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

State of New Mexico
Energy Minerals and Natural Resources Department

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

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

Incident ID	NAPP2402167703
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	CROSS TIMBERS ENERGY, LLC	OGRID	298299
Contact Name	SAMANNTHA AVARELLO	Contact Telephone	817-334-7747
Contact email	SAVARELLO@TXOPARTNERS.COM	Incident # *(assigned by OCD)*	NAPP2402167703
Contact mailing address	400 W. 7TH ST. FORT WORTH, TX 76102		

Location of Release Source

Latitude 32.846238 Longitude -103.497564
(NAD 83 in decimal degrees to 5 decimal places)

Site Name NORTH VACUUM ABO EAST BATTERY	Site Type CTB
Date Release Discovered 01/20/2024	API# *(if applicable)* fAPP2123050201

Unit Letter	Section	Township	Range	County
K	07	17S	35E	LEA

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☑ Private (*Name:* _____)

Nature and Volume of Release

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

☑ Crude Oil	Volume Released (bbls) 5	Volume Recovered (bbls) 3
☑ Produced Water	Volume Released (bbls) 60	Volume Recovered (bbls) 57
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☑ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

FREEZE

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Page 2

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2402167703
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☑ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? YES, PER THE DEFINITION IN 19.15.29.7.A, THIS RELEASE MEETS THE DEFINITION OF AN UNAUTHORIZED RELEASE OF A VOLUME OF 25 BBLS OR MORE AND IS THUS A MAJOR RELEASE.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?

NOR SUBMITTED ONLINE

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.
☑ The impacted area has been secured to protect human health and the environment.
☑ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☑ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

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

Printed Name: SAMANNTHA AVARELLO Title: EHS COORDINATOR

Signature: Samanntha Avarello Date: 01/30/2023

email: SAVARELLO@TXOPARTNERS.COM Telephone: 817-334-7747

OCD Only

Received by: _____ Date: _____

Incident ID	NAPP2402167703
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	76.5' (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
- ☑ Depth to water determination
- ☑ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☑ Boring or excavation logs
- ☑ Photographs including date and GIS information
- ☑ Topographic/Aerial maps
- ☑ Laboratory data including chain of custody

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

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Page 4

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2402167703
District RP	
Facility ID	
Application ID	

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

Printed Name: SAMANNTHA AVARELLO Title: EHS COORDINATOR

Signature: Samanntha Avarello Date: 04/22/2024

email: SAVARELLO@TXOPARTNERS.COM Telephone: 817-334-7747

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2402167703
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- ☑ Detailed description of proposed remediation technique
- ☑ Scaled sitemap with GPS coordinates showing delineation points
- ☑ Estimated volume of material to be remediated
- ☑ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☑ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

- ☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: SAMANNTHA AVARELLO Title: EHS COORDINATOR

Signature: Samanntha Avarello Date: 04/22/2024

email: SAVARELLO@TXOPARTNERS.COM Telephone: 817-334-7747

OCD Only

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

Trinity Oilfield Services & Rentals, LLC

April 22nd, 2024

Oil Conservation Division, District I
1625 N. French Drive
Hobbs, NM 88240

Re: **Remediation Plan Request**
North Vacuum Abo East Battery
Tracking #: NAPP2402167703

Trinity Oilfield Services (Trinity), on behalf of Cross Timbers Energy, LLC, hereby submits the following Remediation Plan Request in response to a release that occurred at the above-referenced location, and further described below.

Site Information	
Incident ID	NAPP2402167703
Site Name	North Vacuum Abo East Battery
Company	Cross Timbers Energy, LLC
County	Lea
ULSTR	K-07-17S-35E
GPS Coordinates (NAD 83)	32.846238, -103.497564
Landowner	Private

RELEASE BACKGROUND

On 01/21/2024, Cross Timbers Energy, LLC reported a release at the North Vacuum Abo East Battery. The release was caused by a freeze. Approximately 6,810 sqft. of the Pad and Pasture was found to be damp upon initial inspection.

Release Information	
Date of Release	1/20/2024
Type of Release	Crude Oil and Produced Water
Source of Release	Freeze
Volume Released – Produced Water	60 bbls
Volume Recovered – Produced Water	57 bbls
Volume Released – Crude Oil	5 bbls
Volume Recovered – Crude Oil	3 bbls
Affected Area – Damp Soil	Pad and Pasture - Approximately 6,810 sqft.
Site Location Map	Attached

SITE CHARACTERIZATION AND CLOSURE CRITERIA

Depth to Groundwater/Wellhead Protection:

Data Source	Well Number	Data Date	Depth (ft.)
NM OSE	L-1329 POD 1	09/09/2014	86'
USGS	325032103294301	12/15/2010	80.93'
USGS	325032103294302	01/06/2016	76.5'
Soil Bore	DTW-3	02/07/2023	105'

A search of the groundwater well databases maintained by the New Mexico Office of the State Engineer (NMOSE) and the United States Geological Survey (USGS) was conducted to determine if any registered groundwater wells are located within a $^{1}/_{2}$ mile of the release site. The search revealed that Three (3) wells occurred in the databases that meet the NMOCD criteria for the age of data, the distance of the data point well from the release point, and a data point well having a diagram of construction.

On February 7, 2023, Kane Environmental Engineering along with Scarborough Drilling was onsite to drill a groundwater determination borehole (DTW-3) to 105' below ground surface within a ½ mile radius of the incident location. The borehole was left open for 96 hours and checked for the presence of groundwater. As a result, no water was detected at 105' below surface at the borehole location (32.84301, -103.49063). The driller log is attached for reference.

General Site Characterization:

Site Assessment	
Karst Potential	Low
Distance to Watercourse	> 1000 ft.
Within 100 yr Floodplain	No
Pasture Impact	No

A risk-based site assessment/characterization was performed following the New Mexico Oil Conservation Division (NMOCD) Rule (Title 19 Chapter 15 Part 29) for releases on oil and gas development and production in New Mexico (effective August 14, 2018). To summarize the site assessment/characterization evaluation, the affected area has Low potential for cave and karst, and no other receptors (residence, school, hospital, institution, church, mining, municipal, or other ordinance boundaries) were located within the regulatorily promulgated distances from the site.

Soil Assessment	
Soil Series	Kimbrough-Lea
Fragile Soil Interpretive Class	Fragile
Erodibility Value	0.32
Wind Erodibility Group	5
Badland Soils	No
Gypsum Soils	No
Representative Slope	1%
Depth to Restrictive Feature	25 cm
Depth to Bedrock	>200 cm
Severe Wildland Burn	No

A soil assessment/characterization was performed following the New Mexico State Land Office Environmental Compliance Office (ECO) Spill and Release Reporting Guidelines (Part 2 Letter D).

Closure Criteria:

On-Site & Off-Site 4ft bgs | Recommended Remedial Action Levels (RRALs)	
Chlorides	10,000 mg/kg
TPH (GRO and DRO and MRO)	2,500 mg/kg
TPH (GRO and DRO)	1,000 mg/kg
BTEX	50 mg/kg
Benzene	10 mg/kg

A reclamation standard of 600 mg/kg chloride and 100 mg/kg TPH will be applied to the top four feet of the pasture area if impacted by the release, per NMAC 19.15.29.13.D (1) for the top four feet of areas that will be reclaimed following remediation.

INITIAL ASSESSMENT AND REMEDIATION ACTIVITIES

Initial Sample Activities:

Delineation Summary	
Delineation Dates	01/24/2024 - 03/08/2024
Depths Sampled	0' - 4'
Delineation Map	Attached
Laboratory Results	Table 1

All soil samples were placed into laboratory-supplied glassware, labeled, and maintained on ice until delivery to an NMOCD-approved laboratory (Cardinal Laboratories of Hobbs, NM) for the analysis of chloride using Method SM4500 Cl-B, Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) by EPA Method 8021 B and Total Petroleum Hydrocarbon (TPH) constituents the by EPA 8015M.

Confirmation Activities:

Remediation Summary	
Remediation Dates	Within 90 Days of NMOCD Approval
Liner Variance Request	None
Deferral Request	None
Proposed Depths Excavated	0.3' - 2'
Proposed Area of 5-point Confirmation Samples – Floors and Walls	400 sqft.
Estimated Volume of Excavated Soil	320 yards

Impacted soil within the release margins will be excavated and temporarily stockpiled on-site on a 6-mil plastic sheeting, pending final disposition. Unless a Variance Request has been approved, all Floor and On-Site Walls of the excavated area will be advanced until laboratory analytical results from confirmation soil samples indicate Chloride, Benzene, BTEX, and TPH concentrations are below the RRAL NMOCD Closure Criteria listed in the Table above, and all Off-Site Walls will be advanced to meet reclamation standards. Confirmation soil samples (five-point composites representing no more than 400 sqft. of the excavated area) will be collected from the floor and sidewalls.

Upon receiving laboratory analytical data showing that confirmation soil samples from the excavated areas yield results below the selected NMOCD Table 1 Closure Criteria, the impacted soil will be transported under manifest to an NMOCD-approved disposal facility and the excavated area will be backfilled with locally sourced, non-impacted "like" material.

SITE RECLAMATION AND RESTORATION

Areas affected by the release and the associated remediation activities will be restored to a condition that existed before the release to the extent practicable. The affected area will be contoured and/or compacted to provide erosion control, stability, and preservation of surface water flow. The area will be fenced off to mitigate grazing and soil compaction by cattle.

Affected areas not on production pads and/or lease roads will be reseeded with a prescribed BLM, NMSLO, and/or Private Landowner requested seed mixture during the first favorable growing season following closure of the site in accordance with the applicable regulatory agency.

REQUEST FOR REMEDIATION PLAN APPROVAL

Supporting Documentation	
C-141| pages 3-5	Signed and Attached
Delineation Map	Attached
Depth to Groundwater Maps and Source	Attached
US NWI Map	Attached
FEMA Flood Hazard Map	Attached
USDA Soil Survey	Attached
Site Photography	Attached
Laboratory Analytics with COCs	Attached

The corrective actions will be completed within 90 days of receipt of approval of this proposal by the NMOCD. Upon completion of the proposed tasks, a Remediation Closure Request will be submitted, documenting remediation activities and results of confirmation soil samples.

Trinity Oilfield Services respectfully requests that the New Mexico Oil Conservation Division grant approval for the detailed Remediation Plan.

Sincerely,

Dan Dunkelberg

Dan Dunkelberg
Project Manager

Cynthia Jordan

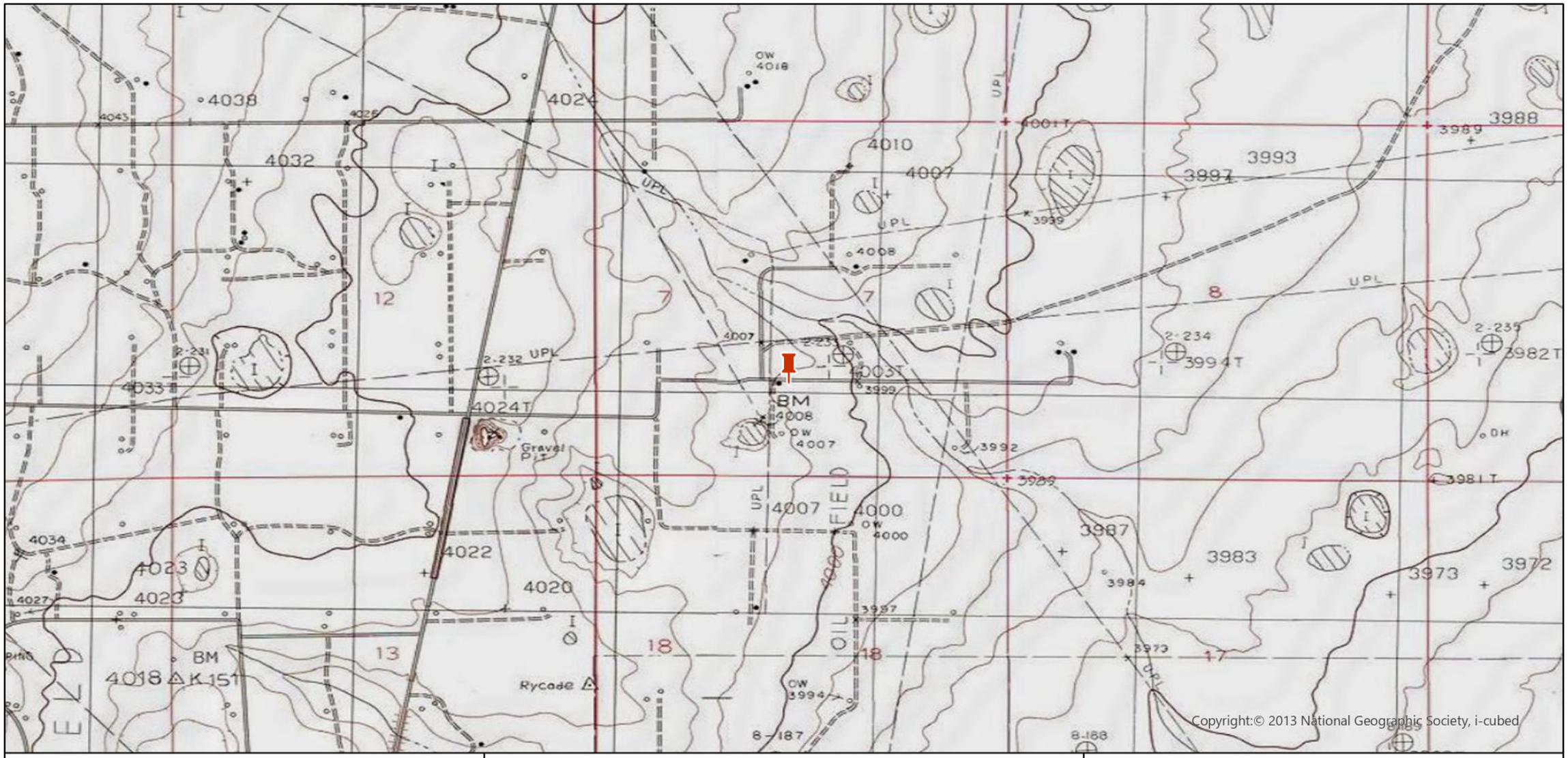
Cynthia Jordan
Project Scientist

TABLE 1
CONCENTRATIONS OF BENZENE, BTEX, TPH & CHLORIDE IN SOIL

CROSS TIMBERS ENERGY, LLC
NORTH VACUUM ABO EAST BATTERY
LEA COUNTY, NEW MEXICO
NMOCD REFERENCE #: NAPP2402167703

TRINITY OILFIELD SERVICES

SAMPLE LOCATION	SAMPLE DEPTH (BGS)	SAMPLE DATE	VERTICAL/ HORIZONTAL	OFF-SITE/ ON-SITE	SAMPLE TYPE	SOIL STATUS	CHLORIDE (mg/Kg)	TPH C6-C36 (mg/Kg)	GRO+ DRO (mg/kg)	GRO C6-C10 (mg/Kg)	DRO C10-C28 (mg/Kg)	MRO C28-C36 (mg/Kg)	TOTAL BTEX (mg/Kg)	BENZENE (mg/Kg)
On-Site, & Deeper than 4' Pasture							**10000**	**2500**	**1000**	**NE**	**NE**	**NE**	**50**	**10**
Delineation Special Circumstance, NMOCD Delineation Limits Pasture to 4'							**600**	**100**	**NE**	**NE**	**NE**	**NE**	**50**	**10**
Vertical Delineation														
DV-001.0-00.0-S	0	1/24/2024	Vertical	On-Site	Grab	In-Situ	1,330.0	57,150.0	49,250.0	6,750.0	42,500.0	7,900.0	737.0	56.70
DV-001.0-01.5-S	1.5	1/24/2024	Vertical	On-Site	Grab	In-Situ	1,260.0	830.3	716.3	94.3	622.0	114.0	20.7	1.31
DV-001.0-04.0-S	4	3/8/2024	Vertical	On-Site	Grab	In-Situ	432.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DV-002.0-00.0-S	0	2/13/2024	Vertical	On-Site	Grab	In-Situ	800.0	13,018.0	10,678.0	78.0	10,600.0	2,340.0	0.3	<10.0
DV-002.0-02.0-S	2	3/4/2024	Vertical	On-Site	Grab	In-Situ	640.0	1,096.0	657.0	<10.0	657.0	439.0	<10.0	<10.0
DV-002.0-04.0-S	4	3/8/2024	Vertical	On-Site	Grab	In-Situ	400.0	25.3	25.3	<10.0	25.3	<10.0	<10.0	<10.0
DV-003.0-00.0-S	0	2/13/2024	Vertical	On-Site	Grab	In-Situ	1,840.0	143.8	76.1	<10.0	76.1	67.7	<10.0	<10.0
DV-003.0-02.0-S	2	3/8/2024	Vertical	On-Site	Grab	In-Situ	224.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Horizontal Delineation														
DH-001.0-01.0-S	1	1/24/2024	Horizontal	On-Site	Grab	In-Situ	512.0	239.6	144.0	<10.0	144.0	95.6	<10.0	<10.0
DH-001.1-01.0-S	1	1/24/2024	Horizontal	On-Site	Grab	In-Situ	160.0	70.8	50.3	<10.0	50.3	20.5	<10.0	<10.0
DH-002.0-01.0-S	1	1/24/2024	Horizontal	On-Site	Grab	In-Situ	1,460.0	254.0	153.0	<10.0	153.0	101.0	<10.0	<10.0
DH-002.2-01.0-P	1	3/4/2024	Horizontal	Off-Site	Grab	In-Situ	192.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DH-003.0-01.0-P	1	1/24/2024	Horizontal	On-Site	Grab	In-Situ	192.0	74.8	54.9	<10.0	54.9	19.9	<10.0	<10.0
DH-004.0-01.0-S	1	1/24/2024	Horizontal	On-Site	Grab	In-Situ	1,960.0	33.6	22.5	<10.0	22.5	11.1	<10.0	0.15
DH-004.2-01.0-P	1	1/24/2024	Horizontal	Off-Site	Grab	In-Situ	112.0	239.0	108.0	<10.0	108.0	131.0	<10.0	<10.0
DH-004.3-01.0-S	1	2/13/2024	Horizontal	Off-Site	Grab	In-Situ	16.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0



Legend:

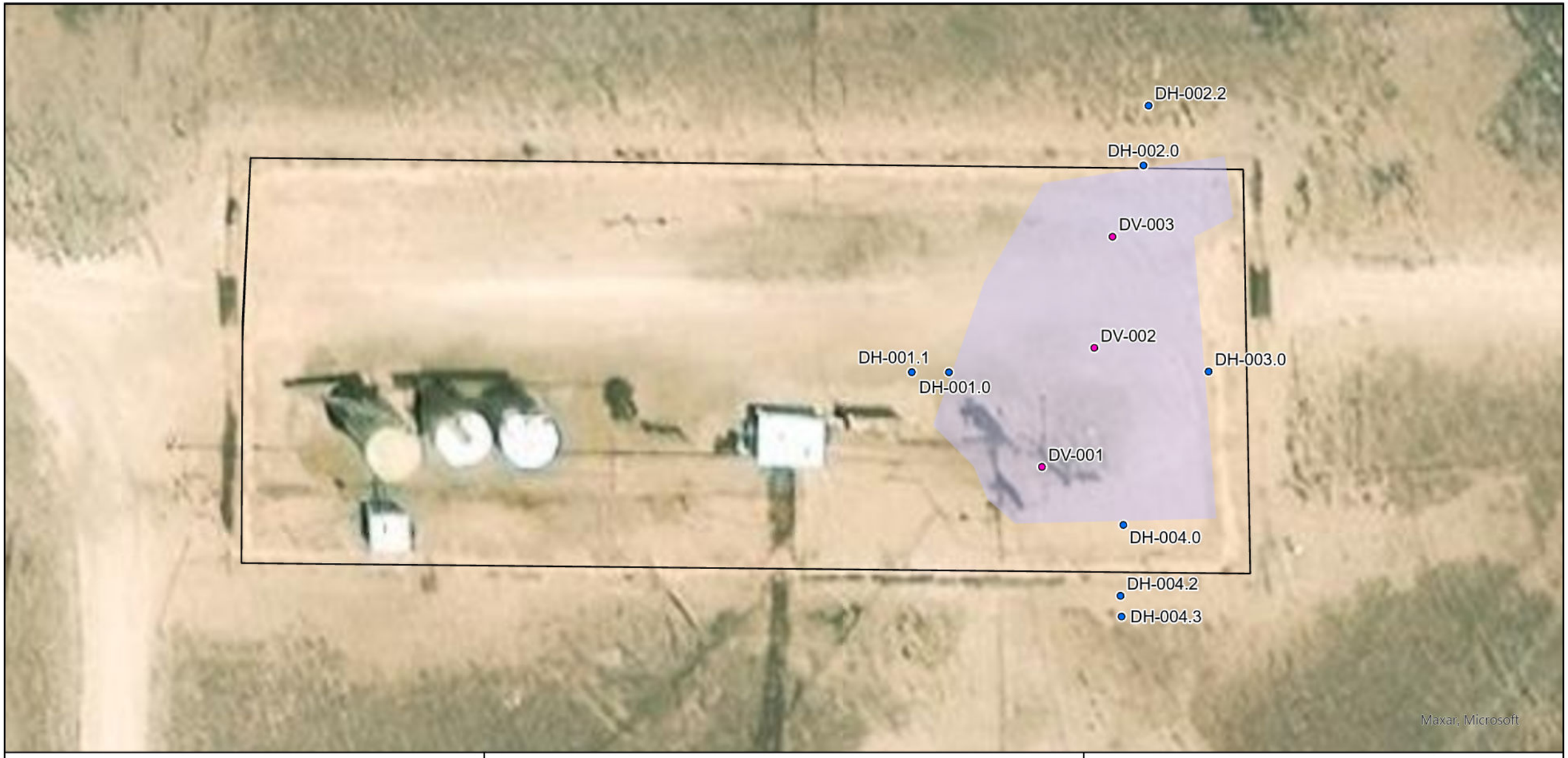
Site Location

Site Location Map
Cross Timbers Energy, LLC
North Vacuum Abo East Battery
32.846238, -103.497564
Lea County, New Mexico
NMOCD Reference # NAPP2402167703

0 0.25 0.5 1 Miles

TRINITY OILFIELD SERVICES

N



Legend:

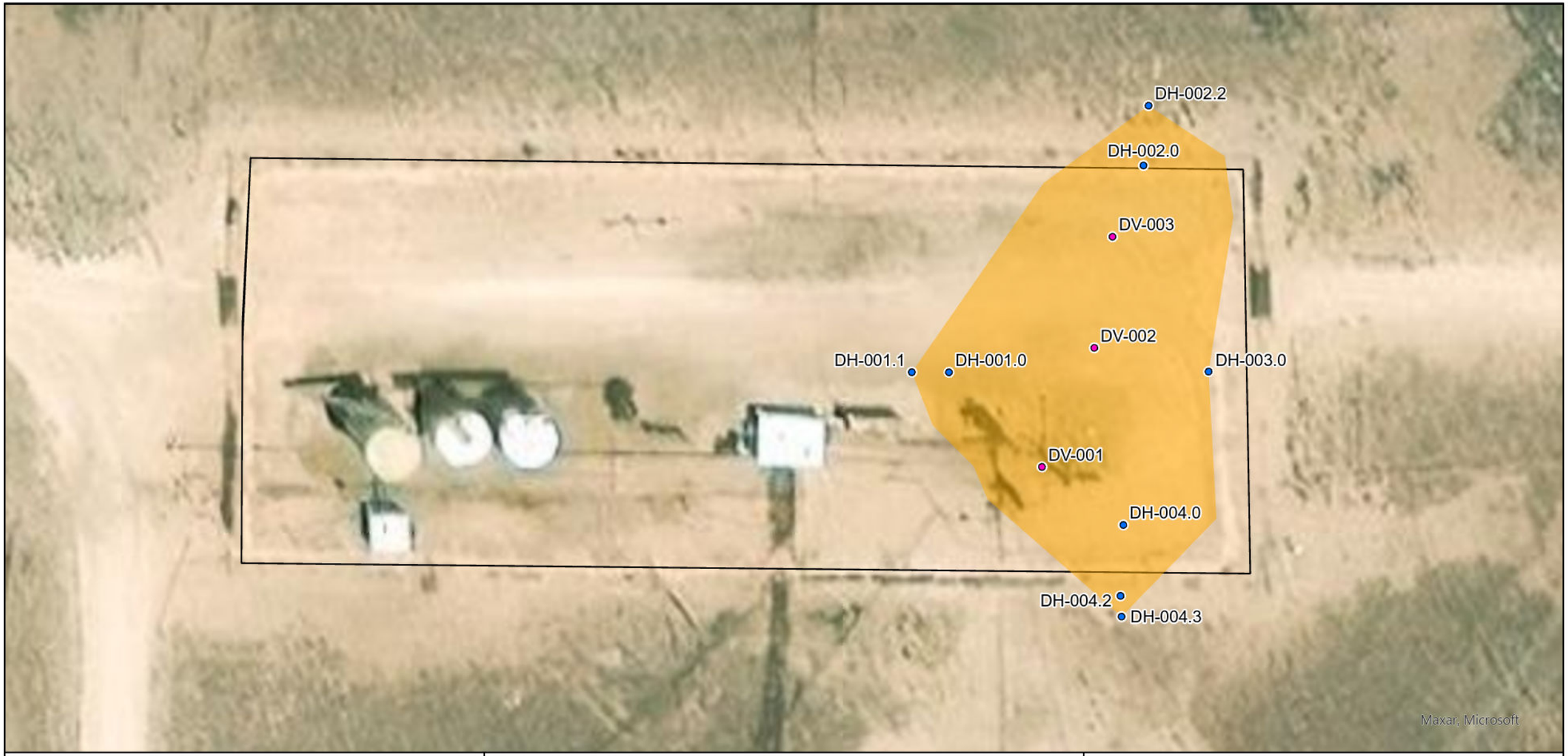
- Vertical Delineation
- Horizontal Delineation
- Release Area
- Unlined Bermed Containment

Delineation Map
Cross Timbers Energy, LLC
North Vacuum Abo East Battery
Lea County, New Mexico
32.846238, -103.497564
NMOCD Reference # NAPP2402167703

0 30 60 120 Feet

N

TRINITY OILFIELD SERVICES



Legend:

- Vertical Delineation
- Horizontal Delineation
- Data Determined Extent of Excavation
- Unlined Bermed Containment

Delineation Map
Cross Timbers Energy, LLC
North Vacuum Abo East Battery
Lea County, New Mexico
32.846238, -103.497564
NMOCD Reference # NAPP2402167703

0 30 60 120 Feet

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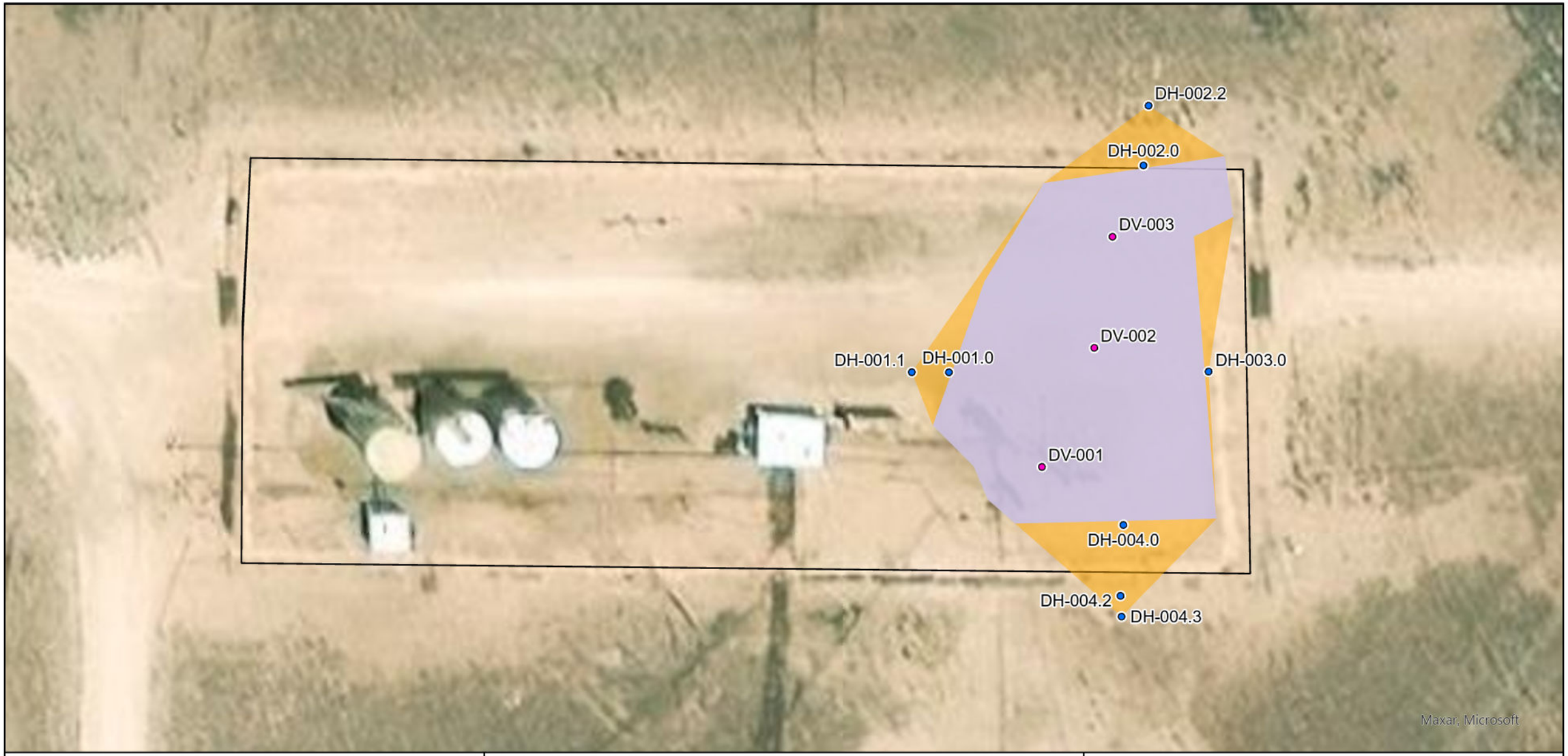
TRINITY OILFIELD SERVICES



Legend:

- Vertical Delineation
- Horizontal Delineation
- Release Area
- Data Determined Extent of Excavation
- Unlined Bermed Containment

Delineation Map
Cross Timbers Energy, LLC
North Vacuum Abo East Battery
Lea County, New Mexico
32.846238, -103.497564
NMOCD Reference # NAPP2402167703

0 30 60 120 Feet

N

TRINITY OILFIELD SERVICES

TRINITY
OILFIELD SERVICES

Release Area

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TRINITY
OILFIELD SERVICES

Release Area

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TRINITY
OILFIELD SERVICES

Release Area

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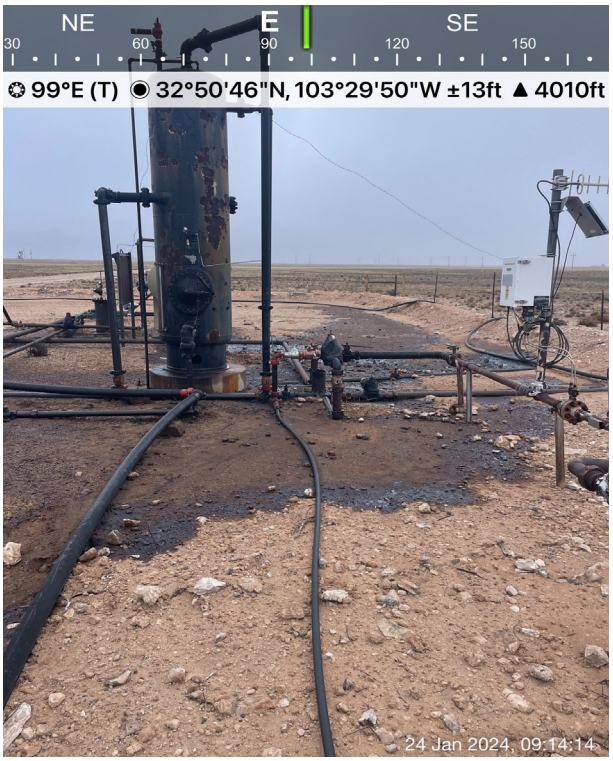

Pad:

TRINITY
OILFIELD SERVICES

Release Area

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TRINITY
OILFIELD SERVICES

Release Area

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OILFIELD SERVICES

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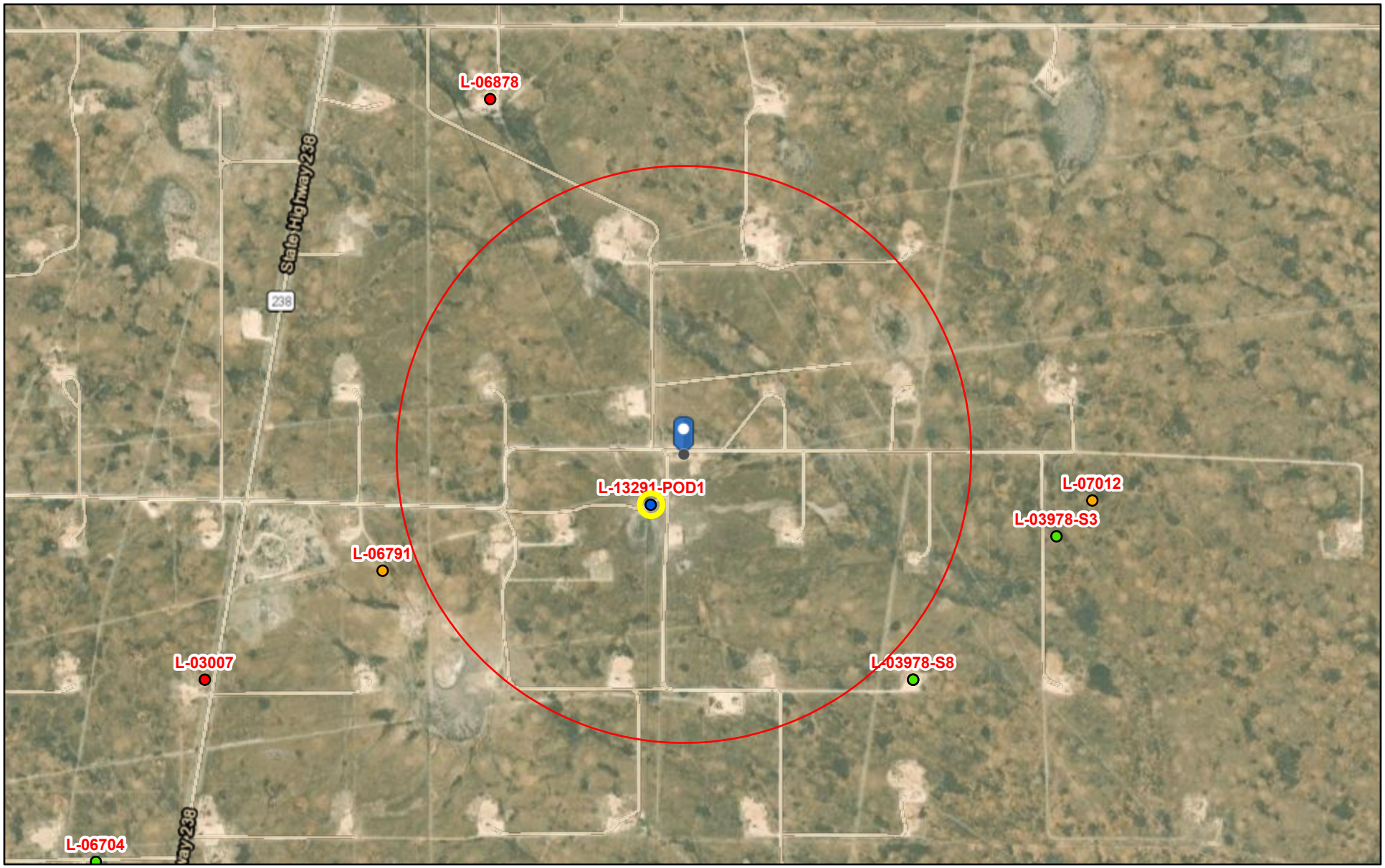
NAPP2402167703 | NORTH VACUUM ABO EAST BATTERY



1/29/2024, 3:14:11 PM

GIS WATERS PODs

Active

Pending

Capped

Plugged

1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

Esri, HERE, iPC, Esri, HERE, Garmin, iPC, Maxar

Online web user

This is an unofficial map from the OSE's online application.

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	L 13291 POD1	2	4	3	07	17S	35E	640512	3635098

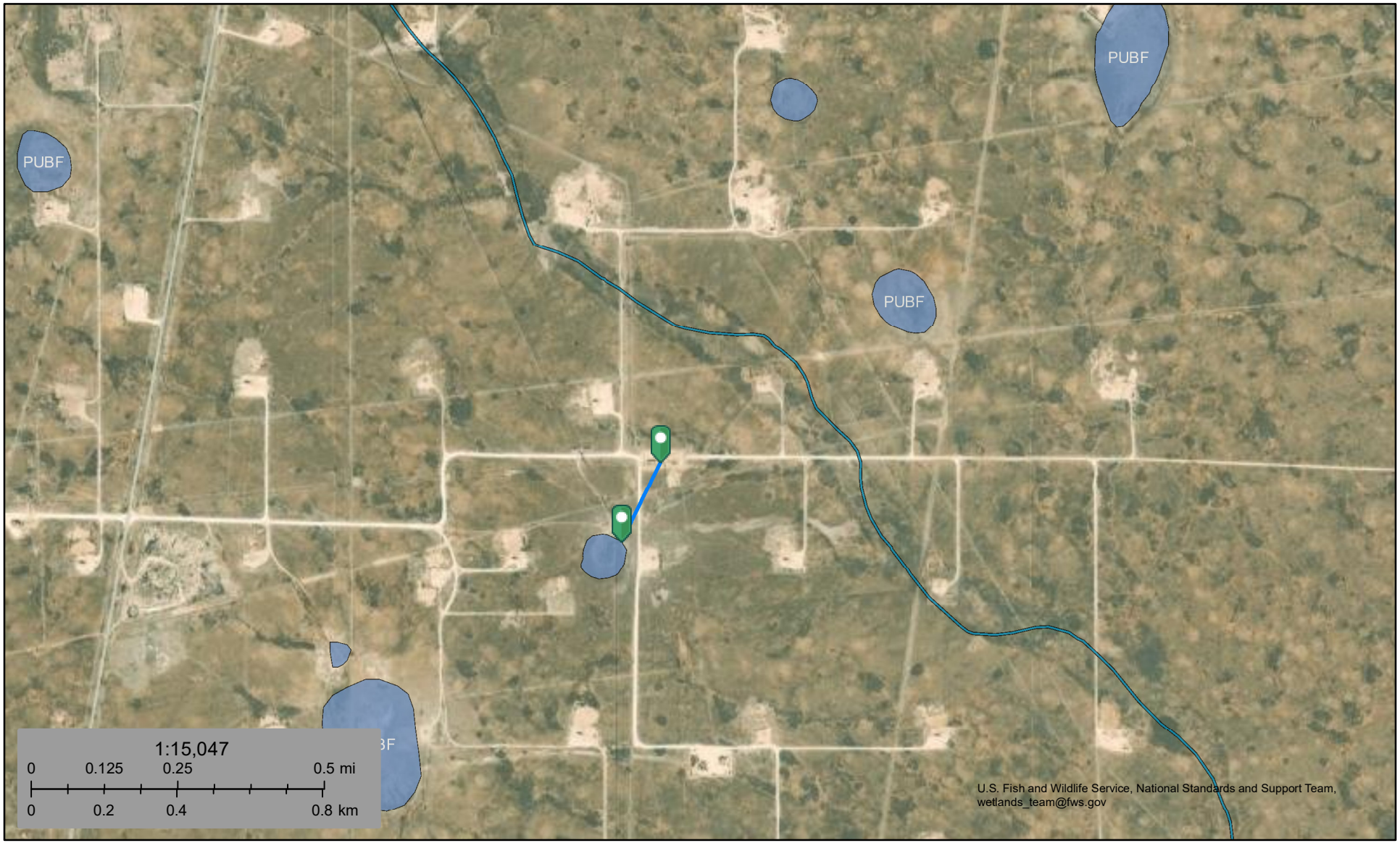
Driller License:	1626	**Driller Company:**	TAYLOR DRILLING		
Driller Name:	ROY A TAYLOR				
Drill Start Date:	08/26/2014	**Drill Finish Date:**	08/26/2014	**Plug Date:**	
Log File Date:	09/09/2014	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	15 GPM
Casing Size:	5.14	**Depth Well:**	210 feet	**Depth Water:**	86 feet

Water Bearing Stratifications:	Top	Bottom	Description
	25	203	Sandstone/Gravel/Conglomerate
	203	206	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	170	210

U.S. Fish and Wildlife Service
National Wetlands Inventory

NAPP2402167703 | NORTH VACUUM ABO EAST BATTERY



January 29, 2024

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Flood Hazard Layer FIRMette

FEMA

103°30'10"W 32°51'2"N

103°29'33"W 32°50'31"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation
- Coastal Transect
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

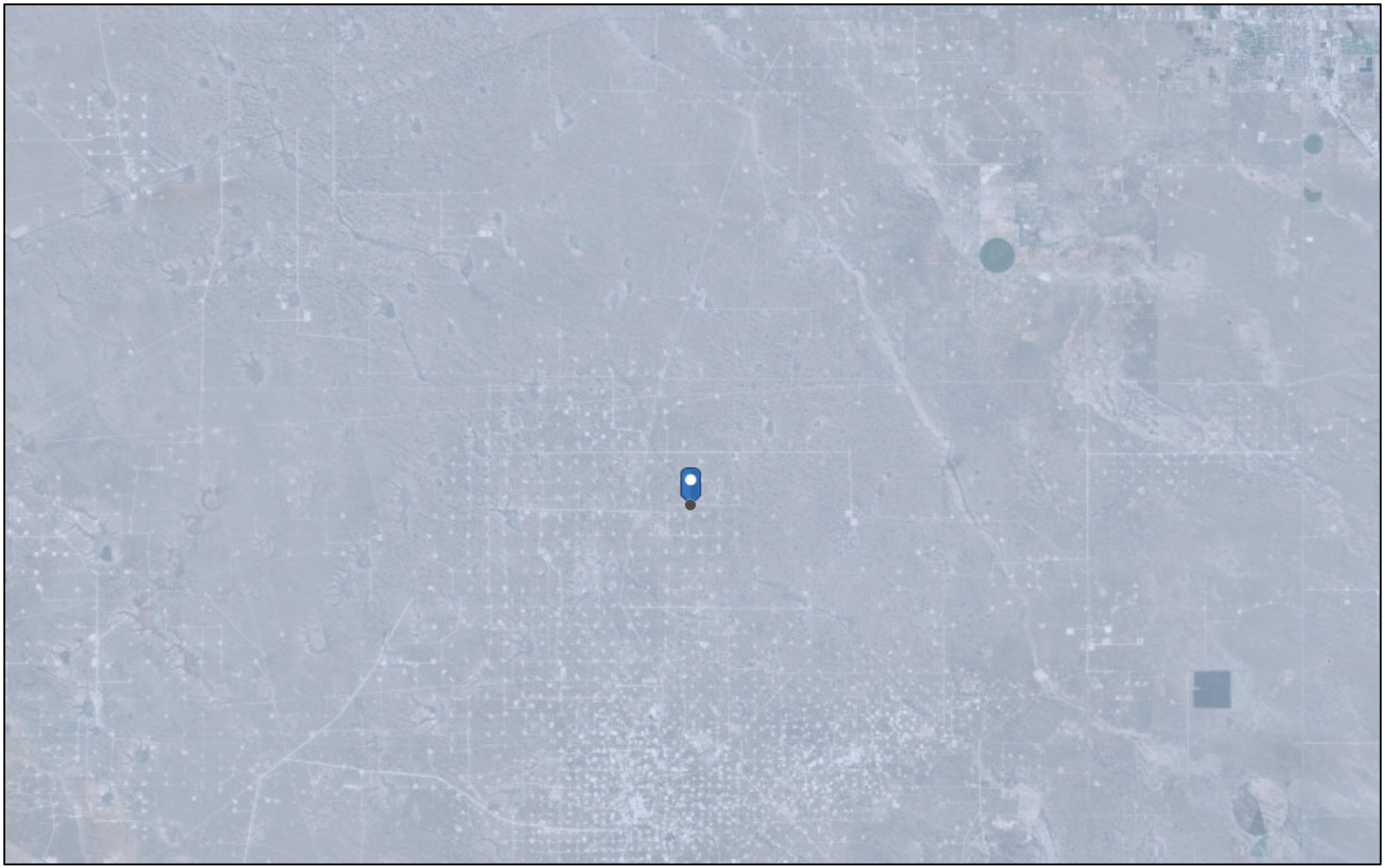
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/29/2024 at 5:35 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NAPP2402167703 | NORTH VACUUM ABO EAST BATTERY



1/29/2024, 3:33:54 PM

Karst Occurrence Potential

Low

1:144,448

0 1 2 4 mi

0 1.5 3 6 km

BLM, OCD, New Mexico Tech, Earthstar Geographics

New Mexico Oil Conservation Division

NM OCD Oil and Gas Map. http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=4d017f2306164de29fd2fb9f8f35ca75: New Mexico Oil Conservation Division

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Lea County, New Mexico

NAPP2402167703 | NORTH VACUUM ABO EAST BATTERY

April 8, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

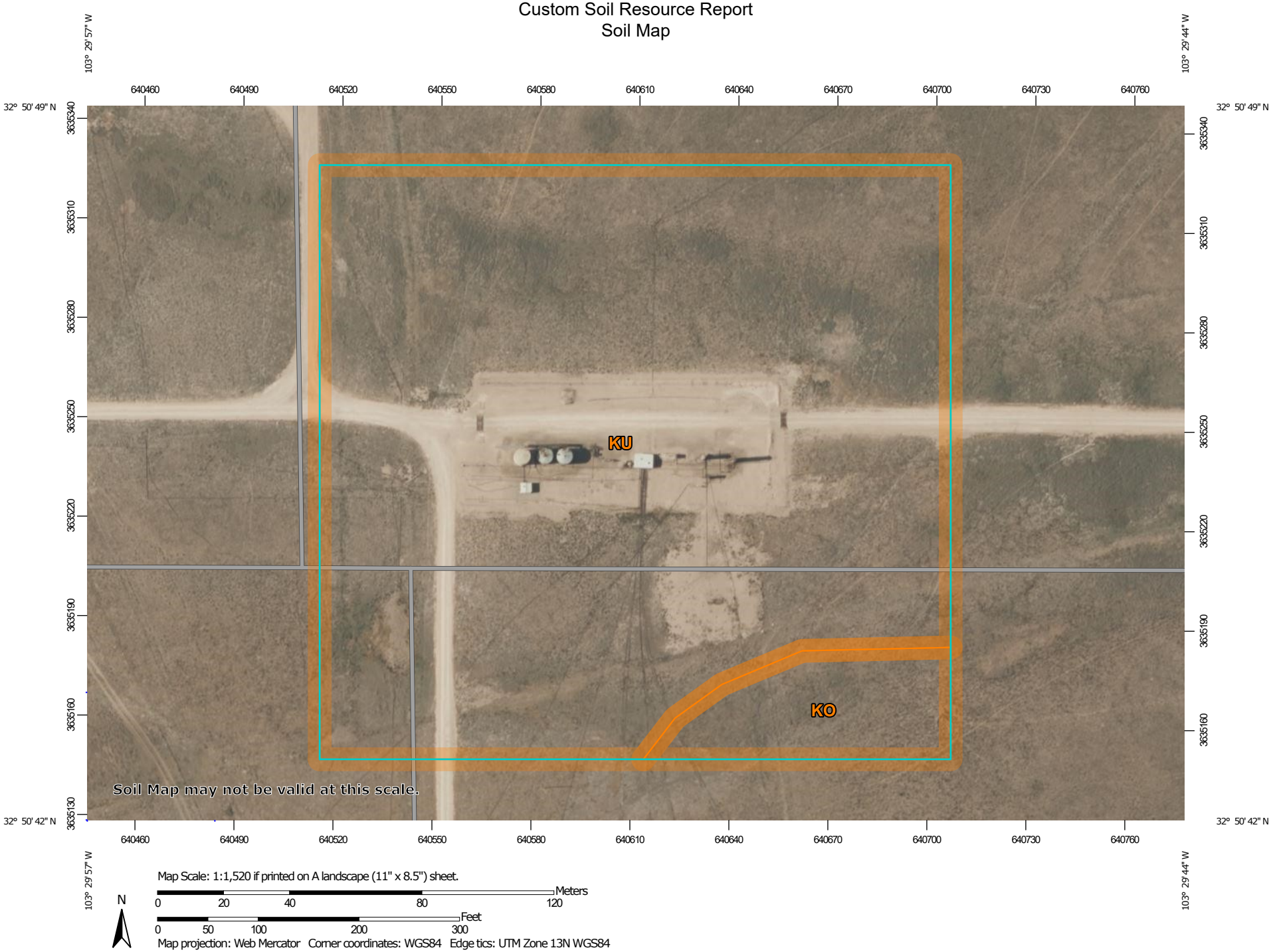
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 20, Sep 6, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
KO	Kimbrough gravelly loam, dry, 0 to 3 percent slopes	0.6	7.2%
KU	Kimbrough-Lea complex, dry, 0 to 3 percent slopes	7.9	92.8%
Totals for Area of Interest		**8.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lea County, New Mexico

KO—Kimbrough gravelly loam, dry, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tw43
Elevation: 2,500 to 4,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Kimbrough, dry, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kimbrough, Dry

Setting

Landform: Playa rims, plains
Down-slope shape: Convex, linear
Across-slope shape: Concave, linear
Parent material: Loamy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 3 inches: gravelly loam
Bw - 3 to 10 inches: loam
Bkkm1 - 10 to 16 inches: cemented material
Bkkm2 - 16 to 80 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 4 to 18 inches to petrocalcic
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 95 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Hydric soil rating: No

Minor Components

Eunice

Percent of map unit: 10 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Hydric soil rating: No

Spraberry

Percent of map unit: 6 percent
Landform: Playa rims, plains
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Hydric soil rating: No

Kenhill

Percent of map unit: 4 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R077DY038TX - Clay Loam 12-17" PZ
Hydric soil rating: No

KU—Kimbrough-Lea complex, dry, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tw46
Elevation: 2,500 to 4,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Kimbrough and similar soils: 45 percent
Lea and similar soils: 25 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kimbrough

Setting

Landform: Playa rims, plains
Down-slope shape: Convex, linear
Across-slope shape: Concave, linear
Parent material: Loamy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 3 inches: gravelly loam
Bw - 3 to 10 inches: loam
Bkkm1 - 10 to 16 inches: cemented material
Bkkm2 - 16 to 80 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 4 to 18 inches to petrocalcic
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 95 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Hydric soil rating: No

Description of Lea

Setting

Landform: Plains
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Calcareous, loamy eolian deposits from the blackwater draw formation of pleistocene age over indurated caliche of pliocene age

Typical profile

A - 0 to 10 inches: loam
Bk - 10 to 18 inches: loam
Bkk - 18 to 26 inches: gravelly fine sandy loam
Bkkm - 26 to 80 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 22 to 30 inches to petrocalcic
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 90 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0

Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R077DY047TX - Sandy Loam 12-17" PZ
Hydric soil rating: No

Minor Components

Kenhill

Percent of map unit: 12 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R077DY038TX - Clay Loam 12-17" PZ
Hydric soil rating: No

Douro

Percent of map unit: 12 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R077DY047TX - Sandy Loam 12-17" PZ
Other vegetative classification: Unnamed (G077DH000TX)
Hydric soil rating: No

Spraberry

Percent of map unit: 6 percent
Landform: Playa rims, plains
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Other vegetative classification: Unnamed (G077DH000TX)
Hydric soil rating: No

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Soil Health

Soil health interpretations are designed to be used as tools for evaluating and managing a soil's capacity to function as a vital living ecosystem that sustains plants, animals, and humans. Example interpretations include compaction, surface sealing, carbon sequestration, resistance and resilience, management systems and practices, and cover crops.

Fragile Soil Index

SOH - Soil Health

Soils can be rated based on their susceptibility to degradation in the "Fragile Soil Index" interpretation. Fragile soils are those that are most vulnerable to degradation. In other words, they can be easily degradedthey have a low resistance to degradation processes. They tend to be highly susceptible to erosion and can have a low capacity to recover after degradation has occurred (low resilience). Fragile soils are generally characterized by a low content of organic matter, low aggregate stability, and weak soil structure. They are generally located on sloping ground, have sparse plant cover, and tend to be in arid or semiarid regions. The index can be used for conservation and watershed planning to assist in identifying soils and areas highly vulnerable to degradation.

Depending on inherent soil characteristics and the climate, soils can vary from highly resistant, or stable, to vulnerable and extremely sensitive to degradation. Under stress, fragile soils can degrade to a new altered state, which may be less favorable or unfavorable for plant growth and less capable of performing soil functions. To assess the fragility of the soil, indicators of vulnerability to degradation

processes are used. They include organic matter, soil structure, rooting depth, vegetative cover, slope, and aridity.

The organic matter content indicates the capacity of the soil to resist and/or recover from degradation processes. Organic matter improves the soil pore structure, increases water infiltration, and reduces soil compaction and soil erosion. Soil structure indicates the capacity of the soil to resist degradation from accelerated water erosion (by increasing the amount of infiltration). Pore structure is the most important aspect of soil structure as pores provide habitat for organism. Shallow soils are more vulnerable to degradation processes because they have limited rooting depth and have a reduced amount of material from which to form new soil. As erosion removes the upper soil profile, productivity will decline if the subsoil is limiting for crop growth. Vegetative cover is very important as uncovered soil is most vulnerable to the processes of soil erosion, both by wind and water. Slope (a measure of the steepness or the degree of inclination) indicates the degree of vulnerability to erosion and mass movement. Aridity is defined by the shortage of moisture. Lack of water is a main factor limiting biological processes and the ability of the soil to resist and/or recover from degradation.

Soils are placed into interpretive classes based on their index rating, which ranges from 0 to 1. An index rating of 1 is the most fragile, while a rating of zero is the least fragile. Interpretative classes are as follows:

Not Fragile (index rating less than or equal to 0.009) These soils have a very high potential to resist degradation and be highly resilient. They are highly structured with an organic matter content greater than 5.7%, are nearly level, are deep or very deep, have greater than 85% vegetative cover, and are in a climate that is wet or very wet.

Slightly Fragile (index rating less than 0.009 and less than or equal to 0.209) These soils have a high potential to resist degradation and be resilient. They are:

— Poorly structured to weakly structured soils that have an extremely low to moderate content of organic matter, are very deep, have high vegetative cover, occur on nearly level ground, and are in wet or very wet climates;

— Highly structured soils that have a very high content of organic matter, are very shallow to moderately deep, have high vegetative cover, occur on nearly level ground, and are in wet or very wet climates;

— Highly structured soils that have a very high content of organic matter, are very deep, have low to moderately high vegetative cover, occur on nearly level ground, and are in wet or very wet climates;

— Highly structured soils that have a very high content of organic matter, are very deep, have high vegetative cover; are on slopes greater than 3%, and are in wet or very wet climates; or

— Highly structured soils that have a very high content of organic matter, are very deep, have high vegetative cover; occur on nearly level ground, and in semi-dry to mildly wet climates;

Moderately Fragile (index rating greater than 0.209 and less than or equal to 0.409) These soils have a moderate potential to resist degradation and be moderately resilient. They are:

— Highly structured soils that have a very high content of organic matter, are very shallow, have high vegetative cover, occur in nearly level to moderately sloping areas, and are in semi-dry climates;

— Poorly structured soils that have an extremely low content of organic matter, are deep, have low vegetative cover, occur in nearly level areas, and are in wet or very wet climates;

— Poorly structured soils that have an extremely low content of organic matter, occur on gentle to very steep slopes, have high vegetative cover, and are in wet or very wet climates;

— Weakly structured soils that have a very low content of organic matter, are deep, occur in nearly level to gently sloping areas, have high vegetative cover, and are in semi-dry climates; or

— Weakly structured soils that have a very low content of organic matter, are very shallow to very deep, occur in nearly level to strongly sloping areas, have high vegetative cover, and are in mildly wet climates.

Fragile (index rating greater than 0.409 and less than or equal to 0.609) These soils have a low potential to resist degradation and low resilience. They are:

— Well structured soils that have a low content of organic matter, are shallow to very deep, have moderate to moderately high vegetative cover, occur on steep slopes, and are in dry climates;

— Well structured soils that have a low content of organic matter, are shallow to very deep, have a low vegetative cover, occur in nearly level to gently sloping areas, and are in dry climates;

— Well structured soils that have a low content of organic matter, are deep, have low vegetative cover, occur on nearly level to very steep slopes, and are in a semi-dry climate;

— Moderately structured soils that have a very low content of organic matter, are deep, have moderately high vegetative cover, occur on moderately steep to very steep slopes, and are in semi-dry climates; or

— Weakly structured soils that have a low content of organic matter, occur on moderately steep to very steep slopes, have low vegetative cover, and are in wet or very wet climates.

Very Fragile (index rating greater than 0.609 and less than or equal to 0.809) These soils have a very low potential to resist degradation and very low resilience. They are:

— Weakly structured soils that have an extremely low content of organic matter, are deep, have low vegetative cover, occur on nearly level to very steep slopes, and are in dry climates;

— Weakly structured soils that have an extremely low content of organic matter, are shallow to very deep, have low vegetative cover, occur on nearly level to very steep slopes, and are in very dry climates; or

— Poorly structured soils that have an extremely low content of organic matter, are very shallow, have no vegetative cover, occur on steep slopes, and are in mildly wet to wet climates.

Extremely Fragile (index rating greater than 0.809 and less than or equal to 1.0) These soils can have no potential to resist degradation and no resilience. They are:

— Poorly structured soils that have an extremely low content of organic matter, are very shallow, have low vegetative cover, occur on very steep slopes, and are in dry or very dry climates;

— Weakly structured soils that have a very low content of organic matter, are nearly level to very deep, have low vegetative cover, occur on very steep slopes, and are in dry climates; or

— Very shallow soils on steep slopes.

The interpretive rating is based on soils that occur in the dominant land use for the map unit component and may not represent soils that occur in site-specific land uses.

Custom Soil Resource Report
Map—Fragile Soil Index

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Extremely fragile
- Highly fragile
- Fragile
- Moderately fragile
- Slightly fragile
- Not fragile
- Not rated or not available

Soil Rating Lines
- Extremely fragile
- Highly fragile
- Fragile
- Moderately fragile
- Slightly fragile
- Not fragile
- Not rated or not available

Soil Rating Points
- Extremely fragile
- Highly fragile
- Fragile
- Moderately fragile
- Slightly fragile
- Not fragile
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 20, Sep 6, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

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Tables—Fragile Soil Index

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
KO	Kimbrough gravelly loam, dry, 0 to 3 percent slopes	Fragile	Kimbrough, dry (80%)	Poor structure (1.00)	0.6	7.2%
				Dry (0.70)		
				Low organic matter (0.69)		
				Shallow (0.65)		
				High vegetative cover (0.07)		
			Eunice (10%)	Extremely low organic matter (0.96)		
				Weakly structured (0.75)		
				Dry (0.70)		
				Shallow (0.60)		
				High vegetative cover (0.07)		
			Spraberry (6%)	Extremely low organic matter (0.97)		
				Weakly structured (0.75)		
				Dry (0.70)		
				Moderately deep (0.45)		
				High vegetative cover (0.07)		
			Kenhill (4%)	Poor structure (1.00)		
				Very low organic matter (0.91)		
				Dry (0.70)		
				Moderately deep (0.27)		
				Moderately-high vegetative cover (0.14)		
KU	Kimbrough-Lea complex, dry, 0 to 3 percent slopes	Fragile	Kimbrough (45%)	Poor structure (1.00)	7.9	92.8%
				Dry (0.70)		
				Low organic matter (0.69)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Shallow (0.65)		
				High vegetative cover (0.07)		
			Kenhill (12%)	Poor structure (1.00)		
				Very low organic matter (0.91)		
				Dry (0.70)		
				Moderately deep (0.27)		
				Moderately-high vegetative cover (0.14)		
			Douro (12%)	Extremely low organic matter (0.95)		
				Weakly structured (0.75)		
				Dry (0.70)		
				Moderately deep (0.25)		
				Nearly level (0.02)		
			Spraberry (6%)	Extremely low organic matter (0.97)		
				Weakly structured (0.75)		
				Dry (0.70)		
				Moderately deep (0.45)		
				High vegetative cover (0.07)		
Totals for Area of Interest					**8.5**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Fragile	8.5	100.0%
Totals for Area of Interest	**8.5**	**100.0%**

Rating Options—Fragile Soil Index

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Chemical Properties

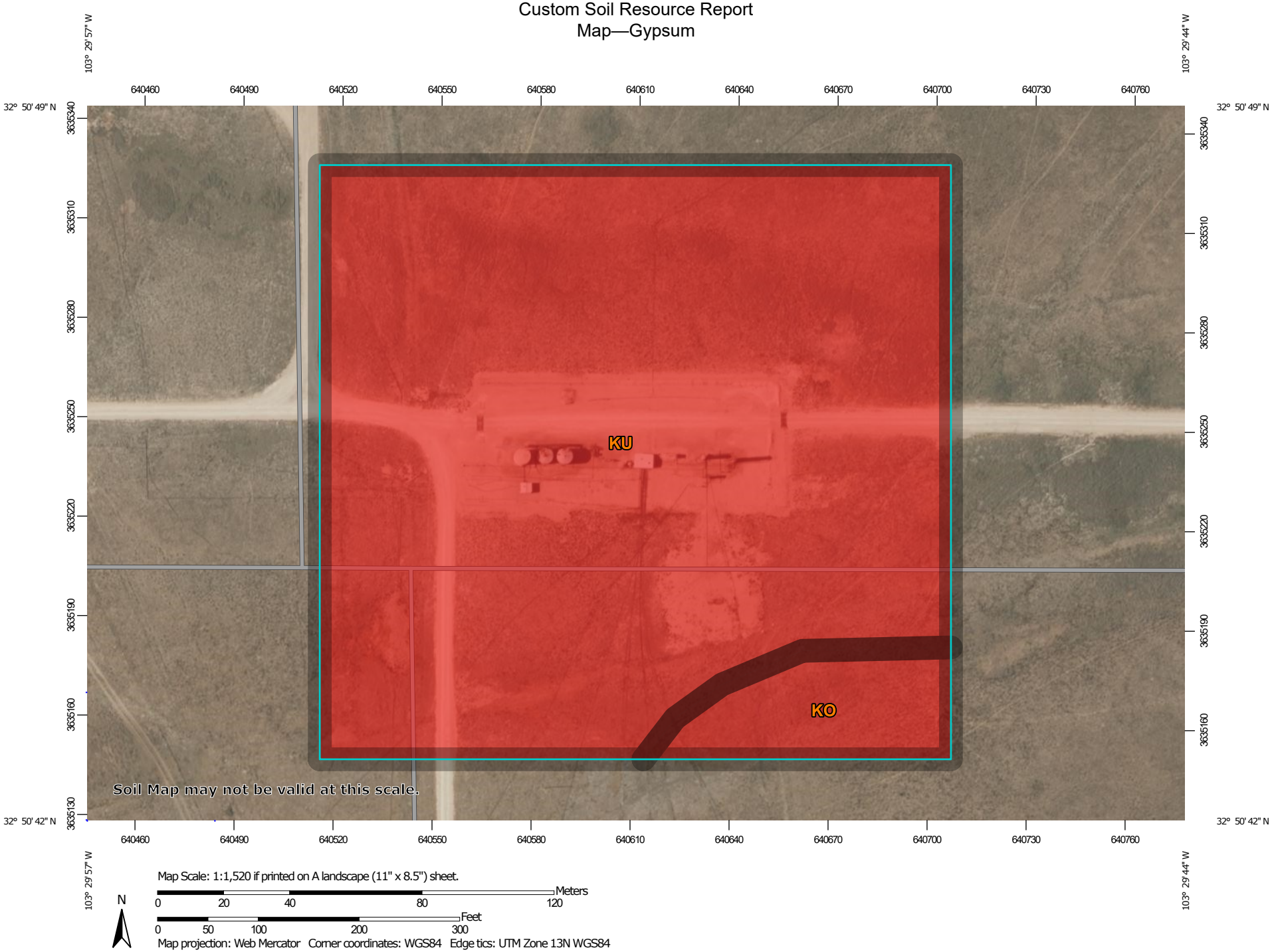
Soil Chemical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil chemical properties include pH, cation exchange capacity, calcium carbonate, gypsum, and electrical conductivity.

Gypsum

The content of gypsum is the percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils high in content of gypsum, such as those with more than 10 percent gypsum, may collapse if the gypsum is removed by percolating water. Gypsum is corrosive to concrete.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Gypsum



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

= 0

Not rated or not available

Soil Rating Lines

= 0

Not rated or not available

Soil Rating Points

= 0

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 20, Sep 6, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Gypsum

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
KO	Kimbrough gravelly loam, dry, 0 to 3 percent slopes	0	0.6	7.2%
KU	Kimbrough-Lea complex, dry, 0 to 3 percent slopes	0	7.9	92.8%
Totals for Area of Interest			**8.5**	**100.0%**

Rating Options—Gypsum

Units of Measure: percent

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher attribute value should be returned in the case of a percent composition tie. The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: Yes

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

Soil Erosion Factors

Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

K Factor, Whole Soil

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Factor K does not apply to organic horizons and is not reported for those layers.

Custom Soil Resource Report
Map—K Factor, Whole Soil

Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Soil Rating Lines
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Soil Rating Points
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Survey Area Data: Version 20, Sep 6, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
KO	Kimbrough gravelly loam, dry, 0 to 3 percent slopes	.32	0.6	7.2%
KU	Kimbrough-Lea complex, dry, 0 to 3 percent slopes	.32	7.9	92.8%
Totals for Area of Interest			**8.5**	**100.0%**

Rating Options—K Factor, Whole Soil

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

Wind Erodibility Group

A wind erodibility group (WEG) consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

Custom Soil Resource Report
Map—Wind Erodibility Group

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- 1
- 2
- 3
- 4
- 4L
- 5
- 6
- 7
- 8
- Not rated or not available

Soil Rating Lines
- 1
- 2
- 3
- 4
- 4L
- 5
- 6
- 7
- 8
- Not rated or not available

Soil Rating Points
- 1
- 2
- 3
- 4
- 4L
- 5
- 6
- 7
- 8
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

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Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Lea County, New Mexico
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Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

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Table—Wind Erodibility Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
KO	Kimbrough gravelly loam, dry, 0 to 3 percent slopes	5	0.6	7.2%
KU	Kimbrough-Lea complex, dry, 0 to 3 percent slopes	5	7.9	92.8%
Totals for Area of Interest			**8.5**	**100.0%**

Rating Options—Wind Erodibility Group

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

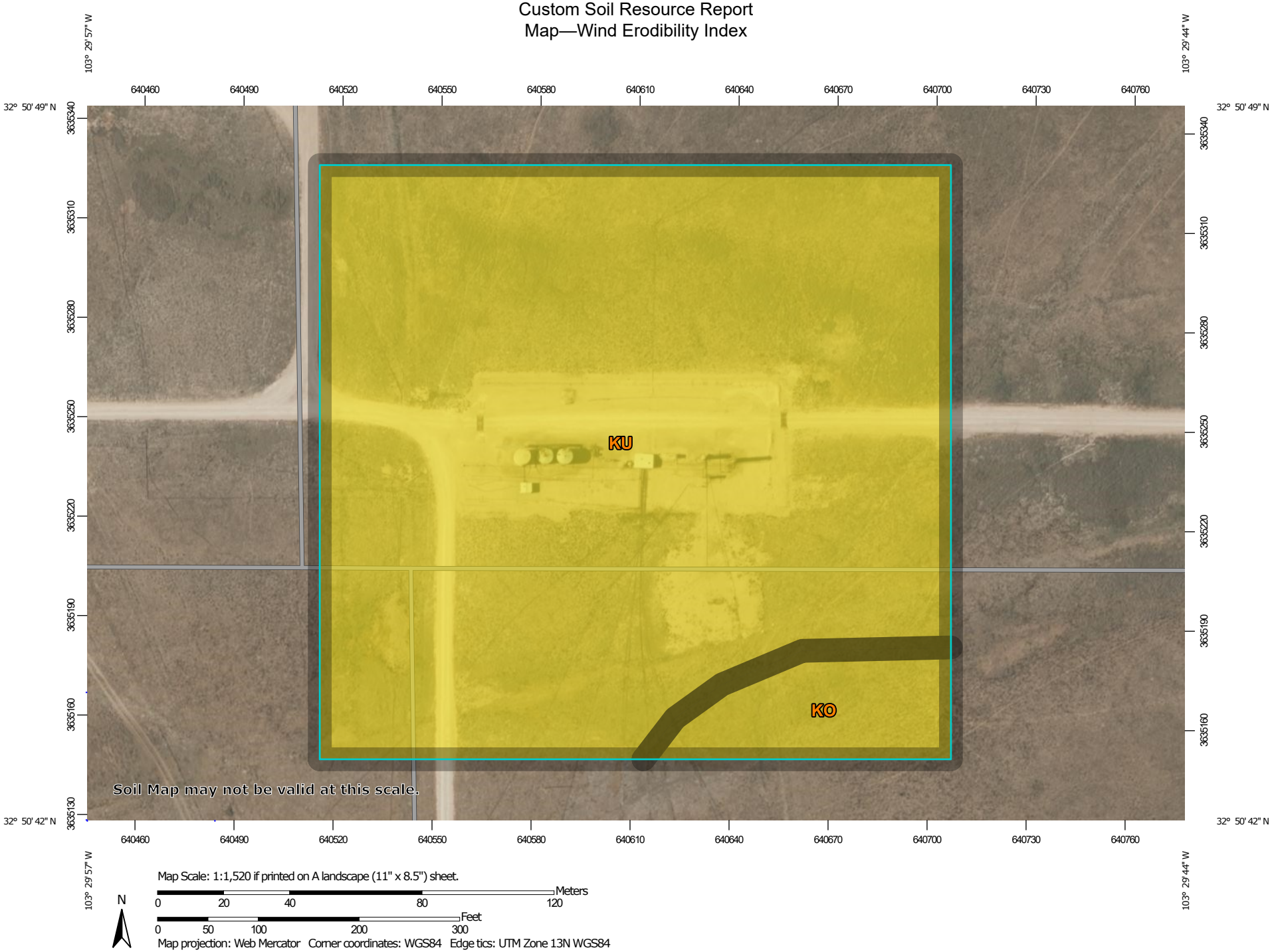
Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Wind Erodibility Index

The wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Custom Soil Resource Report
Map—Wind Erodibility Index



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- 0
- 38
- 48
- 56
- 86
- 134
- 160
- 180
- 220
- 250
- 310
- Not rated or not available

Soil Rating Lines
- 0
- 38
- 48
- 56
- 86
- 134
- 160
- 180
- 220
- 250
- 310
- Not rated or not available

Soil Rating Points
- 0
- 38
- 48
- 56
- 86
- 134
- 160
- 180
- 220
- 250
- 310
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 20, Sep 6, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Wind Erodibility Index

Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
KO	Kimbrough gravelly loam, dry, 0 to 3 percent slopes	56	0.6	7.2%
KU	Kimbrough-Lea complex, dry, 0 to 3 percent slopes	56	7.9	92.8%
Totals for Area of Interest			**8.5**	**100.0%**

Rating Options—Wind Erodibility Index

Units of Measure: tons per acre per year

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be

considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Depth to Bedrock

The term bedrock in soil survey refers to a continuous root and water restrictive layer of rock that occurs within the soil profile.

There are many types of restrictions that can occur within the soil profile but this theme only includes the three restrictions that use the term bedrock. These are:

1) Lithic Bedrock

2) Paralithic Bedrock

3) Densic Bedrock

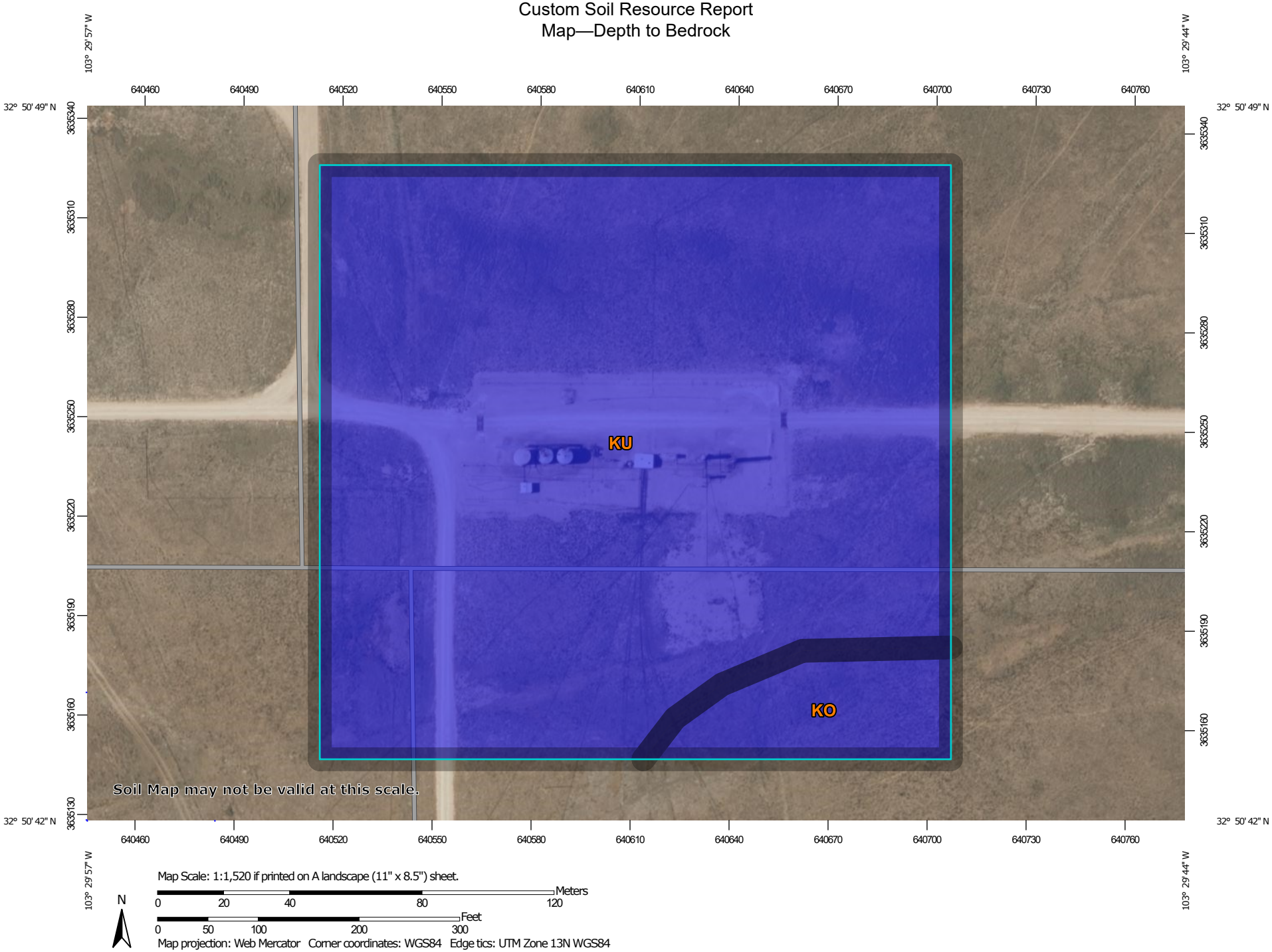
Lithic bedrock and paralithic bedrock are comprised of igneous, metamorphic, and sedimentary rocks, which are coherent and consolidated into rock through pressure, heat, cementation, or fusion. Lithic bedrock represents the hardest type of bedrock, with a hardness of strongly coherent to indurated. Paralithic bedrock has a hardness of extremely weakly coherent to moderately coherent. It can occur as a thin layer of weathered bedrock above harder lithic bedrock. Paralithic bedrock can also be much thicker, extending well below the soil profile.

Densic bedrock represents a unique kind of bedrock recognized within the soil survey. It is non-coherent and consolidated, dense root restrictive material, formed by pressure, heat, and dewatering of earth materials or sediments. Densic bedrock differs from densic materials, which formed under the compaction of glaciers, mudflows, and or human-caused compaction.

If more than one type of bedrock is described for an individual soil type, the depth to the shallowest one is given. If no bedrock is described in a map unit, it is represented by the "greater than 200" depth class.

Depth to bedrock is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Depth to Bedrock



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 20, Sep 6, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Depth to Bedrock

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
KO	Kimbrough gravelly loam, dry, 0 to 3 percent slopes	>200	0.6	7.2%
KU	Kimbrough-Lea complex, dry, 0 to 3 percent slopes	>200	7.9	92.8%
Totals for Area of Interest			**8.5**	**100.0%**

Rating Options—Depth to Bedrock

Units of Measure: centimeters

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher attribute value should be returned in the case of a percent composition tie. The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Depth to Any Soil Restrictive Layer

A "restrictive layer" is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers.

This theme presents the depth to any type of restrictive layer that is described for each map unit. If more than one type of restrictive layer is described for an individual soil type, the depth to the shallowest one is presented. If no restrictive layer is described in a map unit, it is represented by the "greater than 200" depth class.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Depth to Any Soil Restrictive Layer

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 20, Sep 6, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Depth to Any Soil Restrictive Layer

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
KO	Kimbrough gravelly loam, dry, 0 to 3 percent slopes	25	0.6	7.2%
KU	Kimbrough-Lea complex, dry, 0 to 3 percent slopes	25	7.9	92.8%
Totals for Area of Interest			**8.5**	**100.0%**

Rating Options—Depth to Any Soil Restrictive Layer

Units of Measure: centimeters

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher attribute value should be returned in the case of a percent composition tie. The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Representative Slope

Slope gradient is the difference in elevation between two points, expressed as a percentage of the distance between those points.

The slope gradient is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Representative Slope

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- 0 - 5
- 5 - 15
- 15 - 45
- 45 - 60
- 60 - 100
- Not rated or not available

Soil Rating Lines
- 0 - 5
- 5 - 15
- 15 - 45
- 45 - 60
- 60 - 100
- Not rated or not available

Soil Rating Points
- 0 - 5
- 5 - 15
- 15 - 45
- 45 - 60
- 60 - 100
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 20, Sep 6, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Representative Slope

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
KO	Kimbrough gravelly loam, dry, 0 to 3 percent slopes	1.0	0.6	7.2%
KU	Kimbrough-Lea complex, dry, 0 to 3 percent slopes	1.0	7.9	92.8%
Totals for Area of Interest			**8.5**	**100.0%**

Rating Options—Representative Slope

Units of Measure: percent

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher attribute value should be returned in the case of a percent composition tie. The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

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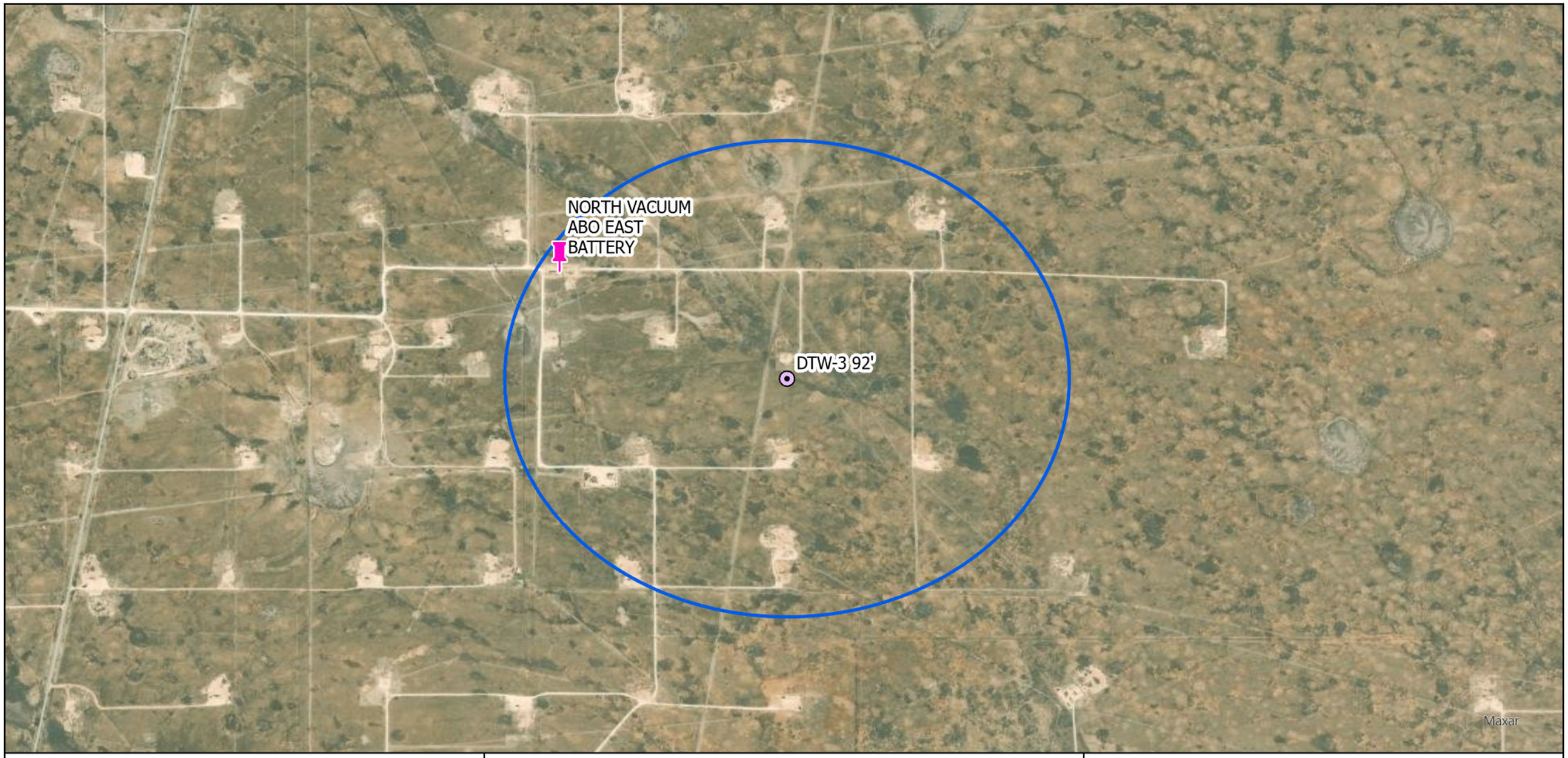


Legend:

- Site Location
- DTW Well
- 1/2 Mile Buffer

Depth to Water Map
Cross Timbers Energy, LLC
North Vacuum Abo East Battery
32.846238, -103.497564
Lea County, New Mexico
NMOCD Reference # NAPP2402167703

0 0.2 0.4 0.8 Miles

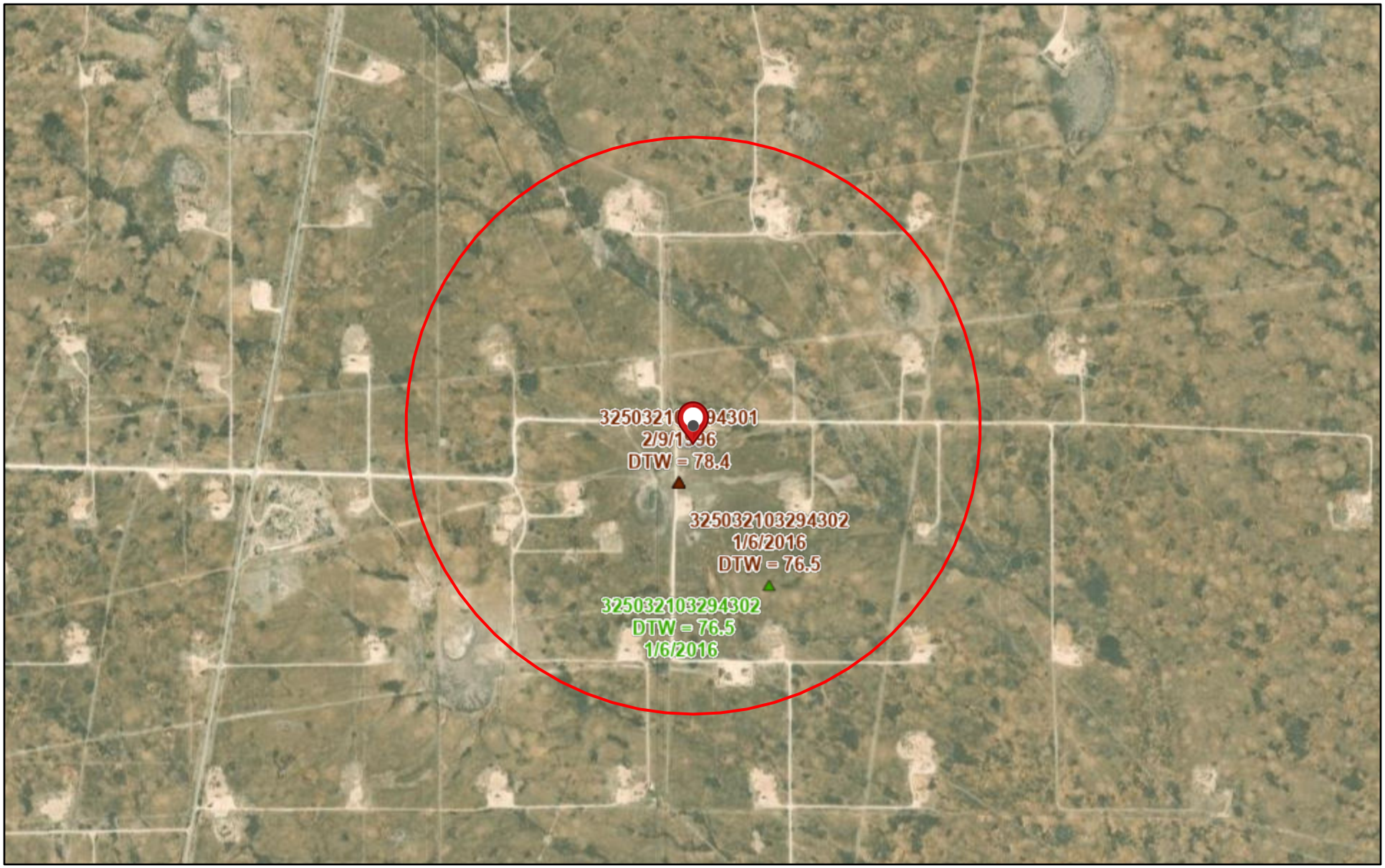
N

TRINITY OILFIELD SERVICES

Kane Environmental Engineering Boring/Completion Log	Kane Environmental Engineering 1 OF 1 2351 E. State Highway 21 Lincoln, TX 78948 Phone: 281-379-6580
CLIENT: Morning Star Partners	**Piezometer DTW 3**
PROJECT: Depth to Water Program	
PROJECT NUMBER:	
LOCATION: Buckeye, N.M.	
BORING/WELL NAME: DTW 3	
KANE REP: J. Rosen	
DRILLING METHOD: Coventional Rotary	
SAMPLING METHODS: Air Rotary Cuttings	
TOP CSG ELEV: GRND. ELEV:	
START/END: February 7, 2023	DRILLER: Scarborough Drilling: License 2969AKP 3068AKP NM License: WD-1188
5" borehole with tricone bit	LATITUDE: 32.84301 LONGITUDE: -103.49063

	CASING	DEPTH IN FEET	SOIL AND DRILLING DESCRIPTION
		20	0 - 1.5' Topsoil, silty fine sand (SM-SP), w/angular pieces of caliche, brown, dry 1.5 - 14' Caliche, white to buff, lithified, hard 14 - 105' Sand (SP), creme to tan, very fine grained, soft, moisture content increases with depth
		40	Sand contains random thin interbeds of hard caliche
		60	Switch to drag bit at 60', and add minimal water/foam to enhance cuttings removal
		80	
		100	Difficult drilling with hole collapse at 92' bgs; total depth drilled 105' Total depth (from ground surface) 92 feet No groundwater encountered upon completion of drilling
		120	Machine slotted, threaded, Schedule 40 PVC screen from 72 - 92 feet bgs, blank casing surface to 72 ft

NAPP2402167703 | NORTH VACUUM ABO EAST BATTERY



4/8/2024, 2:41:34 PM

1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

USGS, Maxar

- USGS Historical GW Wells
- USGS Active Monitoring GW Wells

New Mexico Oil Conservation Division

NM OCD Oil and Gas Map. http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=4d017f2306164de29fd2fb9f8f35ca75: New Mexico Oil Conservation Division

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Important: Next Generation Monitoring Location Page

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 325032103294301

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 325032103294301 17S.35E.07.34231

Lea County, New Mexico
Latitude 32°50'41.3", Longitude 103°29'52.7" NAD83
Land-surface elevation 4,007.00 feet above NGVD29
This well is completed in the High Plains aquifer (N100HGHPLN) national aquifer.
This well is completed in the Ogallala Formation (121OGLL) 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 measur
1961-03-15		D	62610		3935.99	NGVD29	P	Z		
1961-03-15		D	62611		3937.50	NAVD88	P	Z		
1961-03-15		D	72019	71.01			P	Z		
1966-02-21		D	62610		3934.64	NGVD29	P	Z		
1966-02-21		D	62611		3936.15	NAVD88	P	Z		
1966-02-21		D	72019	72.36			P	Z		
1971-02-12		D	62610		3935.66	NGVD29	1	Z		
1971-02-12		D	62611		3937.17	NAVD88	1	Z		
1971-02-12		D	72019	71.34			1	Z		
1976-03-03		D	62610		3935.02	NGVD29	1	Z		
1976-03-03		D	62611		3936.53	NAVD88	1	Z		
1976-03-03		D	72019	71.98			1	Z		
1981-01-15		D	62610		3934.03	NGVD29	1	Z		
1981-01-15		D	62611		3935.54	NAVD88	1	Z		
1981-01-15		D	72019	72.97			1	Z		
1986-04-04		D	62610		3932.54	NGVD29	1	Z		
1986-04-04		D	62611		3934.05	NAVD88	1	Z		

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 measur
1986-04-04		D	72019	74.46			1	Z		
1990-12-19		D	62610		3930.45	NGVD29	1	Z		
1990-12-19		D	62611		3931.96	NAVD88	1	Z		
1990-12-19		D	72019	76.55			1	Z		
1996-02-09		D	62610		3928.60	NGVD29	1	S		
1996-02-09		D	62611		3930.11	NAVD88	1	S		
1996-02-09		D	72019	78.40			1	S		
2001-01-19		D	62610		3926.50	NGVD29	1	S		
2001-01-19		D	62611		3928.01	NAVD88	1	S		
2001-01-19		D	72019	80.50			1	S		
2006-02-21	21:00 UTC	m	62610		3922.90	NGVD29	1	S	USGS	
2006-02-21	21:00 UTC	m	62611		3924.41	NAVD88	1	S	USGS	
2006-02-21	21:00 UTC	m	72019	84.10			1	S	USGS	
2010-12-15	21:40 UTC	m	62610		3926.07	NGVD29	P	S	USGS	
2010-12-15	21:40 UTC	m	62611		3927.58	NAVD88	P	S	USGS	
2010-12-15	21:40 UTC	m	72019	80.93			P	S	USGS	

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level date-time accuracy	m	Date is accurate to the Minute
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
Status	P	Pumping
Method of measurement	S	Steel-tape measurement.
Method of measurement	Z	Other.
Measuring agency		Not determined
Measuring agency	USGS	U.S. Geological Survey
Source of measurement		Not determined
Source of measurement	S	Measured by personnel of reporting agency.
Water-level approval status	A	Approved for publication -- Processing and review completed.

Questions or Comments
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Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 325032103294302

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 325032103294302 17S.35E.07.34231B

Lea County, New Mexico
Latitude 32°50'32", Longitude 103°29'43" NAD83
Land-surface elevation 4,003 feet above NAVD88
This well is completed in the High Plains aquifer (N100HGHPLN) national 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 measur
2016-01-06	19:13 UTC	m	62610		3924.99	NGVD29	1	S	USGS	
2016-01-06	19:13 UTC	m	62611		3926.50	NAVD88	1	S	USGS	
2016-01-06	19:13 UTC	m	72019	76.50			1	S	USGS	

Explanation

Section	Code	Description
Water-level date-time accuracy	m	Date is accurate to the Minute
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	S	Steel-tape measurement.
Measuring agency	USGS	U.S. Geological Survey
Source of measurement	S	Measured by personnel of reporting agency.

Section	Code	Description
Water-level approval status	A	Approved for publication -- Processing and review completed.

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

Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2024-04-08 16:37:34 EDT
0.3 0.25 nadww01

CARDINAL Laboratories

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

February 01, 2024

DAN DUNKELBERG

TRINITY OILFIELD SERVICES & RENTALS, LLC

P. O. BOX 2587

HOBBS, NM 88241

RE: NVA EAST BTY

Enclosed are the results of analyses for samples received by the laboratory on 01/29/24 14:17.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-23-16. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is 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. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	01/29/2024	Sampling Date:	01/24/2024
Reported:	02/01/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Shalyn Rodriguez
Project Location:	CROSS TIMBERS		

Sample ID: DV-001.0-00.0-S (H240386-01)

BTEX 8021B mg/kg Analyzed By: JH S-04

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**56.7**	5.00	01/29/2024	ND	1.85	92.6	2.00	7.25	
Toluene*	**224**	5.00	01/29/2024	ND	1.96	97.9	2.00	6.36	
Ethylbenzene*	**220**	5.00	01/29/2024	ND	1.96	97.8	2.00	6.18	
Total Xylenes*	**235**	15.0	01/29/2024	ND	5.92	98.6	6.00	6.47	
Total BTEX	**737**	30.0	01/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *138 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1330**	16.0	01/30/2024	ND	416	104	400	3.77	

TPH 8015M mg/kg Analyzed By: MS S-06

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**6750**	100	01/30/2024	ND	221	111	200	11.6	
DRO >C10-C28*	**42500**	100	01/30/2024	ND	247	123	200	13.5	
EXT DRO >C28-C36	**7900**	100	01/30/2024	ND					

Surrogate: 1-Chlorooctane *314 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *798 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	01/29/2024	Sampling Date:	01/24/2024
Reported:	02/01/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Shalyn Rodriguez
Project Location:	CROSS TIMBERS		

Sample ID: DV-001.0-01.5-S (H240386-02)

BTEX 8021B mg/kg Analyzed By: JH S-04

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**1.31**	0.050	01/30/2024	ND	1.85	92.6	2.00	7.25	
Toluene*	**6.50**	0.050	01/30/2024	ND	1.96	97.9	2.00	6.36	
Ethylbenzene*	**6.67**	0.050	01/30/2024	ND	1.96	97.8	2.00	6.18	
Total Xylenes*	**6.19**	0.150	01/30/2024	ND	5.92	98.6	6.00	6.47	
Total BTEX	**20.7**	0.300	01/30/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *140 %* *71.5-134*

Chloride, SM4500Cl-B mg/kg Analyzed By: CT

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1260**	16.0	01/30/2024	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**94.3**	10.0	01/30/2024	ND	221	111	200	11.6	
DRO >C10-C28*	**622**	10.0	01/30/2024	ND	247	123	200	13.5	
EXT DRO >C28-C36	**114**	10.0	01/30/2024	ND					

Surrogate: 1-Chlorooctane *91.0 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *87.0 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	01/29/2024	Sampling Date:	01/24/2024
Reported:	02/01/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Shalyn Rodriguez
Project Location:	CROSS TIMBERS		

Sample ID: DH-001.0-01.0-S (H240386-03)

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	01/29/2024	ND	1.85	92.6	2.00	7.25	
Toluene*	<0.050	0.050	01/29/2024	ND	1.96	97.9	2.00	6.36	
Ethylbenzene*	**0.057**	0.050	01/29/2024	ND	1.96	97.8	2.00	6.18	
Total Xylenes*	<0.150	0.150	01/29/2024	ND	5.92	98.6	6.00	6.47	
Total BTEX	<0.300	0.300	01/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *117 %* *71.5-134*

Chloride, SM4500Cl-B mg/kg Analyzed By: CT

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**512**	16.0	01/30/2024	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/30/2024	ND	221	111	200	11.6	
DRO >C10-C28*	**144**	10.0	01/30/2024	ND	247	123	200	13.5	
EXT DRO >C28-C36	**95.6**	10.0	01/30/2024	ND					

Surrogate: 1-Chlorooctane *92.0 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *96.5 %* *49.1-148*

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	01/29/2024	Sampling Date:	01/24/2024
Reported:	02/01/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Shalyn Rodriguez
Project Location:	CROSS TIMBERS		

Sample ID: DH-001.1-01.0-S (H240386-04)

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	01/29/2024	ND	1.85	92.6	2.00	7.25	
Toluene*	<0.050	0.050	01/29/2024	ND	1.96	97.9	2.00	6.36	
Ethylbenzene*	<0.050	0.050	01/29/2024	ND	1.96	97.8	2.00	6.18	
Total Xylenes*	<0.150	0.150	01/29/2024	ND	5.92	98.6	6.00	6.47	
Total BTEX	<0.300	0.300	01/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *113 %* *71.5-134*

Chloride, SM4500Cl-B mg/kg Analyzed By: CT

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**160**	16.0	01/30/2024	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/30/2024	ND	221	111	200	11.6	
DRO >C10-C28*	**50.3**	10.0	01/30/2024	ND	247	123	200	13.5	
EXT DRO >C28-C36	**20.5**	10.0	01/30/2024	ND					

Surrogate: 1-Chlorooctane *89.1 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *88.4 %* *49.1-148*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	01/29/2024	Sampling Date:	01/24/2024
Reported:	02/01/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Shalyn Rodriguez
Project Location:	CROSS TIMBERS		

Sample ID: DH-002.0-01.0-S (H240386-05)

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	01/29/2024	ND	1.85	92.6	2.00	7.25	
Toluene*	<0.050	0.050	01/29/2024	ND	1.96	97.9	2.00	6.36	
Ethylbenzene*	<0.050	0.050	01/29/2024	ND	1.96	97.8	2.00	6.18	
Total Xylenes*	<0.150	0.150	01/29/2024	ND	5.92	98.6	6.00	6.47	
Total BTEX	<0.300	0.300	01/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *115 %* *71.5-134*

Chloride, SM4500Cl-B mg/kg Analyzed By: CT

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1460**	16.0	01/30/2024	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/30/2024	ND	221	111	200	11.6	
DRO >C10-C28*	**153**	10.0	01/30/2024	ND	247	123	200	13.5	
EXT DRO >C28-C36	**101**	10.0	01/30/2024	ND					

Surrogate: 1-Chlorooctane *94.6 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *98.4 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	01/29/2024	Sampling Date:	01/24/2024
Reported:	02/01/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Shalyn Rodriguez
Project Location:	CROSS TIMBERS		

Sample ID: DH-003.0-01.0-P (H240386-06)

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	01/30/2024	ND	2.22	111	2.00	2.14	
Toluene*	<0.050	0.050	01/30/2024	ND	2.20	110	2.00	1.94	
Ethylbenzene*	<0.050	0.050	01/30/2024	ND	2.18	109	2.00	1.98	
Total Xylenes*	<0.150	0.150	01/30/2024	ND	6.36	106	6.00	1.99	
Total BTEX	<0.300	0.300	01/30/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.1 %* *71.5-134*

Chloride, SM4500Cl-B mg/kg Analyzed By: CT

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**192**	16.0	01/30/2024	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/30/2024	ND	221	111	200	11.6	
DRO >C10-C28*	**54.9**	10.0	01/30/2024	ND	247	123	200	13.5	
EXT DRO >C28-C36	**19.9**	10.0	01/30/2024	ND					

Surrogate: 1-Chlorooctane *90.2 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *91.9 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	01/29/2024	Sampling Date:	01/24/2024
Reported:	02/01/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Shalyn Rodriguez
Project Location:	CROSS TIMBERS		

Sample ID: DH-004.0-01.0-S (H240386-07)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**0.148**	0.050	01/30/2024	ND	2.22	111	2.00	2.14	
Toluene*	**0.050**	0.050	01/30/2024	ND	2.20	110	2.00	1.94	
Ethylbenzene*	<0.050	0.050	01/30/2024	ND	2.18	109	2.00	1.98	
Total Xylenes*	<0.150	0.150	01/30/2024	ND	6.36	106	6.00	1.99	
Total BTEX	<0.300	0.300	01/30/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *97.7 %* *71.5-134*

Chloride, SM4500Cl-B mg/kg Analyzed By: CT

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1960**	16.0	01/30/2024	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/30/2024	ND	198	98.9	200	2.97	
DRO >C10-C28*	**22.5**	10.0	01/30/2024	ND	200	99.9	200	6.69	
EXT DRO >C28-C36	**11.1**	10.0	01/30/2024	ND					

Surrogate: 1-Chlorooctane *78.8 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *86.8 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	01/29/2024	Sampling Date:	01/24/2024
Reported:	02/01/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Shalyn Rodriguez
Project Location:	CROSS TIMBERS		

Sample ID: DH-004.2-01.0-P (H240386-08)

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	01/30/2024	ND	2.22	111	2.00	2.14	
Toluene*	<0.050	0.050	01/30/2024	ND	2.20	110	2.00	1.94	
Ethylbenzene*	<0.050	0.050	01/30/2024	ND	2.18	109	2.00	1.98	
Total Xylenes*	<0.150	0.150	01/30/2024	ND	6.36	106	6.00	1.99	
Total BTEX	<0.300	0.300	01/30/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *97.0 %* *71.5-134*

Chloride, SM4500Cl-B mg/kg Analyzed By: CT

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**112**	16.0	01/30/2024	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/30/2024	ND	198	98.9	200	2.97	
DRO >C10-C28*	**108**	10.0	01/30/2024	ND	200	99.9	200	6.69	
EXT DRO >C28-C36	**131**	10.0	01/30/2024	ND					

Surrogate: 1-Chlorooctane *87.2 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *103 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
BS-3	Blank spike recovery outside of lab established statistical limits, but still within method limits. Data is not adversely affected.
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

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name:	Trinity Oilfield Services		**BILL TO**		
Project Manager:	Dan Dunkelberg		**P.O. #:**		
Address:	8426 N Dal Paso		**Company:**	Cross Timbers Energy	
City:	Hobbs	**State:** NM **Zip:** 88241	**Attn:**	Kevin Bennett	
Phone #:		**Fax #:**	**Address:**		
Project #:		**Project Owner:** (see below)	**City:**		
Project Name:	NVA East BTY	dan@trinityoilfieldservices.com	**State:**	**Zip:**	
Project Location:			**Phone #:**		
Sampler Name:	GM		**Fax #:**		

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST												
H240386																										
Lab I.D.	**Sample I.D.**	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	**DATE**	**TIME**	Chloride	TPH	BTEX										
1	DV-001.0-00.0-S	G	1			X							1/24/2024		X	X	X									
2	DV-001.0-01.5-S	G	1			X							1/24/2024		X	X	X									
3	DH-001.0-01.0-S	G	1			X							1/24/2024		X	X	X									
4	DH-001.1-01.0-S	G	1			X							1/24/2024		X	X	X									
5	DH-002.0-01.0-S	G	1			X							1/24/2024		X	X	X									
6	DH-003.0-01.0-P	G	1			X							1/24/2024		X	X	X									
7	DH-004.0-01.0-S	G	1			X							1/24/2024		X	X	X									
8	DH-004.2-01.0-P	G	1			X							1/24/2024		X	X	X									

Relinquished By:	**Date:** 1-29-24 **Time:** 1417	**Received By:**	**Verbal Result:** ☐ Yes ☐ No **Add'l Phone #:**	
			All Results are emailed. Please provide Email address:	
Relinquished By:	**Date:**	**Received By:**	**REMARKS:**	
	Time:			

Delivered By: (Circle One)	**Observed Temp. °C** 2-1c	**Sample Condition**	**CHECKED BY:**	**Turnaround Time:**	**Bacteria (only) Sample Condition**
Sampler - UPS - Bus - Other:	**Corrected Temp. °C**	Cool: ☐ Yes ☐ No Intact: ☐ Yes ☐ No	(Initials)	Standard X Rush ☐	Cool: ☐ Yes ☐ No Intact: ☐ Yes ☐ No Observed Temp. °C
				Thermometer ID #140	Corrected Temp. °C
				Correction Factor 0 °C	

† Cardinal cannot accept verbal changes. Please email changes to celey.keene@cardinallabsnm.com

CARDINAL Laboratories

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

February 16, 2024

DAN DUNKELBERG

TRINITY OILFIELD SERVICES & RENTALS, LLC

P. O. BOX 2587

HOBBS, NM 88241

RE: NVA EAST BTY

Enclosed are the results of analyses for samples received by the laboratory on 02/13/24 14:54.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-23-16. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is 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. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	02/13/2024	Sampling Date:	02/13/2024
Reported:	02/16/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Dionica Hinojos
Project Location:	CROSS TIMBERS		

Sample ID: DH-004.3-01.0-S (H240682-01)

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	02/14/2024	ND	1.98	98.9	2.00	9.13	
Toluene*	<0.050	0.050	02/14/2024	ND	1.96	98.2	2.00	9.49	
Ethylbenzene*	<0.050	0.050	02/14/2024	ND	1.95	97.7	2.00	9.16	
Total Xylenes*	<0.150	0.150	02/14/2024	ND	5.69	94.9	6.00	9.31	
Total BTEX	<0.300	0.300	02/14/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.9 %* *71.5-134*

Chloride, SM4500Cl-B mg/kg Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	02/14/2024	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	02/14/2024	ND	209	105	200	1.11	
DRO >C10-C28*	<10.0	10.0	02/14/2024	ND	211	106	200	1.93	
EXT DRO >C28-C36	<10.0	10.0	02/14/2024	ND					

Surrogate: 1-Chlorooctane *71.0 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *67.2 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	02/13/2024	Sampling Date:	02/13/2024
Reported:	02/16/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Dionica Hinojos
Project Location:	CROSS TIMBERS		

Sample ID: DV-002.0-00.0-S (H240682-02)

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	02/14/2024	ND	1.98	98.9	2.00	9.13	
Toluene*	<0.050	0.050	02/14/2024	ND	1.96	98.2	2.00	9.49	
Ethylbenzene*	**0.061**	0.050	02/14/2024	ND	1.95	97.7	2.00	9.16	
Total Xylenes*	**0.250**	0.150	02/14/2024	ND	5.69	94.9	6.00	9.31	GC-NC1
Total BTEX	**0.311**	0.300	02/14/2024	ND					GC-NC1

Surrogate: 4-Bromofluorobenzene (PID *115 %* *71.5-134*

Chloride, SM4500Cl-B mg/kg Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**800**	16.0	02/14/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS S-06

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**78.0**	50.0	02/14/2024	ND	209	105	200	1.11	
DRO >C10-C28*	**10600**	50.0	02/14/2024	ND	211	106	200	1.93	
EXT DRO >C28-C36	**2340**	50.0	02/14/2024	ND					

Surrogate: 1-Chlorooctane *120 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *550 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	02/13/2024	Sampling Date:	02/13/2024
Reported:	02/16/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Dionica Hinojos
Project Location:	CROSS TIMBERS		

Sample ID: DV-003.0-00.0-S (H240682-03)

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	02/14/2024	ND	1.98	98.9	2.00	9.13	
Toluene*	<0.050	0.050	02/14/2024	ND	1.96	98.2	2.00	9.49	
Ethylbenzene*	<0.050	0.050	02/14/2024	ND	1.95	97.7	2.00	9.16	
Total Xylenes*	<0.150	0.150	02/14/2024	ND	5.69	94.9	6.00	9.31	
Total BTEX	<0.300	0.300	02/14/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.0 %* *71.5-134*

Chloride, SM4500Cl-B mg/kg Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1840**	16.0	02/14/2024	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	02/14/2024	ND	209	105	200	1.11	
DRO >C10-C28*	**76.1**	10.0	02/14/2024	ND	211	106	200	1.93	
EXT DRO >C28-C36	**67.7**	10.0	02/14/2024	ND					

Surrogate: 1-Chlorooctane *95.0 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *94.9 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
GC-NC1	8260 confirmation analysis was performed; initial GC results were not supported by GC/MS analysis and are biased high with interfering compounds.
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

Celey D. Keene, Lab Director/Quality Manager

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL Laboratories

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

Company Name:	Trinity Oilfield Services	BILL TO P.O. #:	
Project Manager:	Dan Dunkelberg	Company:	Cross Timbers Energy
Address:	8426 N Dal Paso	Attn:	Kevin Bennett
City:	Hobbs State: NM Zip: 88241	Address:	
Phone #:	Fax #:	City:	
Project #:	Project Owner: (see below)	State:	Zip:
Project Name:	NVA East Battery dan@trinityoilfieldservices.com	Phone #:	
Project Location:		Fax #:	
Sampler Name:	JHC		

FOR LAB USE ONLY

Lab I.D.: H240682

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	Chloride	TPH	BTEX
1	DH-004.3-01.0-S	G	1			X							2/13/2024		X	X	X
2	DV-002.0-00.0-S	G	1			X							2/13/2024		X	X	X
3	DV-003.0-00.0-S	G	1			X							2/13/2024		X	X	

ANALYSIS REQUEST

Relinquished By:	Date: 8/13/24 Time: 14:54	Received By:	Verbal Result: Yes No Add'l Phone #:
			All Results are emailed. Please provide Email address:
Relinquished By:	Date: Time:	Received By:	REMARKS:

Delivered By: (Circle One)	Observed Temp. °C 2.4	Sample Condition Cool: Yes / No Intact: Yes / No	CHECKED BY: (Initials)	Turnaround Time: Standard [X] Rush [ ]	Bacteria (only) Sample Condition Cool: Yes / No Intact: Yes / No Observed Temp. °C
Sampler - UPS - Bus - Other:	Corrected Temp. °C			Thermometer ID #140 Correction Factor 0 °C	Corrected Temp. °C

† Cardinal cannot accept verbal changes. Please email changes to celey.keene@cardinallabsnm.com

CARDINAL Laboratories

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

March 11, 2024

DAN DUNKELBERG

TRINITY OILFIELD SERVICES & RENTALS, LLC

P. O. BOX 2587

HOBBS, NM 88241

RE: NVA EAST BTY

Enclosed are the results of analyses for samples received by the laboratory on 03/06/24 16:21.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-23-16. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is 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. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	03/06/2024	Sampling Date:	03/04/2024
Reported:	03/11/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Shalyn Rodriguez
Project Location:	CROSS TIMBERS		

Sample ID: DH-002.2-01.0-P (H241139-01)

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	03/08/2024	ND	2.09	104	2.00	0.994	
Toluene*	<0.050	0.050	03/08/2024	ND	2.22	111	2.00	6.60	
Ethylbenzene*	<0.050	0.050	03/08/2024	ND	2.30	115	2.00	8.69	
Total Xylenes*	<0.150	0.150	03/08/2024	ND	6.85	114	6.00	9.64	
Total BTEX	<0.300	0.300	03/08/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *107 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**192**	16.0	03/08/2024	ND	416	104	400	3.77	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/07/2024	ND	187	93.6	200	0.262	
DRO >C10-C28*	<10.0	10.0	03/07/2024	ND	199	99.4	200	0.369	
EXT DRO >C28-C36	<10.0	10.0	03/07/2024	ND					

Surrogate: 1-Chlorooctane *83.9 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *99.3 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	03/06/2024	Sampling Date:	03/04/2024
Reported:	03/11/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Shalyn Rodriguez
Project Location:	CROSS TIMBERS		

Sample ID: DV-002.0-02.0-S (H241139-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**640**	16.0	03/08/2024	ND	416	104	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/07/2024	ND	187	93.6	200	0.262	
DRO >C10-C28*	**657**	10.0	03/07/2024	ND	199	99.4	200	0.369	
EXT DRO >C28-C36	**439**	10.0	03/07/2024	ND					

Surrogate: 1-Chlorooctane	*88.4 %*	*48.2-134*
Surrogate: 1-Chlorooctadecane	*122 %*	*49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name:	Trinity Oilfield Services		**BILL TO**		
Project Manager:	Dan Dunkelberg		**P.O. #:**		
Address:	8426 N Dal Paso		**Company:**	Cross Timbers Energy	
City:	Hobbs	**State:** NM **Zip:** 88241	**Attn:**	Kevin Bennett	
Phone #:		**Fax #:**	**Address:**		
Project #:		**Project Owner:** (see below)	**City:**		
Project Name:	NVA East Battery	dan@trinityoilfieldservices.com	**State:**	**Zip:**	
Project Location:			**Phone #:**		
Sampler Name:	GM		**Fax #:**		

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST											
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	Chloride	TPH	BTEX									
H241139 1	DH-002.2-01.0-P	G	1			X							3/4/2024		X	X	X								
2	DV-002.0-02.0-S	G	1			X							3/4/2024		X	X									

Relinquished By:	**Date:** 3-6-24	**Received By:**	**Verbal Result:**	Yes / No **Add'l Phone #:**
	Time: 1421		**All Results are emailed. Please provide Email address:**	
Relinquished By:	**Date:**	**Received By:**	**REMARKS:**	
	Time:			

Delivered By: (Circle One)	**Observed Temp. °C** 5.2	**Sample Condition**	**CHECKED BY:**	**Turnaround Time:**	**Bacteria (only) Sample Condition**
Sampler - UPS - Bus - Other:	**Corrected Temp. °C**	Cool: Yes / No — Intact: Yes / No	(Initials)	Standard X / Rush	Cool: Yes / No — Intact: Yes / No — Observed Temp. °C — Corrected Temp. °C
				Thermometer ID #140	
				Correction Factor 0 °C	

† Cardinal cannot accept verbal changes. Please email changes to celey.keene@cardinallabsnm.com

CARDINAL Laboratories

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

March 18, 2024

DAN DUNKELBERG

TRINITY OILFIELD SERVICES & RENTALS, LLC

P. O. BOX 2587

HOBBS, NM 88241

RE: NVA EAST BTY

Enclosed are the results of analyses for samples received by the laboratory on 03/12/24 15:40.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-23-16. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is 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. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	03/12/2024	Sampling Date:	03/08/2024
Reported:	03/18/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	CROSS TIMBERS		

Sample ID: DV-001.0-04.0-S (H241264-01)

Chloride, SM4500Cl-B mg/kg Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**432**	16.0	03/14/2024	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	03/14/2024	ND	192	95.8	200	3.73	
DRO >C10-C28*	<10.0	10.0	03/14/2024	ND	192	95.9	200	4.29	
EXT DRO >C28-C36	<10.0	10.0	03/14/2024	ND					

Surrogate: 1-Chlorooctane	*93.6 %*	*48.2-134*
Surrogate: 1-Chlorooctadecane	*117 %*	*49.1-148*

Sample ID: DV-002.0-04.0-S (H241264-02)

Chloride, SM4500Cl-B mg/kg Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**400**	16.0	03/14/2024	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	03/14/2024	ND	192	95.8	200	3.73	
DRO >C10-C28*	**25.3**	10.0	03/14/2024	ND	192	95.9	200	4.29	
EXT DRO >C28-C36	<10.0	10.0	03/14/2024	ND					

Surrogate: 1-Chlorooctane	*90.4 %*	*48.2-134*
Surrogate: 1-Chlorooctadecane	*115 %*	*49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TRINITY OILFIELD SERVICES & RENTALS, LLC
DAN DUNKELBERG
P. O. BOX 2587
HOBBS NM, 88241
Fax To: NONE

Received:	03/12/2024	Sampling Date:	03/08/2024
Reported:	03/18/2024	Sampling Type:	Soil
Project Name:	NVA EAST BTY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	CROSS TIMBERS		

Sample ID: DV-003.0-02.0-S (H241264-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**224**	16.0	03/14/2024	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	03/14/2024	ND	192	95.8	200	3.73	
DRO >C10-C28*	<10.0	10.0	03/14/2024	ND	192	95.9	200	4.29	
EXT DRO >C28-C36	<10.0	10.0	03/14/2024	ND					

Surrogate: 1-Chlorooctane	*93.4 %*	*48.2-134*
Surrogate: 1-Chlorooctadecane	*116 %*	*49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

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Notes and Definitions

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

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name:	Trinity Oilfield Services	BILL TO	
Project Manager:	Dan Dunkelberg	P.O. #:	
Address:	8426 N Dal Paso	Company:	Cross Timbers Energy
City:	Hobbs State: NM Zip: 88241	Attn:	Kevin Bennett
Phone #:	Fax #:	Address:	
Project #:	Project Owner: (see below)	City:	
Project Name:	NVA East Battery dan@trinityoilfieldservices.com	State: Zip:	
Project Location:		Phone #:	
Sampler Name:	GM	Fax #:	

FOR LAB USE ONLY: H241264

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	ANALYSIS REQUEST: Chloride	TPH	BTEX
1	DV-001.0-04.0-S	G	1			X							3/8/2024		X	X	
2	DV-002.0-04.0-S	G	1			X							3/8/2024		X	X	
3	DV-003.0-02.0-S	G	1			X							3/8/2024		X	X	

Relinquished By:	Date: 3-12-24	Received By:	Verbal Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 1540		All Results are emailed. Please provide Email address:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		

Delivered By: (Circle One)	Observed Temp. °C 24	Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No	CHECKED BY: (Initials)	Turnaround Time: Standard ☒ Rush ☐
Sampler - UPS - Bus - Other:	Corrected Temp. °C			Thermometer ID #140
				Correction Factor 0 °C

Bacteria (only) Sample Condition: Cool ☐ Yes ☐ No; Intact ☐ Yes ☐ No; Observed Temp. °C; Corrected Temp. °C

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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

Action 331035

QUESTIONS

Operator: CROSS TIMBERS ENERGY, LLC 400 West 7th Street Fort Worth, TX 76102	OGRID: 298299
	Action Number: 331035
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2402167703**
Incident Name	**NAPP2402167703 NORTH VACUUM ABO EAST BATTERY @ 0**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Plan Received**
Incident Facility	**[fAPP2123050201] NVAU EAST BATTERY**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	NORTH VACUUM ABO EAST BATTERY
Date Release Discovered	01/20/2024
Surface Owner	Private

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	Cause: Freeze | Other (Specify) | Crude Oil | Released: 5 BBL | Recovered: 3 BBL | Lost: 2 BBL.
Produced Water Released (bbls) Details	Cause: Freeze | Other (Specify) | Produced Water | Released: 60 BBL | Recovered: 57 BBL | Lost: 3 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	No
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)	Poly line failure

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QUESTIONS (continued)

Operator: CROSS TIMBERS ENERGY, LLC 400 West 7th Street Fort Worth, TX 76102	OGRID: 298299
	Action Number: 331035
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

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. 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	*Not answered.*
Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation 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 Subsection A of 19.15.29.11 NMAC), please 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: Dan Dunkelberg Title: Consultant Email: dan@trinityoilfieldservices.com Date: 01/30/2024

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QUESTIONS (continued)

Operator: CROSS TIMBERS ENERGY, LLC 400 West 7th Street Fort Worth, TX 76102	OGRID: 298299
	Action Number: 331035
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

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 75 and 100 (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 and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Between 1000 (ft.) and ½ (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	Greater than 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between 500 and 1000 (ft.)
Any other fresh water well or spring	Between ½ and 1 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 500 and 1000 (ft.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Greater than 5 (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.	
Requesting a remediation plan approval with this submission	Yes
Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)	
Chloride (EPA 300.0 or SM4500 Cl B)	1960
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	57150
GRO+DRO (EPA SW-846 Method 8015M)	49250
BTEX (EPA SW-846 Method 8021B or 8260B)	737
Benzene (EPA SW-846 Method 8021B or 8260B)	56.7
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.	
On what estimated date will the remediation commence	08/15/2024
On what date will (or did) the final sampling or liner inspection occur	08/15/2024
On what date will (or was) the remediation complete(d)	11/13/2024
What is the estimated surface area (in square feet) that will be reclaimed	6810
What is the estimated volume (in cubic yards) that will be reclaimed	841
What is the estimated surface area (in square feet) that will be remediated	6810
What is the estimated volume (in cubic yards) that will be remediated	320
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.	

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QUESTIONS (continued)

Operator: CROSS TIMBERS ENERGY, LLC 400 West 7th Street Fort Worth, TX 76102	OGRID: 298299
	Action Number: 331035
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

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	Sundance Services, Inc [fKJ1600527371]
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 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.	
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: Dan Dunkelberg Title: Consultant Email: dan@trinityoilfieldservices.com Date: 04/24/2024
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.	

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QUESTIONS (continued)

Operator: CROSS TIMBERS ENERGY, LLC 400 West 7th Street Fort Worth, TX 76102	OGRID: 298299
	Action Number: 331035
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

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	No

District I
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QUESTIONS (continued)

Operator: CROSS TIMBERS ENERGY, LLC 400 West 7th Street Fort Worth, TX 76102	OGRID: 298299
	Action Number: 331035
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	*{Unavailable.}*

Remediation Closure Request	
Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.	
Requesting a remediation closure approval with this submission	No

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CONDITIONS

Action 331035

CONDITIONS

Operator: CROSS TIMBERS ENERGY, LLC 400 West 7th Street Fort Worth, TX 76102	OGRID: 298299
	Action Number: 331035
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Remediation plan is approved as written. Cross Timbers has 90-days (July 29, 2024) to submit to OCD its appropriate or final remediation closure report.	4/29/2024