl

Map locations, aerial photos with locations, and some site figures for each drill hole are included in the following pages.

Sincerely,

Dennin W Sources

Dennis W. Powers

Note that pages of this memorandum not relevant to SNL-15 have not been reproduced.

## Appendix A Drillhole Objectives

Dennis W. Powers, Ph. D. Consulting Geologist Assessing FY05 Drillhole Location: August 1, 200



Aerial photograph showing locations of SNL-8 and SNL-15.

Note that SNL-15 was relocated to the P-18 drillpad after this memorandum; red

Dennis W. Powers, Ph. D. Consulting Geologist Assessing FY05 Drillhole Locations August 1, 2004





Topographic map of SNL-15 location and photograph showing adjacent pad for oil well. WIPP Waste Handling building is on horizon just left of the pump jack.

11

## Dennis W. Powers, Ph. D.

**Consulting Geologist** 

March 6, 2005

Ron Richardson Field Lead WRES Rick Beauheim Hydrology Lead Sandia National Laboratories

#### Drilling Estimates and Revisions for New Hydrology Wells FY2005

Because of limits to the budget for drilling in 2005, I have revised the expectations for drillholes SNL-6, SNL-8, SNL-13, SNL-14, and SNL-15 (see accompanying Excel workbook). Here I also describe the differences with respect to the hydrology plan and also initial points about these drillholes (notes adjacent to initial Excel worksheet). In reassigning coring intervals and drilling depths, I have made an attempt to maximize the information for higher priority items. That does not mean that I think the earlier objectives were unnecessary or inappropriate. At the end of the summary, I provide some additional priorities for decision-making based on incremental costs as they accrue. For easy reference, a generalized diagram of the stratigraphy of each hole and the the intervals to be cored under this revision is included at the end of the drillhole summaries.

#### SNL-6

Prior Expectations for SNL-6

SNL-6 was originally located in the area of the northeast corner of the hydrological modeling domain. Its purpose is to establish model boundary conditions that are important in evaluating potential vertical-leakage pathways to the Culebra. In addition, the transmissivity of the Culebra at SNL-6 was expected to be low because it is generally in the vicinity of halite in Rustler units M-2/H-2 and M-3/H-3. SNL-6 was originally scheduled to be drilled during FY04.

The hydrology plan generically indicated that wells such as SNL-6 would be cored through the Magenta Dolomite Member ( $\sim$ 30 ft) and from the lower part of the upper Tamarisk Member anhydrite to about 20 ft below the Culebra Dolomite ( $\sim$ 70 ft) for a total of about 100 ft.

My initial forecast called for coring from the uppermost anhydrite of the Forty-niner Member through the base of the Rustler and into the upper Salado, a total of about 350 ft. This more ambitious plan was based on the lack of control for the mudstone/halite facies in all units and unknown effects on the hydrology of the Culebra and other units. It is not believed that the upper Salado is being dissolved at this location and drilling was projected for about 50 ft below an expected top of Salado. Coring above and beyond the hydrology plan included the Forty-niner mudstone and basal anhydrite, all of the upper Tamarisk anhydrite, and all of the Los Medaños plus a short interval in the upper Salado.

#### Current Plan for SNL-6

The current location for SNL-6 is south of the original location, but it is in the same geological setting. Halite is anticipated in M-2/H-2, although data are sparse. The current location is not within the boundary for halite in either M-3/H-3 or M-4/H-4, but the boundary for M-3/H-3 is also not well constrained in this area.

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Dennis W. Powers, Ph. D. Consulting Geologist Drilling Estimates and Revisions FY2005 March 6, 2005

The revised drilling estimate is only to the depth below the Culebra necessary to establish the casing and screen interval through the Culebra. The revised core intervals include the Forty-niner mudstone and Magenta to examine the M-4/H-4 halite margin. The Tamarisk mudstone (M-3/H-3) above the Culebra is partially cored under this plan. It is expected that halite is present in this unit.

The revised plan will eliminate coring and drilling of intervals through the lower Rustler and into the upper Salado. There will be no extension of detailed facies relationships or estimation of dissolution effects, if any, from these zones.

#### SNL-8

Prior Expectations for SNL-8

SNL-8 is located adjacent to the north edge of the drilling pad used for P-20. Because it is located west of the apparent margin of halite in M-3/H-3, it will provide information on the relationship of Culebra transmissivity to the presence or absence of salt in the unit. It also is in the vicinity of numerous oil and gas wells and will provide information on Culebra heads in such an area. The location of SNL-8 is also expected to provide information about the direction and rate of groundwater flow across the WIPP for annual reporting to the NMED. SNL-8 was originally scheduled to be drilled during FY05.

The hydrology plan generically indicated that wells such as SNL-8 would be cored through the Magenta Dolomite Member ( $\sim$ 30 ft) and from the lower part of the upper Tamarisk Member anhydrite to about 20 ft below the Culebra Dolomite ( $\sim$ 70 ft) for a total of about 100 ft.

My initial forecast called for coring from the uppermost anhydrite of the Forty-niner Member through the Magenta and from above the Tamarisk mudstone into the upper Salado, a total of about 280 ft. This plan was based on the lack of detail for the mudstone/halite facies in all units, although the halite facies limits for each unit has already been estimated based on the descriptions from drillhole P-20. It is not believed that the upper Salado is being dissolved at this location and drilling was projected for about 100 ft below an expected top of Salado. Coring above and beyond the hydrology plan included the Forty-niner mudstone and basal anhydrite, and all of the Los Medaños plus a short interval in the upper Salado.

#### Current Plan for SNL-8

The location for SNL-8 has not changed. Halite is not anticipated in M-2/H-2, although the margin is not distant. The current location is not within the boundary for halite in either M-3/H-3 or M-4/H-4.

The revised drilling estimate is to a depth about 40 ft below the Culebra to try to establish the presence of halite in the upper part of M-1/H-1 and obtain some textural details through coring. The revised core interval eliminates coring of the Forty-niner mudstone to examine the M-4/H-4 halite margin; the Magenta is cored to provide regional data. The Tamarisk mudstone (M-3/H-3) above the Culebra is cored under this plan. It is expected that halite is not present in this unit. The lower Rustler and upper Salado are neither drilled nor cored in this revised plan.

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The revised plan will eliminate coring and drilling of intervals through and around the Magenta as well as through the lower Rustler and into the upper Salado. There will be no extension of detailed facies relationships or estimation of dissolution effects, if any, from these zones.

#### SNL-13

Prior Expectations for SNL-13

No drillhole designated SNL-13 was included in the original hydrological program plan. SNL-13 is located southwest of the southwest corner of the WIPP site, in an area estimated to be near the margin of halite in the lower Rustler (M-1/H-1). This location is approximately midpoint between two wells (WTS-4 and WTS-6) proposed for the groundwater monitoring program. WTS-4 was meant to replace the P&A drillhole P-15 that was monitored for a number of years. WTS-6 was to provide monitoring information as well as Culebra transmissivity data near the upper Salado dissolution margin. In addition, a Magenta well was proposed for the WTS-6 location to provided needed transmissivity and head data for modeling. WTS-4 was scheduled to be drilled in FY03; WTS-6 was scheduled to be drilled in FY04. The location of SNL-13 likely will provide information about the direction and rate of groundwater flow across the WIPP for annual reporting to the NMED.

The hydrology plan generically indicated that wells WTS-4 and WTS-6 would be cored through the Magenta Dolomite Member (~30 ft) and from the lower part of the upper Tamarisk Member anhydrite to the upper Salado (~145 ft) for a total of about 175 ft.

My initial forecast called for coring of the Magenta and from above the Tamarisk mudstone into the upper Salado, a total of up to 320 ft. This plan was based on the lack of detail for the mudstone/halite facies in all units in this area, although the halite facies limits for each unit has already been estimated based on the descriptions from nearby drillholes. It is not known whether the upper Salado is being dissolved at this location and drilling was projected as much as 235 ft below an expected top of Salado to reach a marker bed. Coring above and beyond the hydrology plan included more of the lower Tamarisk and a longer interval in the upper Salado.

#### Current Plan for SNL-13

The location for SNL-13 has not changed significantly since it was first proposed. Halite not anticipated in M-2/H-2 or higher. The halite margin for M-1/H-1 is not well constrained in this area. Geophysical logs from surrounding drillholes have been briefly examined and are expected to yield enough information to supplement data from drilling and coring the Rustler/Salado contact.

The revised drilling estimate is to a depth about 10 ft below the Rustler/Salado contact to try to establish whether halite has been dissolved from the uppermost Salado. The core and drilling will also investigate the presence of halite in the upper part of M-1/H-1 and obtain some textural details. The Tamarisk mudstone (M-3/H-3) through Culebra is cored under this plan. The revised

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core interval includes coring of the Magenta; Magenta hydraulic properties in this area are likely to be important, and the hydrology plan locates a Magenta well in this area (WTS-6).

#### SNL-14

Prior Expectations for SNL-14

No drillhole designated SNL-14 was included in the original hydrological program plan. SNL-14 is located south of the southern boundary of the WIPP site, about midway between drillholes P-17 and H-17, where the Culebra has been tested and monitored. SNL-14 is about centered in an area that was designated the "high-T zone" for the Culebra in many earlier reports. The nearest equivalent well in the existing hydrology program plan was designated WTS-11, and it was originally located nearer the southern WIPP boundary, at the drillpad for P-8. WTS-11 was intended to be a replacement for P-17. WTS-11 was to provide monitoring information as well as Culebra transmissivity data. WTS-11 was scheduled to be drilled in FY05. The location of SNL-14 likely will provide information about the direction and rate of groundwater flow across the WIPP for annual reporting to the NMED.

The hydrology plan generically indicated that wells such as WTS-11 would be cored through the Magenta Dolomite Member ( $\sim$ 30 ft) and from the lower part of the upper Tamarisk Member anhydrite to below the Culebra ( $\sim$ 70 ft) for a total of about 100 ft.

My initial forecast called for coring the Forty-niner mudstone and through the Magenta and from above the Tamarisk mudstone into the upper Salado, a total of up to 350 ft. This plan was based on the lack of detail for the mudstone/halite facies in all units in this area and the import of SNL-14 as an indicator of the "high-T zone" that is not as prominent in recent modeling based on the Culebra geohydrological conceptual model. Nearby drillholes (P-17 and H-17) bracket the presence and absence of halite in the units above and below the Culebra, and this location is important as a test of the extension of a possible dissolution zone in M-3/H-3. The upper Salado is not likely to be dissolved at this location, but drilling and coring was projected into the upper Salado to thoroughly test the any relationship between high Culebra transmissivity and upper Salado dissolution. Coring above and beyond the hydrology plan included more of the lower Tamarisk and a longer interval in the upper Salado.

#### Current Plan for SNL-14

Since it was first proposed, the location for SNL-14 has been moved somewhat to mitigate impacts from construction near the Los Medaños, but it is still located along a general midline between H-17 and P-17. There are no changes in the estimates of the geological setting for this drillhole from the original plan for SNL-14. Although SNL-14 is south of the intended location for WTS-11, the geology is expected to be similar.

The revised drilling estimate is to a depth about 50 ft below the Culebra, the depth necessary to check reasonably for halite in the underlying M-2/H-2 and M-1/H-1. The revised core interval includes the Magenta, although there is no plan to locate a Magenta well in this area. The interval including Tamarisk mudstone (M-3/H-3) through Culebra and into the middle of the Los

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Medaños is cored under this plan. This provides a test of the halite in the Tamarisk mudstone as well as an attempt to intercept the upper halite of the lower Rustler (M-1/H-1).

This revised plan eliminates coring of the Forty-niner mudstone to examine the M-4/H-4 halite margin, and it eliminates coring and drilling of the lowermost Rustler and Salado. Direct drillhole and textural evidence from these zones will not be obtained.

#### **SNL-15**

Prior Expectations for SNL-15

No drillhole designated SNL-15 was included in the original hydrological program plan. SNL-15 is now located east of the eastern boundary of the WIPP site at the drilling pad for P-18, where the Culebra has been tested and monitored. The hydrology program plan included a groundwater monitoring well (WTS-3) at this location for the Culebra as well as a Magenta test well. Culebra transmissivity is very low at P-18 compared to other test holes, and the presence of halite in underlying and overlying units is believed to be related to the low transmissivity. Because M-4/H-4 above the Magenta is also expected to have halite, the Magenta characteristics here are also of interest. WTS-3 was scheduled to have both Culebra and Magenta wells drilled and completed in FY05. Another groundwater monitoring well (WTS-9) in this same geological setting, but nearer halite margins, was also scheduled to be completed in FY05.

The hydrology plan generically indicated that wells such as WTS-3 and WTS-9 would be cored through the Magenta Dolomite Member ( $\sim$ 30 ft) and from the lower part of the upper Tamarisk Member anhydrite to below the Culebra ( $\sim$ 70 ft) for a total of about 100 ft.

My initial forecast for SNI-15 called for coring the entire Rustler Formation to establish all of the facies relationships toward the depositional center where all mudstone/halite units are believed to include halite. Including a short interval from the upper Salado brought the estimated core interval to 475 ft. Coring above and beyond the hydrology plan included the upper contact of the Rustler with Dewey Lake, all of the Forty-niner, all of the Tamarisk and all of the Los Medaños.

#### Current Plan for SNL-15

The location for SNL-15 has been moved somewhat since it was first located nearer the halite margins. Proposed locations near existing oil wells were not acceptable to the companies involved. The P-18 drillpad does not have this problem, and it is clearly in a region of hydrological interest. The potential effects of being near a halite margin are not going to be tested in this drillhole, but it should provide more of a benchmark regarding low transmissive Culebra and the relationship of transmissivity of Rustler units to halite in the formation.

The revised drilling estimate is to a depth about 23 ft below the Culebra to allow completion. The revised core interval includes the Culebra and the upper Los Medaños (M-2/H-2).

This revised plan eliminates coring of all Rustler except the Culebra and immediate surrounding units. The evidence regarding halite from P-18 above the total depth of SNL-15 is expected to be confirmed by cuttings. Although a well for the Magenta was proposed here in the hydrology

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plan, the Magenta has not been included in coring here because of immediate costs. It could also be cored if a Magenta well is actually sited here.



#### Priorities for Making Decisions During Drilling

#### Expansion of Drilling and Coring

If the accrued expenses of drilling permits additional targets to be designated, here are my priorities, from higher to lower:

- M-4/H-4 at SNL-8 (+ 35 ft)
- Magenta Dolomite at SNL-15 (+ 30 ft)
- Extend coring above and below Culebra (+ 40 ft)

#### Contraction of Drilling and Coring

If accrued expenses of drilling require coring to be reduced in later drillholes, here are my priorities, from first to be reduced to last to be reduced:

- Eliminate Magenta at SNL-8 (- 30 ft)
- Eliminate Forty-niner coring at SNL-6 (- 40 ft)
- Eliminate Magenta coring at SNL-6 (- 30 ft)

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#### Summary Comments on Revisions

The initial program of drilling and coring I recommended was aggressive, and I intended it to provide a solid base of physical evidence bearing on the geohydrological factors that contribute to the understanding of the spatial variation in the hydraulic properties of the Culebra Dolomite as well as the Magenta Dolomite. A hydrogeological conceptual model of the Culebra has been put forward, and these drillholes provide additional means of testing that model. Although a similar conceptual model of the Magenta has not yet been established, the spacing and distribution of these drillholes potentially add much to the existing coverage, as the eastern sector of the WIPP hydrologic modeling domain is not well represented by cores. Although Salado dissolution is not expected to be a significant factor in any of these five locations except possibly SNL-13, the distribution of halite and other Rustler facies, along with depth, are expected to be significant for the Culebra. The general distribution of halite in the Rustler is believed to be well known, but the margins are still poorly sampled to determine the potential for dissolution to have affected local halite distribution and hydraulic properties of these units.

With budget limitations in mind, I have attempted my version of *triage* – to sort or allocate on the basis of need for or likely benefit from ....

I have eliminated all drilling and coring of the basal Rustler and upper Salado except for SNL-13, which is located in part to test the potential effects of upper Salado dissolution. Data from other drillholes will supplement the estimate of upper Salado dissolution at SNL-13 and the amount of coring and depth has been greatly reduced. Drilling of the basal Rustler and upper Salado in the remaining holes, without core, would not significantly improve knowledge, although a specific data point on the contact might be provided by a geophysical log. I have eliminated coring of any units significantly above or below the Culebra in SNL-15 because there is little doubt about the presence of halite in all mudstone/halite units. I have also eliminated coring of some mudstone/halite units in different holes to focus on the greatest priority, the Culebra Dolomite.

Thirty years of experience at WIPP indicate to me that the cost of not having information and the cost of later providing equivalent information is more expensive than the savings of the moment. Nevertheless, I provide here a basis for choosing drillhole depths and core intervals from the five wells to be drilled and completed in FY04 with these limitations in mind. I will work with you on priorities as the drilling unfolds to do my best to balance the technical needs and budgetary limitations.

Sincerely,

Dunia W Burr

Dennis W. Powers

# Appendix B Abridged Borehole History

The abridged borehole history has been prepared by compiling information from driller's reports by West Texas Water Well Service (WTWWS) personnel, on-site reporting by Washington Regulatory and Environmental Service (WRES) personnel, and geologic logs by Dennis W. Powers. The main information is from WTWWS reports, which are reported as Central Daylight Time. For consistency, all information in the abridged borehole history has been converted to Central Daylight T WRES in the Environmental Monitoring and Hydrology Section.

**Released to Imaging: 12/2/2024 3:30:35 PM** 

<u>Note:</u> The abridged drillhole history provided here has been compiled mainly from the daily records produced by personnel of West Texas Water Well Service (WTWWS) and provided to Ron Richardson (Washington Regulatory and Environmental Services). The information has been reformatted and has been modestly edited. *Additions to the record from notes by Dennis Powers or other personnel are in italics*. All times reported in the abridged drillhole history are in CDT (Central Daylight Time) as recorded by WTWWS because they operate from Odessa, TX. Any additional notes included here (*in italics*) with times recorded in MDT (Mountain Daylight Time) at the site have been converted to CDT. Geologic logs (main body of text) have times as MDT, and times in the geologic logs commonly vary slightly from driller's log after allowing for the hour time difference. Drilling operations at SNL-15 were under restrictions because the site is located in designated prairie chicken habitat. As a consequence, actual rig operations could not begin until after 09:00 MDT or 10:00 CDT each day.

<u>6-01-05</u> Left Odessa, TX, at 08:00 CDT (*see note above*) and arrived at SNL-15 drillpad site at 09:30. Conducted safety meeting. Set rolloff from Tripod. Drilled 12.75" hole to 39.5' by 11:00. Tripped out of hole by 11:12. Prepared to run surface casing by 11:25. Pulled surface casing from hole and reamed to 39.5' from 11:25 to 12:20. Reran 40' casing in hole, leaving 6" stickup above pad level. Cemented surface casing with 42 sacks of cement, *formed pad*, and left site at 14:30.

<u>6-02-05</u> Arrived on site at 10:00. Held safety meeting. Rigged up diverter for drilling with air and completed rigging up at 13:20. Drilled 7.875" hole from 39.5' at 13:20. Reached 330' at 19:58. Tripped out to collars by 20:15 and departed site.

<u>6-03-05</u> Arrived on site at 10:05. Held safety meeting. Tripped into hole by 10:40. *No water in drillhole*. Worked on mist pump until 11:15. Drilled 7.875" hole from 330' beginning 11:25. Reached 650' at 19:25. Tipped out of hole to collars, shut down, and departed site *at 20:15*.

<u>6-04-05</u> Arrived on site at 10:15. Held safety meeting. Tripped into hole from 10:30 to 11:06 to 650'. Drilled from 650' to 900' by 17:46, reaching coring point. Tripped out drillhole by 18:35, shut down and departed site.

<u>6-05-05</u> Richardson on site at 09:00, performed housekeeping chores. John Wood (Diamond Oil Well Drilling Company - DOWDCO) arrived at 09:35. WTWWS crew arrived on site at 10:00. Held safety meeting and performed rig maintenance. Action Safety personnel on site 10:15 for inspection. Put core tool together and began to trip in at 11:02. Reached bottom (900') and began to core at 12:20. Cut 27' by 13:35. Tripped out by 15:14. Laid down core, recovering 27'. Tripped into hole from 15:40 to 16:55. Cut 23' (950') by 17:30. Tripped out by 18:20 and laid down core; 24' recovered. Broke down core tool and loaded it for DOWDCO. John Wood departs site at 19:20. Shut down and left site at 20:00.

<u>6-06-05</u> Arrived on site at 10:00. Held safety meeting. Laid rig over to install new cat rope. *Lea Land on site,* moved rolloff out by 10:47. Placed 4.5 bags of HolePlug® to plug cored section from 950' to 938'. Tripped into hole with 7.875'' bit and reamed cored section to 940'

from 12:20 to 13:40. Tripped out of hole by 14:40. Removed diverter from rig by 15:05. Jet West (Al Henderson) on site and logged well from 15:05 to 17:45. Secured site and left.

**<u>6-07-05</u>** Arrived on site at 10:00. Held safety meeting. Loaded drill pipe onto truck. Laid out tremmie pipe and tallied lengths. Ran tremmie pipe into hole by 12:45. *Mike Stapleton (New Mexico State Engineer representative) on site at 14:20 to observe completion.* Ran 2.5-inch

glass-reinforced plastic casing into hole to 935' by 15:12. Screen interval is from 928.5-902' below ground level, with 0.070-inch slots. Put 1 bag of HolePlug® into the annulus below pipe. Placed 4/10 gravel from 935' to 896' by 16:09. Put 3 additional bags of HolePlug® on gravel to bring seal to 891' by 14:30 and allowed plug to set for 15 minutes. *LaFarge on-site at 16:20; set up and* pumped cement from 16:45 to 17:50. *Stapleton departs 17:00*. Pulled tremmie pipe from hole by 18:20. Shut down and departed site.



Luis Armendariz (l) of West Texas Water Well Service and John Wood (r) of Diamond Oil Well Drilling Company prepare to core SNL-15 on June 5, 2005.

# **Appendix C Geologic Logs**

Note:

fering scales, and the graphic logs for publication were generally produced at 10 or 20 vertical ft per inch, as indicated in the header for the log.

can vary somewhat from depths determined for stratigraphic units based on geophysical logs (see Т

data. Depths used for completing the well are based on geophysical logs.

Evaluation of Symbola Llood in									
Explanation of Symbols Used In									
Lithology EUGS (Appendix C) Lithology Features									
	33		Cross-cutting strata						
	Construction fill		Ripples						
	Fine sand or sandstone	$\gamma$	Bioturbation						
		~~~~~	Stylolite						
	Medium or coarse sand or sandstone		Wavy bedding						
	Siltstone	y >> > >>	Stromatolites, algal bedding						
	Claystone	\forall	Vertical gypsum crystals						
	Organic-rich		Gypsum nodules						
	claystone		Clasts, may show lithology as fill pattern						
	Carbonate (pedogenic calcrete)	\triangleright	Brecciated, fractures						
	Dolomite	f	Fracture, f _g for gypsum- filled, f _h for halite-filled						
	Gypsum		Erosional boundary						
			Sharp lithologic contact						
	Anhydrite		Gradational lithologic contacts						
	Polyhalite	hz	Hard-drilling zone						
		sl	Slickensides						
+ + + + + + + + + + + + + + + + + + +	Halite	ns	No cuttings sample						
+ + +	Symbols may be combi	ned; not a	Il symbols may be used						
CORE LOG Sheet _							of		
--	---	--------------------------	-----------	---	---	--	--	--	--
Hole I	D: SNL	-15		Location: S	Location: SE 1/4 of SE 1/4, section 26, T23S, R31E, Eddy Co, NM				
Drill Da Drill Ci Service	ate: <u>6/1/2</u> rew: <u>Wes</u> e	2005 t Texas W	ater Well	Drill Method: Rotary with air Drill Ma Hole Diameter: initial 7.875 inches Barrel S Hole Depth: Drill Flu Hole Orient: vertical downward Core Print		Drill Make/Moo Barrel Specs: . Drill Fluid: <u>air</u> Core Preserv:	Model: Gardner-Denver 1500 cs: 6.75 in o.d., 4 in. core air rv: box as is		
Logged by: Dennis W. Powers, P				h.D., consulting geologist Date: Scale: Scale:			= 20 ft		
UTM (NAD27)				No 35803	Northing Easting		Elevation (amsl)		
Survey Coordinate: (m) Comments: Described lithology				rom ground leve	300330.30 m 618352.94 m 3477.94 ft m ground level to 900 ft on the basis of collected cuttings. Cored interval described on p.7. at 10 ft intervals				
	0								
Run Number	Depth (ft)	% Recovered	RQD	Profile (Rock Type)	Description Contacts are placed midway between samples			Remarks	
N/A		N/A C-1 C-2 C-3	N/A		0-5': Dune sand; weak red (2.5YR4/2); f-vf, subround to round grains; <1% dark opaque grains; friable set 40 10': Calcareous sandstone (Mescalero caliche), white; f-vf, subround grains; few dark opaque grains; moderate of 8.6 induration; with calcareous sandstone (Gatuña Formation); red (2.5YR5/6); vf-f, subround; few dark opaque grains; some MnO ₂ stains; moderate to strong induration. 20': Gatuña as above.			Drilled to 39.5 ft; set 40 ft of steel casing with o.d. of 8.625 inches and cemented to surface	
	40	C-4 C-5			30': Calcareous s subround to roun- stains; strong ind 40': Siltstone, arg red (5YR6/6); with moderate indurat	andstone (Gatuña ded grains; ~1% c uration. jillaceous (Santa F h some probably r ion	a); pink (5YR7/3) lark opaque grai Rosa Formation) nica; non-calcard	; med-vf; ns; MnO ₂ ; yellowish eous;	Begin drilling from 39.5 ft with air on
		C-6			50': generally as a more indurated	above; reddish-bro	own (5YR5/6); sl	ightly	6/2/05.
	60	C-7			60': as above				
		C-8			70': Sandstone, silty; light reddish-brown (5YR6/4); v.f-f; well indurated; fine laminae (0.125 inch); few mica grains				
	80	C-9			80': as above, mo	ore mica and coars	ser grains: med t	to vf.	
		C-10			90': Siltstone, arg moderate indurat upper Dewey Lak	illaceous; reddish ion, some possible te Formation	-brown (5YR4/4) e mica; slightly c	; alcareous;	
	100	C-11			100': Siltstone, ar moderate indurat	gillaceous; reddis ion	h-brown (2.5YR4	4/4);	

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Hole ID: SNL-15 CORE LOG (cont. sheet) Sheet 2 of 7						eet <u>2</u> of <u>7</u>
Logge	ed by: _	Dennis	W. Po	wers, Ph.[D. Date: 6/2/05	
Run Number	Depth (ft)	% Recovered	RQD	Profile (Rock Type)	Description	Remarks
N/A		N/A C-12	N/A		110': Siltstone, argillaceous and sandy; reddish-brown (2.5YR4/4); moderate induration	
	120	C-13			120': similar to above, with some hard sandstone chips of similar color; f-vf sand grains; well indurated	
		C-14			130': similar to 110'.	
	140	C-15			140': Siltstone, argillaceous; reddish brown (2.5YR4/4); moderate induration	
		C-16			150': similar to above	
	160	C-17			160': similar to 120'.	
		C-18			170': similar to 120', more sand than at 160'.	
	180	C-19			180': similar to 110'	
		C-20			190': similar to 110'	
	200	C-21			200': similar to 170'	
		C-22			210': similar to 110', trace of fibrous gypsum	
	220	C-23			220': similar to 210'	
		C-24			230': simlar to 110', no trace of gypsum	
	240	C-25			240': similar to 120', mixed sandstone and siltstone	
		C-26			250 : Sinstone, readish-brown (2.5YR5/4); poorly indurated, trace gypsum	
	260	C-27			260": Sandstone, weak red (2.5YR5/2); vf; well indurated, may be cemented with sulfate; platy	

Hole ID: SNL-15 CORE LOG (cont. sheet) Sheet _					eet <u>3</u> of <u>7</u>
Logged by:	Dennis	W. Po	wers, Ph.[D. Date: 6/2-3/05	
Run Number Depth (ft)	% Recovered	RQD	Profile (Rock Type)	Description	Remarks
N/A	N/A C-28	N/A		270': similar to 260'; fibrous gypsum common	
-280	C-29			280': similar to above, little gypsum	
	C-30			290': similar to above, more gypsum.	
300	C-31			300': similar to above, less gypsum	
	C-32			320': similar to above; little gypsum	
320	C-33			330': similar to above, slightly more red (2.5YR5/4; reddish	End drilling @ 330'
	C-34			brown); small (<0.05 inch) greenish reduction spots becoming more common	6/2/05; begin drilling @ 330' 6/3/05; air
340	C-35			340': similar to 320'; small greenish reduction spots common 350': as above	
	C-36				
360	C-37			360': as above	
	C-38			370': as above	
380	C-39□			380': Siltstone, little sand; reddish brown (2.5YR5/4); common plates of fibrous gypsum	
	C-40			390': similar to 370'	
400	C-41			400': as above	
	C-42			420': as above	
420	0-43		<u></u> 7		

Appendix C Geologic Logs

Hole ID: SNL-15 CORE LOG (cont. sheet) Sheet4 of7					
Logged by:	Dennis	W. Po	wers, Ph.[D. Date: 6/3/05	
Run Number Depth (ft)	% Recovered	RQD	Profile (Rock Type)	Description	Remarks
N/A	N/A C-44	N/A		430': Siltstone, sandy; reddish brown (2.5YR5/4); vf sand; small greenish-gray reduction spots (generally < 0.25 inch) common; well indurated; fibrous gypsum common	
440	C-45			440': similar to above, little gypsum	
	C-46			450': similar to above	
460	C-47			460': similar to above, more gypsum	
	C-48			470': similar to above, little or no gypsum	
480	C-49				
500	C-50 C-51			500': similar to above, some gypsum	
	C-52			510': similar to above, some gypsum	
-520	C-53			520': similar to above; reduction spots generally larger	
	C-54			530': Siltstone; reddish brown (2.5YR5/4); some reduction spots, little or no gypsum; moderate induration	
540	C-55			540': similar to above	
	C-56			550': Siltstone, sandy; similar to 500'; little gypsum	
560	C-57			560': Siltstone, similar to 530' 570': similar to above; trace gypsum	
580	C-58 C-59			580': Siltstone, sandy; similar to 530'	

Hole ID: SNL-15 CORE LOG (cont. sheet) Sheet _5_ of _7					eet <u>5</u> of <u>7</u>	
Logge	ed by: _	Dennis	W. Po	wers, Ph.[D. Date: 6/3-4/05	
Run Number	Depth (ft)	% Recoverec	RQD	Profile (Rock Type)	Description	Remarks
N/A	560	N/A	N/A		500's Siltetopo, condy; reddich brown (2 5VP5/4); yf cond;	
		C-60			small greenish-gray reduction spots (generally < 0.25 inch); moderate induration; trace fibrous gypsum	
	600	C-61			600': Siltstone, slightly sandy; reddish brown (2.5YR5/6); few reduction spots; little gypsum	
		C-62			610': similar to 590'	
	620	C-63			620': similar to 590' approximate base Dewey Lake Formation	
		C-64 C-65	Î		approximate top Rustler Formation 627': Anhydrite, white to light gray, fine crystalline 630': similar to above, little or no gypsum	
	640	ns	t			
		C-66	ember exter		650': similar to above	End drilling @ 650' on 6/3/05 Begin drilling @ 650' on 6/4/05
	660	C-67	/-niner Me	+ + + + + + + + + + + + + + + + + + +	660': Halite, clear; with some mixed anhydrite as above	010/4/00
		C-68	timate Fort)		670': Siltstone, sandy; weak red (2.5YR5/2)	
	680	C-69	approx	; <u>-</u>	680': Halite and weak red siltstone, mixed	
		C-70			690': Siltstone; gray (2.5YRN/6); minor clear halite	
	700	C-71	ļ		700': similar to above; no halite	
		C-72	a Dolomite er		710': Dolomite, weak red (2.5YR5/2)	
	720	C-73	~Magentá Membé		720': similar to above	
		C-74	amarisk 1ember		730': Anhydrite, gray	
	740	C-75	~ ™ >		740': similar to above	

Hole ID: SNL-15					CORE LOG (cont. sheet) She	eet <u>6</u> of <u>7</u>
Logge	ed by: _	Dennis	W. Po	wers, Ph.I	D. Date: 6/4/05	
Run Number	Depth (ft)	% Recovered	RQD	Profile (Rock Type)	Description	Remarks
N/A	740	N/A	N/A			
		C-76			750': Anhydrite, gray, fine to medium crystalline	
	760	C-77			760': similar to above	
		C-78			770': similar to above	
	780	C-79			780': similar to above	
		C-80			790': Anhydrite, white to light gray, fine crystalline	
	800	ns				
		ns				
	820	ns	xtent			
		C-81	Member e		830': Anhydrite, gray (may be from above)	
	840	C-82	Tamarisk		840': Siltstone, reddish brown (2.5YR5/4); with clear halite	
		C-83	proximate	· _ + + + 7 T _ T F 1 7 T _ T F 1	850': similar to above	
	860	ns	at			
		C-84			870': similar to above	
	880	C-85			880': similar to above; with gray siltstone	
		C-86			890': Anhydrite, gray	
	900	C-87			900': similar to above	End drilling @ 900' on 6/4/05

•

Hole	ID: <u>S</u>	NL-15			CORE LOG (cont. sheet) She	eet <u>7</u> of 7
Logge	ed by: _	Dennis	W. Po	wers, Ph.I	D Date: 6/5/05	
Run Number	Depth (ft)	% Recovered	RQD	Profile (Rock Type)	Description	Remarks
1	900 910	cut 27'; recovered 27.4'	~8' in segments <4"; RQD = 70.8		Ahydrite and gypsum, dark gray, generally f-m crystalline, with clear gypsum in pores and sulfate needles grown into space before gypsum crystallized. Thin beds to laminae; purplish from 904.2-904.6' 904.9' Base of Tamarisk Member Top of Culebra Dolomite Member Dolomite, light gray (5Y7/2) to pale yellow (5Y8/3); bedded, some wavy thin laminae; large (to ~2") anhydrite and gypsum nodules scattered throughout. Tiny (<1/16") vugs filled with silt (dolomite?) from ~934', become slightly larger from ~925.5'; filling is darker in some vugs, brown from 925.6-922.5'; not present above 919'. Sub-vertical, irregular to somewhat planar, fractures with halite fill (apertures ~0.01-0.03 inches) at 1-3 inch horizontal spacing; some bedding plane halite. Wavy laminae 910.1-910.5', 910.8-912.3'. Sandy dolomite 921.2-921.3'. Erosion surface(?) at ~923' above laminar zone	Begin coring @ 900' on 6/5/05
2	930 940 950	cut 23'; recovered 24.1'	~8.5' in segments <4"; RQD = 64.7		935.4' Base of Culebra Dolomite Member Top of Los Medaños Member 935.4-938.7': Claystone, silty, gray (5Y5/1) at base to dark gray (5Y4/1) at top; gypsum 938.3' and 936'. Thin bedded and thin laminae, ~horizontal. Gypsum and halite(?) in narrow fractures 936.5-937'; slickensides to ~50° from horizontal. 938.7-951.5': Halite, clear, gray to slightly orange, f-vc (up to 1.5''), with variable amounts of silty claystone (5YR5/4; reddish-brown) in interstices and as irregular beds and zones; halite is displacive in mud, with mainly more irregular boundaries and some incorporative growth. Sulfatic 943.3- 945.5', polyhalite(?) 943.3-943.7'.	End coring @ 951.5' on 6/5/05
	960					

Appendix C Geologic Logs



Storm clouds southeast of SNL-15 as seen from SNL-15 well pad June 5, 2005. Photo by Denis W. Powers.

Appendix D Permitting and Completion Information

А

management coordinator, Environmental Monitoring and Hydrology Section of Washington Regulatory and Environmental Services for the WIPP Project. Selected documents are

matters should refer to the New Mexico State Engineer permit number C-3152.

Information on management of well-drilling wastes for SNL-15 is not included; at the time of basic data report preparation, these wastes were still being characterized for disposal.

Dennis W. Powers, Ph. D.

Consulting Geologist

June 6, 2005

Ron Richardson

Field Lead WRES Rick Beauheim Hydrology Lead Sandia National Laboratories

Re: Screen Interval for Culebra Dolomite Member in SNL-15

The information regarding the Culebra Dolomite Member in SNL-15 indicates that the best interval to screen is from 902–928.5 ft below the drilling pad level. This decision is based on geophysical logs completed on June 6, 2005 (see attached figure) and cores from SNL-15.

These are factors considered in this decision for SNL-15:

- The Culebra interval, based on the natural gamma geophysical log, is from 902–932 ft. This interval is 30 ft thick, a little thicker than average around the WIPP site, and it is consistent with the recovered core thickness. There is little indication of fluid production from the Culebra; fractures and some pore spaces are filled with halite.
- The transition from Culebra to Los Medaños was recovered, showing the gray claystone below the Culebra was inducated and not particularly plastic. The base of the screen will be placed at ~928.5 ft to provide best coverage of Culebra, well above the claystone.
- The screened or slotted section of the casing joint is expected to be ~26.5 ft long. This will incorporate all of the Culebra except the basal 3.5 ft, which has little porosity.
- Halite was detected about 3 ft below the Culebra in M-2/H-2. HolePlug® will be placed around the blank below the Culebra, to ~935 ft, helping to isolate this interval. HolePlug® was also put into the drillhole to plug from 940 ft to total depth before reaming the cored interval to a final nominal diameter of 7.875 inches to a depth of 940 ft. There is little potential for dissolution of this salt by Culebra brine.
- Geophysical logs and core indicate the anhydrite (A-2) above the Culebra is intact. There is halite in this unit and H-3 is present above A-2. HolePlug® above the gravel pack will restrict fluid movement. There is little potential for dissolution by any Culebra brine.
- The sand/gravel pack should be placed from the top of HolePlug® at ~935 ft to ~897 ft to provide good flow through the screened interval and allow for any immediate compaction. The annulus will be cemented from the top of the HolePlug® at ~892 ft to the surface. Tamarisk halite (H-3) occurs at SNL-15, not mudstone (M-3).
- Because of the pressure and heat generated by cement in the annulus, the casing will be filled with fresh water prior to cementing to prevent physical damage. The fresh water will be removed (probably by air lift) at an early time after hole completion.

I believe this letter summarizes the hydrological and geological justification for setting the screened interval and preparing SNL-15 for completion.

Sincerely,

Dennis W Sources

Dennis W. Powers

140 Hemley Road, Anthony, TX 79821 Telephone: (915) 877-3929 E-mail: dwpowers@evaporites.com

CELL: (915) 588-7901

Released to Imaging: 12/2/2024 3:30:35 PM

Dennis W. Powers, Ph. D.

Consulting Geologist

June 6, 2005

Partial Geophysical Log of SNL-15 Showing Completion Intervals



140 Hemley Road, Anthony, TX 79821Telephone: (915) 877-3929E-mail: dwpowers@evaporites.comCELL: (915) 588-7901

Dennis W. Powers, Ph. D.

Consulting Geologist

August 23, 2005

Rey Carrasco

Geotechnical Engineering Washington TRU Solutions Carlsbad, NM 88220

Storage and Retention of Cores and Rock Samples from SNL-15

Background

Cores and cutting samples have been collected from drillhole SNL-15 in support of the drilling and testing program to investigate the hydrology of the Culebra Dolomite Member of the Rustler Formation as well as other units of hydrogeological significance to the program. These samples were collected under my supervision, and the chain-of-custody has been maintained by me or WRES personnel. SNL-15 is being drilled, completed, and tested under WTS contract provisions and under provisions in the hydrology program plan (SNL. 2003. Program Plan, WIPP Integrated Groundwater Hydrology Program, FY03-09, Revision 0. March 14, 2003. ERMS 526671).

Core and Cuttings Storage Conditions

There is no sample or core testing planned for SNL-15 requiring abnormal handling, preservation conditions, or immediate action to obtain test information. As a consequence, these samples and cores can be maintained in your current core storage facilities. Many of the cores obtained from SNL-15 are likely to be accessed in the next few months for further geologic studies to establish more details of stratigraphic, sedimentologic, and diagenetic conditions and events. These studies, if carried out, will be carried out under a formal plan, most likely developed under QA requirements of Sandia National Laboratories.

Core and Cuttings Retention Periods

It is recommended that <u>cores</u> obtained from SNL-15 be maintained indefinitely under normal storage conditions because of their relevance to hydrology and monitoring programs. The <u>cores</u> can be accessed for observations, and they can be removed for further laboratory study, including possible destruction, under a plan with appropriate management and QA approval.

It is recommended that <u>cuttings</u> samples be retained under normal storage conditions through the approval by EPA of the second CRA. The <u>cuttings</u> are commonly very fine in shallow sections and add little to the geologic record from initial observations as well as geophysical logs. <u>Cuttings</u> may be accessed for observation, and they may be removed for further laboratory study, including possible destruction, under a plan with appropriate management and QA approval.

Supplemental Information

Descriptive core logs and digital photographs of cores with a photograph log will be provided to you on CD-ROM format in accessible formats when the content has been reviewed for the basic data report for SNL-15.

Wennin W Sources

Dennis W. Powers

Copy to: Ron Richardson, *Environmental Monitoring*, WRES Richard L. Beauheim, *Hydrology Lead*, Sandia National Laboratories

140 Hemley Road, Anthony, TX 79821 Telephone: (915) 877-3929 E-mail: dwpowers@evaporites.com

FAX: (915) 877-5071

	APPLICATION FOR PERMIT
	To appropriate (explore & monitor) the Underground Waters of the State of New Mexico
Date	e Received 02-07-05
1.	Name of applicant U.S. Department of Energy, Carlsbad Field Office WTPP
	Mailing addressP.O. Box 3090, Carlsbad, New Mexico 88221-3090
	City and State <u>Carlsbad</u> , New Mexico, 88221
2.	Source of water supply Artesian - Culebra located in Carlsbad
	(Artesian or shallow water aquifer) (Name of underground basin)
3.	The well is to be located in the sw 1/4 se 1/4 Section 26 Township 22 South
	Range <u>31 East</u> N.M.P.M., or Tract No. n/a of Map No. n/a of the Carlsbad, Distric
	on fand Owned by 0.3. Department of the Interior, Bureau of Land Management
	Description of well: name of driller West Texas Water Well Service
	Outside Diameter of casing < 7 inches; Approximate depth to be drilled 1250 then plugged back to 1000 feet
	Quantity of water to be appropriated and beneficially usedN/A
	acre fee (Consumptive use, diversion)
	purpose
	Acreage to be irrigated or place of use <u>N/A</u>
	Subdivision 2 to 7 to 7
	Subdivision Section Township Range Acres Owner
	Additional statements or explanations The intent of this application is to provide authorization to drill a second drill a
	monitoring well in support of Performance Assessment for the U.S. Department of Energy's Waste Isolation Pilot Plant The
	well will be completed in the Culebra Dolomite Member of the Rustler Formation and will not be used to appropriate water f
	well will be completed in the Culebra Dolomite Member of the Rustler Formation and will not be used to appropriate water f beneficial use. Initial pump tests will be conducted, not to exceed 30 days @ less than or equal to, 20 gal/min. Thereafter, the subject well will be used for water level measurements only.
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Appendix D Permitting and Completion Information

	ACTION OF STATE ENGINEED	
Iter notice num	THE ENGINEEK	
er notice pursuant to statute a ercised to the detriment of any State Engineer pertaining to t following conditions:	and by authority vested in me, this application is approvedprovided it others having existing rights; further provided that all rules and regu- the drilling of wells be complied with; and further su	is not lations o ibject to
	· · · · · · · · · · · · · · · · · · ·	
· · · ·	see attached conditions of approval	
of of completion of well shall t	be filed on or before	
of of one line in the	N/A,	20x
of of application of water to be	neficial use shall be filed on or beforeN/A	20
ness my hand and seal this	neficial use shall be filed on or before N/A xi	20
ness my hand and seal this phn R(Antonio, Jr., P.)	neficial use shall be filed on or before <u>N/A</u> <u>xy</u> <u>10</u> day of <u>February</u> , A.D., 2 E., State Engineer	ž0 20 <u>05</u>
ohn R P:Antonio, Jr., P.	neficial use shall be filed on or before <u>N/A</u> <u>10</u> day of <u>February</u> , A.D., 2 E., State Engineer	ž0 20 <u>05</u>
ohn R D'Antonjo, Jr., P.	neficial use shall be filed on or before <u>N/A</u> <u>10</u> day of <u>February</u> , A.D., 2 E., State Engineer	ž0 20 <u>05</u>
of of application of water to be ness my hand and seal this ohn R_D:Antonio, Jr., P. A. M. M. 't Mason, District II Supe	neficial use shall be filed on or before <u>N/A</u> day of <u>February</u> , A.D., 2 E., State Engineer ervisor	20 <u>05</u>
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ohn R. D'Antonio, Jr., P. Mason, District II Supe	neficial use shall be filed on or before <u>N/A</u> <u>X</u> day of <u>February</u> , A.D., 2 E., State Engineer ervisor	20 <u>05</u>
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t Mason, District II Supe	neficial use shall be filed on or before <u>N/A</u> <u>A</u> day of <u>February</u> , A.D., 2 E., State Engineer ervisor	20 <u>05</u>
This form shall be executed, prefer Each of triplicate copies music A separate application Secs. 1-4 - Fill out all Sec. 5 - Irrigation use	INSTRUCTIONS Tably typewritten, in triplicate and shall be accompanied by a filing fee of \$25.00 t be properly signed and attested. a for permit must be filed for each well used. blanks fully and accurately. shall be stated in acre feet of water per acre per accurate to be	20 <u>05</u> 0.
This form shall be executed, prefer Each of triplicate copies music A separate application Secs. 1-4 - Fill out all Sec. 5 - Irrigation use applied on the land. If for music annually.	INSTRUCTIONS The property signed and attested. Information for permit must be filed for each well used. blanks fully and accurately. shall be stated in acre feet of water per acre per annum to be nicipal or other purposes, state total quantity in acre feet to be used	20 <u>05</u> 0.
This form shall be executed, prefer Each of tripleate application Sec. 5 - Irrigation use applied on the land. If for murannually. Sec. 6 - Describe only	INSTRUCTIONS The property signed and attested. The promit must be filed for each well used. blanks fully and accurately. shall be stated in acre feet of water per acre per annum to be nicipal or other purposes, state total quantity in acre feet to be used the lands to be irrigated or where water will be used. If on	20 <u>05</u> 0.
This form shall be executed, prefer Each of triplicate copies muss A separate application Secs. 1-4 - Fill out all Sec. 5 - Irrigation use applied on the land. If for mus annually. Sec. 6 - Describe only unsurveyed lands describe by survey corners, or describe by natural object.	neficial use shall be filed on or before N/A N/A Image: Image	20 <u>05</u> 0.

John R. D Antonio, Jr., P.E. State Engineer



Roswell Office 1900 WEST SECOND STREET ROSWELL, NM 88201

STATE OF NEW MEXICO OFFICE OF THE STATE ENGINEER

February 10, 2005

HAROLD JOHNSON U.S. DEPT OF ENERGY CARLSBAD FIELD OFFICE, WIPP P.O. BOX 3090 CARLSBAD, NM 88221-3090

Greetings:

Trn Nbr: 323372 File Nbr: C 3152

Enclosed is your copy of the Exploratory / Monitoring Permit which has been approved. Your attention is called to the Specific and General Conditions of Approval of this permit.

In accordance with General Condition C, a well record shall be filed in this office ten days after completion of drilling. The well record is proof of completion of well. IT IS YOUR RESPONSIBILITY TO ASSURE THAT THE WELL LOG BE FILED WITHIN 10 DAYS OF DRILLING OF THE WELL.

This permit will expire on or before 02/28/06, unless the well has been drilled and the well log filed in this office.

Sincerely,

Mike Stapleton

(505)622-6467

Enclosure

cc: Santa Fe Office

explore

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NEW MEXICO STATE ENGINEER OFFICE PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL

- 2 The well shall be constructed to artesian well specifications and the State Engineer shall be notified before casing is landed or cemented
- 4 No water shall be appropriated and beneficially used under this permit.
- B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.
- C Driller's well record must be filed with the State Engineer within 10 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.
- C1 A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).
- LOG The Point of Diversion C 03152 must be completed and the Well Log filed on or before 02/28/2006.

ACTION OF STATE ENGINEER

Notice of Intention Rcvd:Date Rcvd. Corrected:Formal Application Rcvd: 02/07/2005Pub. of Notice Ordered:Date Returned - Correction:Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

	Witness my hand and seal this	10 day of	FebA.D.	,2005
	John R. D. Artonio, Jr., P.E. By:	, State Engi	neer	
Trn	Desc: <u>C 3152</u>		File N	Jumber: <u>C 03152</u>
		page: 1	IIN NUMDE	er: <u>323372</u>



IN REPLY REFER TO: NM-108365 2805(520)owl

United States Department of the Interior

Bureau of Land Management Carlsbad Field Office 620 E. Greene Street Carlsbad, NM 88220 www.nm.blm.gov

MAR 16 2005

U. S. Dept. of Energy, Carlsbad Field Office P. O. Box 3090 Carlsbad, NM 88221-3090

RIGHT-OF-WAY RESERVATION AMENDMENT

KNOW ALL MEN BY THESE PRESENTS, that in accordance with section 507 of the Federal Land Policy and Management Act of 1976 (90 Stat. 2781, 43 U.S.C. 1767) that the United States of America acting by and through the U. S. Department of the Interior, Bureau of Land Management, does hereby issue and reserve to the U. S. Department of Energy, Carlsbad Field Office, Waste Isolation Pilot Plant (WIPP), a right-of-way amendment for three additional well pads, and access roads for the expressed purpose of conducting groundwater investigations in support of the WIPP, over the following described real property situated in the Counties of Lea and Eddy, State of New Mexico to wit:

<u>SNL - 6</u> T. 21 S., R. 32 E., NMPM Sec. 7: Lot 4, and SE½SW¼, SE¼. <u>SNL-8</u> T. 22 S., R. 31 E., NMPM Sec. 14: SE¹/₄SE¹/₄. <u>SNL-15</u> T. 22 S., R. 31 E., NMPM Sec. 26: SE¼SE¼.

The well site locations contain approximately 1.551 acres (approximately 150' X 150') and the linear features (roads) contain approximately 6408 feet length, 20 feet width, for 2.975 acres. The combined acreage of the site locations and roads are 4.526 acres.

A plat showing the reservation amendment described above is attached hereto as Exhibit A and made a part hereof.

The right-of-way herein granted and reserved is for the full use of the above described property by the U. S. Department of the Energy, Carlsbad Field Office, WIPP, subject to reasonable rules and regulations of the Secretary of the Interior, and to the following terms and conditions:

1. The facility will be constructed, operated, and maintained in accordance with the details specified in the application submitted February 18, 2005.

2. The Bureau of Land Management retains the right to occupy and use the right-of-way, provided such occupancy and use will not unreasonably interfere with the rights granted herein. The Bureau of Land Management may, if the Department of Energy, Carlsbad Field Office, WIPP concurs, grant rights and privileges for the use of the right-of-way to other compatible users including members of the public and other Government Departments and Agencies, States, and local subdivisions thereof.

3. Department of Energy, Carlsbad Field Office, WIPP, will be responsible for the security and day-to-day operation of the facility.

4. Any resources on lands within the right-of-way shall remain under the jurisdiction of the Bureau of Land Management and may be severed or extracted or disposed of only in accordance with applicable law and regulation of the Secretary of the Interior. The extraction, severance, and disposal of any such resources shall be subject to such stipulations, if any, that the Bureau of Land Management and Department of Energy, Carlsbad Field Office, WIPP, agree are needed to avoid unreasonable interference with the use of the land.

5. When and if the Department of Energy, Carlsbad Field Office, WIPP, no longer needs this amended reservation, if jurisdiction is not transferred to another entity, the Department of Energy, Carlsbad Field Office, WIPP, will rehabilitate the land according to the following specifications.

- A. All structures, improvements, debris, etc., will be removed.
- B. The land will be returned to the original contour.
- C. All disturbed surfaces will be reseeded with a seed mixture conducive with Lesser Prairie Chicken habitat.
- D. Attached are Special Stipulations for Site Reclamation.
- 6. The reservation being amended has a 30-year term, commencing on August 30, 2002.

any f. Henell

Tony J. Herrell, Field Manager Carlsbad Field Office, BLM

<u>3-15-05</u> Date





EXHIBIT B March 15, 2005 NM-108365

STIPULATIONS FOR FLPMA SITES

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this right-of-way.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, *et. seq.*) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized by this grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, *etc.*) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, *et. seq.* or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, *et. seq.*) on the right-of-way (unless the release or threatened release is wholly unrelated to the right-of-way holder's activity on the right-of-way). This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the site any pollutant should be discharged from site facilities, or from containers, or vehicles impacting public lands, the control and total removal, disposal, and cleanup of such pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting public lands, or to repair all damages to public lands resulting therefrom, the Authorized Officer may take such measures as deemed necessary to control and cleanup the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve the holder of any liability or responsibility.

5. Sites shall be maintained in an orderly, sanitary condition at all times. Waste materials, both liquid and solid, shall be disposed of promptly at an appropriate, authorized waste disposal facility in accordance with all applicable State and Federal laws. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, and equipment.

6. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" designated by the Rocky Mountain Five-State Interagency Committee. The color selected for this project is <u>Shale Green</u>, Munsell Soil Color Chart Number <u>5Y 4/2</u>.

NM-108365 March 15, 2005 Page 2 of 2

7. The holder shall post a sign designating the BLM serial number assigned to this right-ofway grant in a permanent, conspicuous location on the site where the sign will be visible from the entry to the site. This sign will be maintained in a legible condition for the term of the right-of-way.

8. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

9. Should the holder require a base of mineral material, a sales contract for removal of mineral material (caliche, sand, gravel, fill dirt) from an authorized pit, site, or on location must be obtained from the BLM <u>prior to commencing construction</u>. There are several options available for purchasing mineral material: contact the BLM office.

10. The area will be kept free of the following plant species: Malta starthistle, African rue, Scotch thistle, and saltcedar.

Special Stipulations:

The Authorized Officer will be contacted for the well pads and access road restoration instructions when the wells are ready for final abandonment procedures. At that time full restoration of the sites (150' X 150') will be addressed.

EXHIBIT C

BLM Serial No.: NM-108365 Company Reference:

Seed Mixture for LPC Sand/Shinnery Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be <u>no</u> primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	<u>lb/acre</u>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

**Four-winged Saltbush

5lbs/A

* This can be used around well pads and other areas where caliche cannot be removed.

*Pounds of pure live seed:

Pounds of seed \mathbf{x} percent purity \mathbf{x} percent germination = pounds pure live seed

SENM-S-22

PRAIRIE CHICKENS

No surface use is allowed during the following time periods; unless otherwise specified, this stipulation does not apply to operation and maintenance of production facilities.

On the following lands:

T. 21 S., R. 32 E., NMPM Sec. 7: All

T. 22 S., R. 31 E., NMPM Sec. 14: All Sec. 26: All

For the purpose of: Protecting Prairie Chickens:

Drilling for oil and gas, and 3-D geophysical exploration operations will not be allowed in Lesser Prairie Chicken Habitat during the period of March 15 through June 15, each year. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 a.m. and 9:00 a.m. The 3:00 a.m. and 9:00 a.m. restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during the period. Additionally, no new drilling will be allowed within up to 200 meters of leks know at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Bureau of Land Management Carlsbad Field Office SENM-S-22 December 1997

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		Section 7	REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

it Konny Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

Appendix E Archeological Clearance Report

The report from Mesa Field Services on the following three pages was converted from an original Word document to an

The original signed document is maintained by the land management coordinator, Washington Regulatory and Environmental Services, for the WIPP Project.

Accepted () Rejected () 4. Type of Report: Negative (X) Positive () 5. Title of Report: A Cultural Resource Survey for the SNL-6, SNL-8, and SNL-15 6. Fieldwork Date(s): February 2, 2005 Author(s): Thereas Straight 7. Report Date: February 2, 2005 8. Consultant Name/Address: Mesa Field Services 9. Cultural Resource Permit No.: 153: Direct Charge: Thereas Straight 7. Report Date: February 2, 2005 8. Consultant Name/Address: Mesa Field Services 9. Cultural Resource Permit No.: 153: Direct Charge: Thereas Straight 10. Consultant Report No.: MFS-1122 Carlabad, New Mexico 88221-3072 10. Consultant Report No.: MFS-1122 Carlabad, New Mexico 88221-3072 10. Consultant Report No.: MFS-1122 Phone (505) 628-8865 11. Customer Name: Westinghouse TRU Solutions, LLC 12. Customer Project No.: P.O. 107596 7. Report Date: Responsible Individual: Ron Richardson 14. Length	1. (For BLM Use) BLM Report No.	2. (For BLM Use) Reviewer's Initials/I	Date			3. NMCRIS	Number: 91630	
4. Type of Report: Negative (X) Positive () 5. Title of Report: A Cultural Resource Survey for the SNL-6, SNL-6, and SNL-15 Well Pads 6. Fieldwork Date(s): February 2, 2005 Author(s): Thereas Straight 7. Report Date: February 2, 2005 8. Consultant Name/Address: Mesa Field Services 9. Cultural Resource Permit No.: 153: Direct Charge: Thereas Straight 9. Cultural Resource Permit No.: 153: Field Personnel Names: Sean Simpson 4ddress: P.O. Box 3072 Carisbad, New Mexice 88221-3072 Phone (505) 628-8885 10. Consultant Report No.: P.O. 107596 T1. Customer Name: Westinghouse TRU Solutions, LLC Carisbad, NM 88221 12. Customer Project No.: P.O. 107596 Phone (505) 628-8885 12. Consultant Report No.: P.O. 107596 T1. Customer Name: Westinghouse TRU Solutions, LLC Carisbad, NM 88221 12. Customer Project No.: P.O. 107596 Phone: (505) 524-8885 1.55 12. Customer Vance: P.O. 107596 13. Land Status BLM State Private Other Total a. Area Surveyed (acres) 1.85 1.55 1.55 1.55 1.55 14. Linear Block Length. N/A Length. 350 (T. (each) Width. N/A Width. 350 (T. (each) 1.55 15. Loceation (Map[s] Attached): a. State: New Mexico <th></th> <th>Accepted () Re</th> <th>jected (</th> <th></th> <th></th> <th></th> <th></th> <th></th>		Accepted () Re	jected (
5. Title of Report: A Cultural Resource Survey for the SNL-6, SNL-8, and SNL-15 Well Pads 6. Fieldwork Date(s): February 2, 2005 Author(s): Theresa Straight 7. Report Date: February 2, 2005 8. Consultant Name/Address: Mesa Field Services 9. Cultural Resource Permit No.: 153-: Direct Charge: Theresa Straight 9. Cultural Resource Permit No.: 153-: Field Personnel Names: Sean Simpson 4 Address: P.O. Box 2072 10. Consultant Report No.: MFS-1122 Carisbad, New Mexico 88221-3072 11. Customer Name: Westinghouse TRU Solutions, LLC Responsible Individual: Ron Richardson 12. Customer Project No.: P.O. 107596 Address: P.O. Box 2078 1.55 Carisbad, NM 88221 8.44 Phone: (505) 234-8395 1.55 13. Land Status BLM State Private 0ther 14. Linear Length. N/A Width. 350 ff. 1.55 14. Linear Length. N/A Width. 350 ff. 1.55 15. Location (Map[s] Attached): a. State: New Mexico b. County: Eddy and Lea Counties 1.55 a. Bud Office: Crisbad Field Office . BLM Office: Crisbad Field Office 1.22, R31E, Section 14: SEK SEK, Section 13: NEX MSWK (SNL-8) 12. Sigs 7.5' Map Name(s), Date(4. Type of Report:	Negative (X)		Positive ()			
Author(s): Theresa Straight 7. Report Date: February 2, 2005 8. Consultant Name/Address: Mesa Field Services 9. Cultural Resource Permit No.: 153- Direct Charge: Theresa Straight 10. Consultant Report No.: MFS-1122 Field Personnel Names: Sean Simpson 10. Consultant Report No.: MFS-1122 Address: P.O. Box 3072 Carlsbad, New Mexico 88221-3072 10. Consultant Report No.: MFS-1122 Phone (505) 628-8885 11. Customer Name: Westinghouse TRU Solutions, LLC 12. Customer Project No.: P.O. 107596 Responsible Individual: Ron Richardson Address: P.O. Box 2078 Carlsbad, NM 88221 12. Customer Project No.: P.O. 107596 Phone: (505) 234-8395 13. Land Status BLM State Private Other Total a. Area Surveyed (acres) 8.44 4 4 8.44 8.44 b. Area of Effect (acree) 1.55 1 1.55 1.55 14. Linear Block Length. <u>N/A</u> Length. <u>350 ft</u> WidthN/A Width350 ft (each) 1.55 1.55 15. Location (Map[s] Attached): a. State: New Mexico 5. County: Eddy and Lea Counties 5. BLM Office: Carlsbad Field Office c. Bud Office: Carlsbad Field Office 12.25, R31E, Section 7: N½ SE¼ (SNL-6) T225, R31E, Section 7: S½ SE¼, Section 35: NE¼ SW¼ (SNL-8) T225, R31E, S	5. Title of Report: A Cultural Resource Survey for the SNL-6, SNL-8, and SNL-15 Well Pads					6. Fieldwork Date(s): February 2, 2005		
8. Consultant Name/Address: Mesa Field Services 9. Cultural Resource Permit No.: 153: Direct Charge: Theresa Straight Field Personnel Names: Sean Simpson Address: P.O. Box 3072 Carlsbad, New Mexico 88221-3072 Phone (505) 628-8885 10. Consultant Report No.: MFS-1122 Responsible Individual: Ron Richardson Address: P.O. Box 2078 Carlsbad, NM 88221 Phone: (505) 234-8395 13. Land Status BLM State Videt Length N/A Length 350 ft Width N/A Width 350 ft BLM State Direct Carlsbad, NM 88221 Phone: (505) 234-8395 1. Land Status BLM Area Surveyed (acres) 1.55 Videt Mark Midth N/A Length 350 ft Width N/A Width 350 ft BLM Office: Carlsbad Field Office A State: New Mexico b. County: Eddy and Lea Counties BLM Office: Ca	Author(s): Theresa Straight				7. Report Date: February 2, 2005			
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Field Personnel Names: Sean Simpson Address: P.O. Box 3072 Carlsbad, New Mexico 88221-3072 Phone (505) 628-8885 11. Customer Name: Westinghouse TRU Solutions, LLC Responsible Individual: Ron Richardson Address: P.O. Box 2078 Carlsbad, NM 88221 Phone: (505) 234-8395 13. Land Status BLM State Private Other Total a. Area Surveyed (acres) 8.44 b. Area of Effect (acres) 1.55 14. Linear Length. N/A Length_350 ft Width_N/A Width_350 ft_ (each) 15. Location (Map[s] Attached): a. State: New Mexico b. County: Eddy and Lea Counties . c. BLM Office: Carlsbad Field Office . d. Nearest City or Town: Loving, NM . e. Legal Description: T21S, R32E, Section 7: N/x SEV, (SNL-6) T22S, R31E, Section 12: SEV SEV, Section 3: SNEV, SW% (SNL-8) T22S, R31E, Section 12: SEV SEV, Section 3: SNEV, NW1 (SNL-8) T22S, R31E, Section 14: SEV, SEV, Section 3: SNEV, NW1 (SNL-8) T22S, R31E, Section 14: SEV, SEV, Section 3: SNEV, NW1 (SNL-8) Approx 50 ft FSL; 700 ft FEL Sec. 27, T21S, R31E (SNL-15) f. Well Pad Footages: approx. 1,750 ht FSL; 1,400 ft FEL Sec. 7, T21S, R31E (SNL-15) Approx 50 ft FSL; 700 ft FEL Sec. 28, T22S, R31E (SNL-15) g. USSS 7.5' Map Name(s), Date(s), and Code(s): The Divide, NM 198	Direct Charge: Theresa Straight				•••			
11. Customer Name: Westinghouse TRU Solutions, LLC 11. Customer Name: Westinghouse TRU Solutions, LLC Responsible Individual: Ron Richardson Address: P.O. Box 2078 Carlsbad, NM 88221 Phone: (505) 234-8395 13. Land Status BLM State Private Other Total a. Area Surveyed (acres) 8.44 b. Area of Effect (acres) 1.55 14. Linear Length N/A Length 350 ft Width N/A Width 350 ft 15. Location (Map[s] Attached): a. State: New Mexico b. County: Eddy and Lea Counties c. BLM Office: Carlsbad Field Office d. Nearest City or Town: Loving, NM e. Legal Description: T21S, R32E, Section 7: N% SE%(SNL-6) T22S, R31E, Section 14: SE% SE%, Section 13: SW% SW% (SNL-8) T22S, R31E, Section 26: SE% SE%, Section 13: SW% SW% (SNL-8) T22S, R31E, Section 26: SE% SE%, Section 13: SW% SW% (SNL-8) T22S, R31E, Section 26: SE% SE%, Section 13: SW% SW% (SNL-8) T22S, R31E, Section 26: SE% SE%, Section 13: SW% SW% (SNL-8) T22S, R31E, Section 26: SE% SE%, Section 13: SW% SW% (SNL-8) T22S, R31E, Section 26: SE% SE%, Section 13: SW% SW% (SNL-8) T22S, R31E, Section 26: SE% SE%, Section 13: SW% SW% (SNL-8) T22S, R31E, Section 26: SE% SE%, Section 35: NE% NE% (SNL-15) f. Well Pad Footages: approx 0.0 ft FSL; 100 ft FEL Sec. 26, T22S, R31E (SNL-16) approx 50 ft FSL; 100 ft FEL Sec. 26, T22S, R31E (SNL-8) approx 50 ft FSL; 100 ft FEL Sec. 26, T22S, R31E (SNL-16) approx 50 ft FSL; 100 ft FEL Sec. 2	Field Personnel Names: Sean Sim Address: P.O. Box 3072 Carlsbad, New Mexico 88 Phone (505) 628-8885	1pson 3221-3072			10.	Consultant R	eport No.: MFS-	-1122
Responsible Individual: Ron Richardson 12. Customer Project No.: P.O. 107596 Address: P.O. Box 2078 Carlsbad, NM 88221 1 Phone: (505) 234-8395 1 13. Land Status BLM State Private Other Total a. Area Surveyed (acres) 8.44 1 8.44 8.44 b. Area of Effect (acres) 1.55 1.55 1.55 14. Linear Block Length, N/A Length_350 ft Width_N/A Width_350 ft_ (each) 8.44 15. Location (Map[s] Attached): a. State: New Mexico 5 5 b. County: Eddy and Lea Counties 5 5 5 c. BLM Office: Carlsbad Field Office 4 Nearest City or Town: Loving, NM e. Legal Description: T21S, R32E, Section 7: N½ SE½ (SNL-6) T22S, R31E, Section 14: SE½ SE½, Section 13: SW½ SW¼ (SNL-8) T22S, R31E, Section 26: SE½ SE½, Section 35: NE½ NE¼ (SNL-6) T22S, R31E, Section 26: SE½ SE½, Section 35: NE½ NE¼ (SNL-6) approx 900 ft FSL; 100 ft FEL Sec. 14, T22S, R31E (SNL-6) approx 900 ft FSL; 100 ft FEL Sec. 26, T22S, R31E (SNL-6) approx 900 ft FSL; 100 ft FEL Sec. 14, T22S, R31E (SNL-6) approx 900 ft FSL; 100 ft FEL Sec. 14, T22S, R31E (SNL-6) approx 900 ft FSL; 100 ft FEL Sec. 14, T22S, R31E (SNL-6) approx 900 ft FSL; 100 ft FEL Sec. 14, T22S, R31E (SNL-6) approx 900 ft FSL; 100 ft FEL Sec. 14, T22S, R31E (SNL-6) approx 900 ft FSL; 100 ft FEL Sec. 14, T22S, R31E (SNL-6) approx 900 ft FSL; 100 ft FEL Sec. 14, T22S, R31E (SNL-6)	11. Customer Name: Westinghous	se TRU Solutions, LLC		<u> </u>				
Address: P.O. Box 2078 Carlsbad, NM 88221 Phone: (505) 234-8395 13. Land Status BLM State Private Other Total a. Area Surveyed (acres) 8.44 8.44 b. Area of Effect (acres) 1.55 1.55 14. Linear Block Length_N/A Length_350 ft Width_N/A Width_350 ft_ (each) 1.55 15. Location (Map[s] Attached): a. State: New Mexico b. County: Eddy and Lea Counties c. BLM Office: Carlsbad Field Office d. Nearest City or Town: Loving, NM	Responsible Individual: Ron Rich	ardson		12. Custo	sustomer Project No.: P.O. 107596			
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 c. BLM Office: Carlsbad Field Office d. Nearest City or Town: Loving, NM e. Legal Description: T21S, R32E, Section 7: N¹/₂ SE¹/₄(SNL-6) T22S, R31E, Section 14: SE¹/₂ SE¹/₄(SNL-6) T22S, R31E, Section 26: SE¹/₂ SE¹/₄, Section 35: NE¹/₄ NE¹/₄ (SNL-8) T22S, R31E, Section 26: SE¹/₄ SE¹/₄, Section 35: NE¹/₄ NE¹/₄ (SNL-15) f. Well Pad Footages: approx. 1,750 ft FSL; 1,400 ft FEL Sec. 7, T21S, R32E (SNL-6) approx. 900 ft FSL; 100 ft FEL Sec. 14, T22S, R31E (SNL-8) approx 50 ft FSL; 700 ft FEL Sec. 26, T22S, R31E (SNL-15) g. USGS 7.5' Map Name(s), Date(s), and Code(s): The Divide, NM 1984 (32103-D6) 	b. County: Eddy and Lea Cour	nties						
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g. USGS 7.5' Map Name(s), Date(s), and Code(s): The Divide, NM 1984 (32103-D6)	f. Well Pad Footages: approx. 1,750 ft FSL; 1,400 ft FEL Sec. 7, T21S, R32E (SNL-6) approx. 900 ft FSL; 100 ft FEL Sec. 14, T22S, R31E (SNL-8) approx 50 ft FSL; 700 ft FEL Sec. 26, T22S, R31E (SNL-15)							
Bootleg Ridge, NM 1984 (32103-C6)	g. USGS 7.5' Map Name(s), Date(s), and Code(s): The Divide, NM 1984 (32103-D6) Bootleg Ridge, NM 1984 (32103-C6)							

16. Project Data:
 a. Records Search: Date(s) of BLM File Review: February 1, 2005 Name of Reviewer(s): Theresa Straight Date(s) of ARMS Data Review February 1, 2005 Name of Reviewer(s): Theresa Straight Findings (see Field Office requirements to determine area to be reviewed during records search): One previously recorded site, LA 30766, is within 500 ft of the SNL-6 well pad. This site was not encountered during the survey. No other sites are within 0.25 mile of any of the well locations.
b. Description of Undertaking: Westinghouse TRU Solutions plans to build three monitoring wells. They are the SNL-6, SNL-8, and SNL-15. No plat sheets were provided; however, UTM grid coordinates were given for each location. They are as follows: SNL-6 (NAD 27; Zone 13) 621250 E/ 3595385 N, SNL-8 (NAD 27, Zone 13) 618524 E/ 3583795 N, and SNL-15 (NAD 27, Zone 13) 618359 E/ 3580335 N. Each well location will be 150 ft square, yet a 350 ft square was surveyed to ensure the protection of cultural resources. The project totaled 8.44 acres, all of which is located on land owned and administered by the BLM-CFO.
 c. Environmental Setting (NRCS soil designation; vegetative community; elevation; etc.): The project area is located east of Livingston Ridge. The terrain is relatively flat, varying from a grade of 0.8 percent to a grade of 1.4 percent. The elevation varies from 3,480 ft to 3,640 ft above mean sea level. The soils area of the Kermit-Berino and Pyote-Maljamar-Kermit associations as defined by the Soil Conservation Service of the U.S. Department of Agriculture. Local vegetation is typical of Chihuahuan Desert Scrub and includes mesquite, grasses, and yucca. Due to this vegetative cover, ground surface visibility averaged 85 percent at the time of the survey. Climatic information was obtained from the Western Regional Climate Center online database for the Waste Isolation Pilot Plant (WIPP). From 1986 to 2002 WIPP received an average annual precipitation of 12.68 inches. July through September were the wettest months while January through March were the driest. WIPP has an average annual high temperature of 80.1 degrees Fahrenheit and an average annual low temperature of 48.9 degrees (F). July is the warmest month with an average high of 98.0 degrees (F) and December is the coldest month with an average high of 60.0 degrees (F). d. Field Methods (transect intervals; crew size; time in field; etc.): A crew of one spent 4 hours surveying the project area. A 15 m wide transect interval was used. e. Artifacts Collected?: None
17. Cultural Resource Findings: No cultural material was encountered during the survey.
a. Location/Identification of Each Resource: N/A
b. Evaluation of Significance of Each Resource: N/A
18. Management Summary (Recommendations): Because no cultural material was encountered, archaeological clearance is recommended for the project as staked. If any cultural material is encountered during construction activities, work at that location should stop and archaeologists with the BLM-CFO should be notified.
19.
I certify the information provided above is correct and accurate and meets all applicable BLM standards.
Responsible Archaeologist
Signature Date

THE ABOVE COMPLETES A NEGATIVE REPORT. IF ELIGIBLE OR POTENTIALLY ELIGIBLE PROPERTIES ARE INVOLEVED, THE ABOVE WILL BE THE TITLE PAGE AND ABSTRACT FOR A COMPLETE REPORT.





Figure 1. Project Area Map

Mesa Field Services

Appendix F Photograph Logs

Digital photographs were taken of the cores from SNL-13. A listing of consecutive photos, beginning with the lower Tamarisk Member of the Rustler Formation and ending with the upper Los Medaños Member of the Rustler Formation, has been compiled and is included here in Appendix F. . . A CD-ROM with these images (jpeg format) is being archived, and a copy with photographic log is maintained by Geotechnical Engineering (Washington TRU Solutions LLC) with records of the

cores stored for WIPP.

File	DATE	LOCATION	DESCRIPTION OF SUBJECT (includes	PHOTOGRAPHER
			individual/group names, direction, etc. as appropriate)	(initials and dept.)
SNL-15_Core001.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Tamarisk Mbr core, 900.0 - 901.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core002.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Tamarisk Mbr core, 900.9 - 902.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core003.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Tamarisk Mbr core, 901.9 - 903.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core004.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Tamarisk Mbr core, 902.9 - 904.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core005.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Tamarisk Mbr core, 903.9 - 905.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core006.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Tamarisk/Culebra Dolomite Mbrs core, 904.9 - 906.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core007.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 905.9 - 907.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core008.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 906.9 - 908.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core009.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 907.9 - 909.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core010.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 908.9 - 910.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core011.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 909.9 - 911.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core012.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 911.1 - 912.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core013.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 911.9 - 913.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core014.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 912.9 - 914.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core015.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 913.9 - 915.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core016.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 914.9 - 916.1 ft bgl, with markings, scale	DW Powers Consultant to WTS

Camera: Nikon CoolPix 5700

Resolution: 2560 x 1920

File	DATE	LOCATION	DESCRIPTION OF SUBJECT (includes	PHOTOGRAPHER
_			individual/group names, direction, etc. as	(initials and dept.)
			appropriate)	
SNL-15_Core017.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Culebra Dolomite Mbr	DW Powers
		T22S, R31E, sec	core, 915.9 - 917.1 ft bgl, with markings,	Consultant to WTS
		26	scale	
SNL-15_Core018.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Culebra Dolomite Mbr	DW Powers
		T22S, R31E, sec	core, 916.9 - 918.0 ft bgl, with markings,	Consultant to WTS
		26	scale	
SNL-15_Core019.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Culebra Dolomite Mbr	DW Powers
		T22S, R31E, sec	core, 917.9 - 919.1 ft bgl, with markings,	Consultant to WTS
	o /= /o =	26	scale	
SNL-15_Core020.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Culebra Dolomite Mbr	DW Powers
		122S, R31E, sec	core, 918.9 - 920.1 ft bgl, with markings,	Consultant to WIS
	0/5/05		scale	
SNL-15_Core021.jpg	6/5/05	SINL-15 drillpad;	Close-up photo of Culebra Dolomite Mbr	DVV Powers
		1223, KJIE, SEC		
SNI -15 Core022 ing	6/5/05	20 SNI -15 drillpad:	Close-up photo of Culobra Dolomito Mbr	
SNL-15_COIE022.jpg	0/5/05	T22S R31E soc	c_{0} core 0.20 θ_{-} 0.22 1 ft bal with markings	Consultant to WTS
		26	scale	
SNI -15 Core023 ing	6/5/05	SNI -15 drillpad:	Close-up photo of Culebra Dolomite Mbr	DW Powers
0112 10_0010020.jpg	0/0/00	T22S, R31F, sec	core, 921.9 - 923.1 ft bal, with markings.	Consultant to WTS
		26	scale	
SNL-15 Core024.ipg	6/5/05	SNL-15 drillpad:	Close-up photo of Culebra Dolomite Mbr	DW Powers
···-··		T22S, R31E, sec	core, 923.0 - 924.1 ft bgl, with markings,	Consultant to WTS
		26	scale	
SNL-15_Core025.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Culebra Dolomite Mbr	DW Powers
		T22S, R31E, sec	core, 924.0 - 925.1 ft bgl, with markings,	Consultant to WTS
		26	scale	
SNL-15_Core026.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Culebra Dolomite Mbr	DW Powers
		T22S, R31E, sec	core, 925.0 - 926.1 ft bgl, with markings,	Consultant to WTS
		26	scale	
SNL-15_Core027.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Culebra Dolomite Mbr	DW Powers
		T22S, R31E, sec	core, 925.9 - 927.1 ft bgl, with markings,	Consultant to WTS
01/1/17/0	o /= /o =	26	scale	
SNL-15_Core028.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Culebra Dolomite Mbr	DW Powers
		1225, R31E, Sec	core, 926.9 - 927.4 ft bgl, with markings,	Consultant to WIS
SNIL 15 Coro020 ing	G/E/OE	20 SNIL 15 drillpodi	Scale	DW/ Doworo
SNL-15_Cole029.jpg	0/5/05	T228 P31E soc	Close-up photo of Culebra Dolornite Mbr	DVV POWEIS Consultant to WTS
		26	scale	
SNL-15 Core030 ing	6/5/05	SNI -15 drillpad:	Close-up photo of Culebra Dolomite Mbr	DW Powers
	0/0/00	T22S, R31F, sec	core, 927.9 - 929.1 ft bal, with markings.	Consultant to WTS
		26	scale	
SNL-15_Core031.jpa	6/5/05	SNL-15 drillpad:	Close-up photo of Culebra Dolomite Mbr	DW Powers
		T22S, R31E, sec	core, 928.9 - 930.1 ft bgl, with markings,	Consultant to WTS
		26	scale	
SNL-15_Core032.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Culebra Dolomite Mbr	DW Powers
		T22S, R31E, sec	core, 929.9 - 931.1 ft bgl, with markings,	Consultant to WTS
		26	scale	

Camera: Nikon CoolPix 5700

Resolution: 2560 x 1920

File	DATE	LOCATION	DESCRIPTION OF SUBJECT (includes	PHOTOGRAPHER
			individual/group names, direction, etc. as appropriate)	(initials and dept.)
SNL-15_Core033.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 930.9 - 932.1 ft bgl, with markings, scale; strap obscures part of photo	DW Powers Consultant to WTS
SNL-15_Core034.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 931.9 - 933.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core035.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 932.9 - 934.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core036.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite Mbr core, 933.9 - 935.0 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core037.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Culebra Dolomite/Los Medaños Mbrs core, 935.0 - 936.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core038.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Los Medaños Mbr core, 935.9 - 937.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core039.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Los Medaños Mbr core, 936.9 - 938.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core040.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Los Medaños Mbr core, 937.9 - 939.1ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core041.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Los Medaños Mbr core, 938.9 - 940.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core042.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Los Medaños Mbr core, 939.9 - 941.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core043.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Los Medaños Mbr core, 940.9 - 942.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core044.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Los Medaños Mbr core, 941.9 - 943.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core045.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Los Medaños Mbr core, 942.9 - 944.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core046.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Los Medaños Mbr core, 943.9 - 945.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core047.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Los Medaños Mbr core, 944.9 - 946.1 ft bgl, with markings, scale	DW Powers Consultant to WTS
SNL-15_Core048.jpg	6/5/05	SNL-15 drillpad; T22S, R31E, sec 26	Close-up photo of Los Medaños Mbr core, 945.9 - 947.1 ft bgl, with markings, scale	DW Powers Consultant to WTS

Camera: Nikon CoolPix 5700

Resolution: 2560 x 1920

File	DATE		DESCRIPTION OF SUR JECT (includes	
File	DATE	LUCATION	DESCRIPTION OF SUBJECT (Includes	PHUIUGRAPHER
			individual/group names, direction, etc. as	(initials and dept.)
			appropriate)	
SNL-15_Core049.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Los Medaños Mbr core,	DW Powers
		T22S, R31E, sec 26	946.9 - 948.1 ft bgl, with markings, scale	Consultant to WTS
SNL-15_Core050.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Los Medaños Mbr core,	DW Powers
		T22S, R31E, sec 26	947.9 - 949.1 ft bgl, with markings, scale	Consultant to WTS
SNL-15_Core051.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Los Medaños Mbr core,	DW Powers
		T22S, R31E, sec 26	948.9 - 950.1 ft bgl, with markings, scale	Consultant to WTS
SNL-15_Core052.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Los Medaños Mbr core,	DW Powers
		T22S, R31E, sec 26	949.9 - 951.1 ft bgl, with markings, scale	Consultant to WTS
SNL-15_Core053.jpg	6/5/05	SNL-15 drillpad;	Close-up photo of Los Medaños Mbr core,	DW Powers
		T22S, R31E, sec 26	950.9 - 951.5 ft bgl, with markings, scale	Consultant to WTS

Appendix F Photograph Logs



Ronny Keith (r) of West Texas Water Well Service and John Wood (l) of Diamond Oil Well Drilling Company during coring of SNL-15. June 5, 2005. Photo by Dennis W. Powers.
Appendix G Geophysical Logs

Geophysical logging of SNL-15 was conducted by Jet West Geophysical Services, LLC, 2550 La Plata Highway, Farmington, NM, 87499-3522, on June 6, 2005. The operator was Al Henderson. Copies of the logs are maintained by Washington Regulatory and Environmental Services, Environmental Monitoring and Hydrology Section, for the WIPP project. A CD-ROM is being retained that includes:

- 1) Electronic copies of the logs produced by Jet West Geophysical Logging Services using WellCAD vs 4.0,
- 2) WellCAD Reader to open the electronic logs, and
- 3) Electronic data in both .txt and .las formats.

The following geophysical logs were obtained:

•Caliper

- •Natural gamma
- •Density-porosity
- Induction resistivity
- Induction conductivity

SNL-15 had been cored and drilled to ~950 ft, plugged back to ~938 ft with bentonite, and reamed to 940 ft at the time of logging. A conductor casing had been placed to a depth of 39.5 ft bgl, with a stickup of 0.5 ft. There was no detectable brine in the drillhole at the time of logging. SNL-15 was drilled with air.

The caliper log was used for estimating material volume placed in the annulus between berglass reinforced plastic casing and the drillhole wall.

The reference point (0 ft depth) for geophysical logging is the top of the connector on the surface conductor casing and is ~ 0.5 ft above drill pad level. This point was assigned an elevation of 3,478 ft amsl on the logs, based on the predrilling survey of the well pad. A benchmark placed near the drillhole after completion has an elevation of 3,477.94 ft amsl (see Fig. 1-5 and Table 1-1 in the main text) based on a resurvey in 2006. [The benchmark from an earlier survey has not been replaced.] A rounded elevation of 3,478 ft amsl for the reference point used in the text is appropriate for the measurements based on geophysical logs.

Appendix G Geophysical Logs

Jet West Geophysical Services logging vehicle (right) set up and logging SNL-15 on June 6, 2005. The top of the connector (below) is the reference point (0 ft depth) for logging and setting casing. The photo below taken Septmeber 10, 2005, shows the

the connector.





Basic Data Report for Drillhole SNL-15 (C-3152) DOE/WIPP-05-3325

Figure 2-1 Well Record SNL-15 (C-3152)		3.0
Company: Washington TRU Solutions LLC Well: SNL-15 (C-3152) Section: 26 Twp: T22S Rge: R31E Location: 102 ft from south line (fsl) 807 ft from east line (fel)			Radioactive Logs
Reference point Log measured from: top of connector on conductor casing (gl) Drilling measured from: gl Permanent Datum: benchmark (resurveyed 2007)	Elevation KB: DF: GL: 3478 ft amsl (benchmark: 3477.94)	eaders	ivity 100 Density 1000 Density Porosi
Drilling contractor: West Texas Well Water Service Coring contractor: Diamond Oil Well Drilling Co. Geophysical logs: Al Henderson Jet West Geophysical Services, LLC (NM) Geologist: Dennis W. Powers Spud date: June 1, 2005 Completion date: June 7, 2005 Total depth (TD): 950 ft bgl (driller log)	Casing Record Conductor: 40 ft 8.625 inch steel Casing: 2.48 inch i.d. fiberglass reinforced plastic to 935 ft bgl Screened interval: 928.5-902 ft bgl	5 Well Log He	1 aj Resistivity/Conduct multical Induction Resistivity multical 0.1 multical Ohm-m multical 1 multical 1
Geophysical Logs Date: June 6, 2005 Micro/Laterolog/Induction/SP: 0-936 ft Gamma/Fluid: 0-936 ft Caliper: 0-934 ft Density/Neutron: 0-938 ft	Type fluid in hole: air Res mud: n/a Res mud filtrate: n/a Max. Rec. Temp.: not recorded	SNL-1	Levation to the second
General Lithologic Symbol Dolomite Mudstone/siltstone Anhydrite + + + + + + + + Halite	DIS Used Fine sandstone & siltstone Coarse sandstone Sandstone w/caliche Polyhalite		Stratigraphy Caliper

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QUESTIONS

Action 398195

QUESTIONS

Operator:	OGRID:
GOODNIGHT MIDSTREAM PERMIAN, LLC	372311
5910 North Central Expressway	Action Number:
Dallas, TX 75206	398195
	Action Type:
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Prerequisites	
Incident ID (n#)	nAPP2226128925
Incident Name	NAPP2226128925 TANKS CRP INLET @ 0
Incident Type	Produced Water Release
Incident Status	Remediation Closure Report Received

Location of Release Source

Please answer all the questions in this group.	
Site Name	TANKS CRP INLET
Date Release Discovered	09/17/2022
Surface Owner	Federal

Incident Details

Please answer all the questions in this group.	
Incident Type	Produced Water Release
Did this release result in a fire or is the result of a fire	No
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release

Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.

Crude Oil Released (bbls) Details	Not answered.
Produced Water Released (bbls) Details	Cause: Equipment Failure Pipeline (Any) Produced Water Released: 150 BBL Recovered: 30 BBL Lost: 120 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	Yes
Condensate Released (bbls) Details	Not answered.
Natural Gas Vented (Mcf) Details	Not answered.
Natural Gas Flared (Mcf) Details	Not answered.
Other Released Details	Not answered.
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	Ruptured inlet piping caused spill

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QUESTIONS, Page 2

Action 398195

QUESTIONS (continued)		
Operator:	OGRID:	
GOODNIGHT MIDSTREAM PERMIAN, LLC	372311	
5910 North Central Expressway	Action Number:	
Dallas, TX 75206	398195	
	Action Type:	
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)	

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	No, according to supplied volumes this does not appear to be a "gas only" report.
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	Yes
Reasons why this would be considered a submission for a notification of a major release	From paragraph A. "Major release" determine using: (1) an unauthorized release of a volume, excluding gases, of 25 barrels or more.
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e	e. gas only) are to be submitted on the C-129 form.

Initial Response	
The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.	
The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remedi	Not answered. ation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of
actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Submission and the ball intermetian people date developed and the ball intermetian people date date developed and the ball intermetian people date date date date date date date dat	
Subsection A or 19.15.29.11 NMAC), prease prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.	
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.	
I hereby agree and sign off to the above statement	Name: Ralph Tijerina Title: Director of EH&S Email: rtijerina@goodnightmidstream.com Date: 11/01/2024

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

QUESTIONS (continued)

Operator:	OGRID:
GOODNIGHT MIDSTREAM PERMIAN, LLC	372311
5910 North Central Expressway	Action Number:
Dallas, TX 75206	398195
	Action Type:
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Site Characterization

Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). 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 in feet below ground surface (ft bgs)	Between 100 and 500 (ft.)
What method was used to determine the depth to ground water	NM OSE iWaters Database Search
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release an	nd the following surface areas:
A continuously flowing watercourse or any other significant watercourse	Between 1 and 5 (mi.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between 1 and 5 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Between 1 and 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between 1 and 5 (mi.)
Any other fresh water well or spring	Between 1000 (ft.) and ½ (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 1000 (ft.) and ½ (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Between 1000 (ft.) and ½ (mi.)
Categorize the risk of this well / site being in a karst geology	Low
A 100-year floodplain	Greater than 5 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	No

Remediation Plan

Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.		
Yes		
sociated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.		
Yes		
No		
Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)		
36800		
1510		
1280		
0		
0		
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.		
09/22/2022		
09/12/2023		
09/12/2023		
46000		
3400		
44200		
200		
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.		

The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.

Action 398195

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QUESTIONS, Page 4

Action 398195

QUESTIONS (continued)		
Operator: GOODNIGHT MIDSTREAM PERMIAN LLC	OGRID: 372311	
5910 North Central Expressway Dallas, TX 75206	Action Number: 398195	
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)	

QUESTIONS

Remediation Plan (continued)

Please answer all the questions that apply or are indicated. This information must be provided to the	appropriate district office no later than 90 days after the release discovery date.
This remediation will (or is expected to) utilize the following processes to remediate	/ reduce contaminants:
(Select all answers below that apply.)	
(Ex Situ) Excavation and off-site disposal (i.e. dig and haul, hydrovac, etc.)	Yes
Which OCD approved facility will be used for off-site disposal	LEA LAND LANDFILL [fEEM0112342028]
OR which OCD approved well (API) will be used for off-site disposal	Not answered.
OR is the off-site disposal site, to be used, out-of-state	Not answered.
OR is the off-site disposal site, to be used, an NMED facility	Not answered.
(Ex Situ) Excavation and on-site remediation (i.e. On-Site Land Farms)	Not answered.
(In Situ) Soil Vapor Extraction	Not answered.
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	Not answered.
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	Not answered.
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	Not answered.
Ground Water Abatement pursuant to 19.15.30 NMAC	Not answered.
OTHER (Non-listed remedial process)	Not answered.
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed ef which includes the anticipated timelines for beginning and completing the remediation.	forts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC,
I hereby certify that the information given above is true and complete to the best of my k to report and/or file certain release notifications and perform corrective actions for relea the OCD does not relieve the operator of liability should their operations have failed to a water, human health or the environment. In addition, OCD acceptance of a C-141 report local laws and/or regulations.	knowledge and understand that pursuant to OCD rules and regulations all operators are required ases which may endanger public health or the environment. The acceptance of a C-141 report by adequately investigate and remediate contamination that pose a threat to groundwater, surface t does not relieve the operator of responsibility for compliance with any other federal, state, or
I hereby agree and sign off to the above statement	Name: Ralph Tijerina Title: Director of EH&S

Date: 11/01/2024 The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.

Email: rtijerina@goodnightmidstream.com

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

QUESTIONS (continued)

Operator:	OGRID:
GOODNIGHT MIDSTREAM PERMIAN, LLC	372311
5910 North Central Expressway	Action Number:
Dallas, TX 75206	398195
	Action Type:
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Deferral Requests Only		
Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.		
Requesting a deferral of the remediation closure due date with the approval of this submission	Νο	

Action 398195

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QUESTIONS, Page 6

Action 398195

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QUESTIONS (continued)

Operator:	OGRID:
GOODNIGHT MIDSTREAM PERMIAN, LLC	372311
5910 North Central Expressway	Action Number:
Dallas, TX 75206	398195
	Action Type:
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Sampling Event Information		
Last sampling notification (C-141N) recorded	398204	
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	09/22/2022	
What was the (estimated) number of samples that were to be gathered	93	
What was the sampling surface area in square feet	44200	

Remediation Closure Request

Only answer the questions in this group if seeking remediation closure for this release because all r	emediation steps have been completed.
Requesting a remediation closure approval with this submission	Yes
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
All areas reasonably needed for production or subsequent drilling operations have been stabilized, returned to the sites existing grade, and have a soil cover that prevents ponding of water, minimizing dust and erosion	Yes
What was the total surface area (in square feet) remediated	44200
What was the total volume (cubic yards) remediated	200
All areas not reasonably needed for production or subsequent drilling operations have been reclaimed to contain a minimum of four feet of non-waste contain earthen material with concentrations less than 600 mg/kg chlorides, 100 mg/kg TPH, 50 mg/kg BTEX, and 10 mg/kg Benzene	Yes
What was the total surface area (in square feet) reclaimed	1000
What was the total volume (in cubic yards) reclaimed	40
Summarize any additional remediation activities not included by answers (above)	Impacted material effected above the NM OCD closure criteria was excavated and transferred to an approved NM OCD waste facility. This is a resubmittal that was previously denied for not having adequate horizontal control.
The responsible party must attach information demonstrating they have complied with all applicable comprehensive report (in .pdf format) including a scaled site map, sampling diagrams, relevant field final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.	closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of
I hereby certify that the information given above is true and complete to the best of my to report and/or file certain release notifications and perform corrective actions for release the OCD does not relieve the operator of liability should their operations have failed to water, human health or the environment. In addition, OCD acceptance of a C-141 repor local laws and/or regulations. The responsible party acknowledges they must substant prior to the release or their final land use in accordance with 19.15.29.13 NMAC includit	knowledge and understand that pursuant to OCD rules and regulations all operators are required isses which may endanger public health or the environment. The acceptance of a C-141 report by adequately investigate and remediate contamination that pose a threat to groundwater, surface t does not relieve the operator of responsibility for compliance with any other federal, state, or ially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed ng notification to the OCD when reclamation and re-vegetation are complete.
	Name: Ralph Tijerina

	I hereby agree and sign off to the above statement E	Title: Director of EH&S Email: rtijerina@goodnightmidstream.com Date: 11/01/2024
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General Information Phone: (505) 629-6116

Online Phone Directory https://www.emnrd.nm.gov/ocd/contact-us

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

QUESTIONS (continued)

	Operator:	OGRID:
	GOODNIGHT MIDSTREAM PERMIAN, LLC	372311
	5910 North Central Expressway	Action Number:
	Dallas, TX 75206	398195
		Action Type:
		[C-141] Remediation Closure Request C-141 (C-141-v-Closure)
G	QUESTIONS	

Reclamation Report

Reclamation Report		
Only answer the questions in this group if all reclamation steps have been completed.		
Requesting a reclamation approval with this submission	No	

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CONDITIONS

Operator:	OGRID:
GOODNIGHT MIDSTREAM PERMIAN, LLC	372311
5910 North Central Expressway	Action Number:
Dallas, TX 75206	398195
	Action Type:
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

CONDITIONS		
Created By	Condition	Condition Date
rhamlet	We have received your Remediation Closure Report for Incident #NAPP2226128925 TANKS CRP INLET, thank you. This Remediation Closure Report is approved. Once the well site is plugged/abandoned and the site is considered "Land No longer in Use," final reclamation must occur.	12/2/2024

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