

***** LIQUID SPILLS - VOLUME CALCULATIONS *****																																																																																													
Location of spill:	SANTANA STATE COM 20CD WELLPAD (32.816424, -104.189016)				Date of Spill:	1/15/2024																																																																																							
					Site Soil Type:	PD — Pajarito-Dune land complex																																																																																							
Estimated Daily Production Loss:	50	BBL Oil	0	BBL Water																																																																																									
Total Area Calculations																																																																																													
Total Surface Area	width		length		wet soil depth	oil (%)																																																																																							
Rectangle Area #1	106.0 ft	X	632.0 ft	X	0.02 in	100%																																																																																							
Rectangle Area #2	ft	X	ft	X	in	0%																																																																																							
Rectangle Area #3	ft	X	ft	X	in	0%																																																																																							
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Porosity <u>0.250</u> gal per gal																																																																																													
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p><u>Saturated Soil Volume Calculations:</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center; border-bottom: 1px solid black;">H2O</th> <th style="text-align: center; border-bottom: 1px solid black;">OIL</th> </tr> </thead> <tbody> <tr><td>Area #1</td><td style="text-align: center;">66,992 sq. ft.</td><td style="text-align: center;">cu. ft.</td></tr> <tr><td>Area #2</td><td style="text-align: center;">0 sq. ft.</td><td style="text-align: center;">cu. ft.</td></tr> <tr><td>Area #3</td><td style="text-align: center;">0 sq. ft.</td><td style="text-align: center;">cu. ft.</td></tr> <tr><td>Area #4</td><td style="text-align: center;">0 sq. ft.</td><td style="text-align: center;">cu. ft.</td></tr> <tr><td>Area #5</td><td style="text-align: center;">0 sq. ft.</td><td style="text-align: center;">cu. ft.</td></tr> <tr><td>Area #6</td><td style="text-align: center;">0 sq. ft.</td><td style="text-align: center;">cu. ft.</td></tr> <tr><td>Area #7</td><td style="text-align: center;">0 sq. ft.</td><td style="text-align: center;">cu. ft.</td></tr> <tr><td>Area #8</td><td style="text-align: center;">0 sq. ft.</td><td style="text-align: center;">cu. ft.</td></tr> <tr> <td>Total Solid/Liquid Volume:</td> <td style="text-align: center; color: red;">66,992 sq. ft.</td> <td style="text-align: center; color: red;">112 cu. ft.</td> </tr> </tbody> </table> <p><u>Estimated Volumes Spilled</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center; border-bottom: 1px solid black;">H2O</th> <th style="text-align: center; border-bottom: 1px solid black;">OIL</th> </tr> </thead> <tbody> <tr> <td>Liquid in Soil:</td> <td style="text-align: center; color: red;">0.0 BBL</td> <td style="text-align: center; color: red;">5.0 BBL</td> </tr> <tr> <td>Liquid Recovered :</td> <td style="text-align: center; color: red;">0.0 BBL</td> <td style="text-align: center; color: red;">45.0 BBL</td> </tr> <tr> <td>Spill Liquid</td> <td style="text-align: center; color: red;">0.0 BBL</td> <td style="text-align: center; color: red;">50.0 BBL</td> </tr> <tr> <td>Total Spill Liquid:</td> <td colspan="2" style="text-align: center; color: red; border-top: 2px solid red;">50.0</td> </tr> </tbody> </table> <p><u>Recovered Volumes</u></p> <p>Estimated oil recovered: 45.0 BBL</p> <p>Estimated water recovered: 0.0 BBL</p> </div> <div style="width: 35%;"> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #007bff; color: white;"> <th style="padding: 5px;">Soil Type</th> <th style="padding: 5px;">Porosity</th> </tr> </thead> <tbody> <tr><td style="padding: 5px;">Clay</td><td style="padding: 5px;">0.15</td></tr> <tr><td style="padding: 5px;">Peat</td><td style="padding: 5px;">0.40</td></tr> <tr><td style="padding: 5px;">Glacial Sediments</td><td style="padding: 5px;">0.13</td></tr> <tr><td style="padding: 5px;">Sandy Clay</td><td style="padding: 5px;">0.12</td></tr> <tr><td style="padding: 5px;">Silt</td><td style="padding: 5px;">0.16</td></tr> <tr><td style="padding: 5px;">Loess</td><td style="padding: 5px;">0.25</td></tr> <tr><td style="padding: 5px;">Fine Sand</td><td style="padding: 5px;">0.16</td></tr> <tr><td style="padding: 5px;">Medium Sand</td><td style="padding: 5px;">0.25</td></tr> <tr><td style="padding: 5px;">Coarse Sand</td><td style="padding: 5px;">0.26</td></tr> <tr><td style="padding: 5px;">Gravelly Sand</td><td style="padding: 5px;">0.26</td></tr> <tr><td style="padding: 5px;">Fine Gravel</td><td style="padding: 5px;">0.26</td></tr> <tr><td style="padding: 5px;">Medium Gravel</td><td style="padding: 5px;">0.25</td></tr> <tr><td style="padding: 5px;">Coarse Gravel</td><td style="padding: 5px;">0.18</td></tr> <tr><td style="padding: 5px;">Sandstone</td><td style="padding: 5px;">0.25</td></tr> <tr><td style="padding: 5px;">Siltstone</td><td style="padding: 5px;">0.18</td></tr> <tr><td style="padding: 5px;">Shale</td><td style="padding: 5px;">0.05</td></tr> <tr><td style="padding: 5px;">Limestone</td><td style="padding: 5px;">0.13</td></tr> <tr><td style="padding: 5px;">Basalt</td><td style="padding: 5px;">0.19</td></tr> <tr><td style="padding: 5px;">Volcanic Tuff</td><td style="padding: 5px;">0.20</td></tr> <tr><td style="padding: 5px;">Standing Liquids</td><td style="padding: 5px;"></td></tr> </tbody> </table> </div> </div>								H2O	OIL	Area #1	66,992 sq. ft.	cu. ft.	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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	NAPP2401651809
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Longfellow Energy, LP	OGRID 372210
Contact Name David Cain	Contact Telephone 972-590-9918
Contact email david.cain@longfellowenergy.com	Incident # (assigned by OCD) NAPP2401651809
Contact mailing address 8115 Preston Road, Suite 800, Dallas, TX 75225	

Location of Release Source

Latitude 32.816424 Longitude -104.189016
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Santana State COM 20CD Wellpad	Site Type
Date Release Discovered 01/15/2024	API# (if applicable) 30-015-49527

Unit Letter	Section	Township	Range	County
L	21	17S	28E	Eddy

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

Nature and Volume of Release

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

<input checked="" type="checkbox"/> Crude Oil	Volume Released (bbls) 50	Volume Recovered (bbls) 45
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release Freeze

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2401651809
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why: 	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
Printed Name: _____	Title: _____
Signature: _____	Date: _____
email: _____	Telephone: _____
<u>OCD Only</u> Received by: _____ Date: _____	

Incident ID	NAPP2401651809
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?	28' (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

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

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

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

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

State of New Mexico
Oil Conservation Division

Page 4

Incident ID	NAPP2401651809
District RP	
Facility ID	
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I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

Incident ID	NAPP2401651809
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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: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

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

Signature: _____ Date: _____

Trinity Oilfield Services & Rentals, LLC



May 28th, 2024

Oil Conservation Division, District II
811 South First Street,
Artesia, NM 88210

Re: **Remediation Plan Request**
Santana State COM 20CD Wellpad
Tracking #: NAPP2401651809

Trinity Oilfield Services (Trinity), on behalf of Longfellow Energy, LP, 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	NAPP2401651809
Site Name	Santana State COM 20CD Wellpad
Company	Longfellow Energy, LP
County	Eddy
ULSTR	L-21-17S-28E
GPS Coordinates (NAD 83)	32.816424, -104.189016
Landowner	State

RELEASE BACKGROUND

On 01/16/2024, Longfellow Energy, LP reported a release at the Santana State COM 20CD Wellpad. The release was caused by a freeze. Approximately 66,790 sqft. of the Pad and Pasture was found to be damp upon initial inspection.

Release Information	
Date of Release	01/15/2024
Type of Release	Crude Oil
Source of Release	Freeze
Volume Released – Produced Water	0 bbls
Volume Recovered – Produced Water	0 bbls
Volume Released – Crude Oil	50 bbls
Volume Recovered – Crude Oil	45 bbls
Affected Area – Damp Soil	Pad and Pasture - Approximately 66,790 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	RA-12030-POD25	01/19/2024	28'

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 ½ mile of the release site. The search revealed that One (1) well 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 01/19/2024, Trinity was on-site to gauge NM OSE well RA-12030-POD25, located within a ½ mile radius of the incident location. Groundwater was verified at a depth of 28'. The groundwater gauging log is attached for reference.

General Site Characterization:

Site Assessment	
Karst Potential	Medium
Distance to Watercourse	> 1,000 ft.
Within 100 yr Floodplain	No
Pasture Impact	Yes

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 Medium 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	Pajarito-Dune
Fragile Soil Interpretive Class	Not Rated
Erodibility Value	0.2
Wind Erodibility Group	3
Badland Soils	No
Gypsum Soils	No
Representative Slope	2%
Depth to Restrictive Feature	>200 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	600 mg/kg
TPH (GRO and DRO and MRO)	100 mg/kg
TPH (GRO and DRO)	NA
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 entire release area.

INITIAL ASSESSMENT AND REMEDIATION ACTIVITIES**Initial Sample Activities:**

Delineation Summary	
Delineation Dates	01/18/2024 - 04/29/2024
Depths Sampled	0' - 6'
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.

As indicated in the attached Delineation Map, the release area includes an overspray section. Additional vertical delineation was conducted at samples DV-007 and DV-008 within this section. Laboratory analysis confirms that the samples within the overspray area meet reclamation standards. Trinity proposes remediation exclusively within the release area to prevent disturbance of unaffected vegetation in pasture areas.

Confirmation Activities:

Remediation Proposal	
Remediation Dates	Within 90 Days of NMOCD Approval
Liner Variance Request	None
Deferral Request	None
Proposed Depths Excavated	0' - 5'
Proposed Area of 5-point Confirmation Samples – Floors and Walls	400 sqft.
Estimated Total Volume of Excavated Soil	8,238 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 for the excavated areas yield results below the selected NMOCD Table I Closure Criteria, the impacted soil will be transported under manifest to an NMOCD-approved disposal facility. Upon approval, 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 which existed prior to 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 disturbed by remediation on native land, not on production pads and/or lease roads, will be reseeded with a prescribed NMSLO seed mixture for Sandy Loam (SL) soils as defined in SLO Seed Mix Version 1-200808 during the first favorable growing season following the closure of the site. Reclamation on State Trust Land will also be documented and monitored for successful vegetation growth and invasive/noxious weed populations.

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 samples.

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

Sincerely,



Dan Dunkelberg
Project Manager



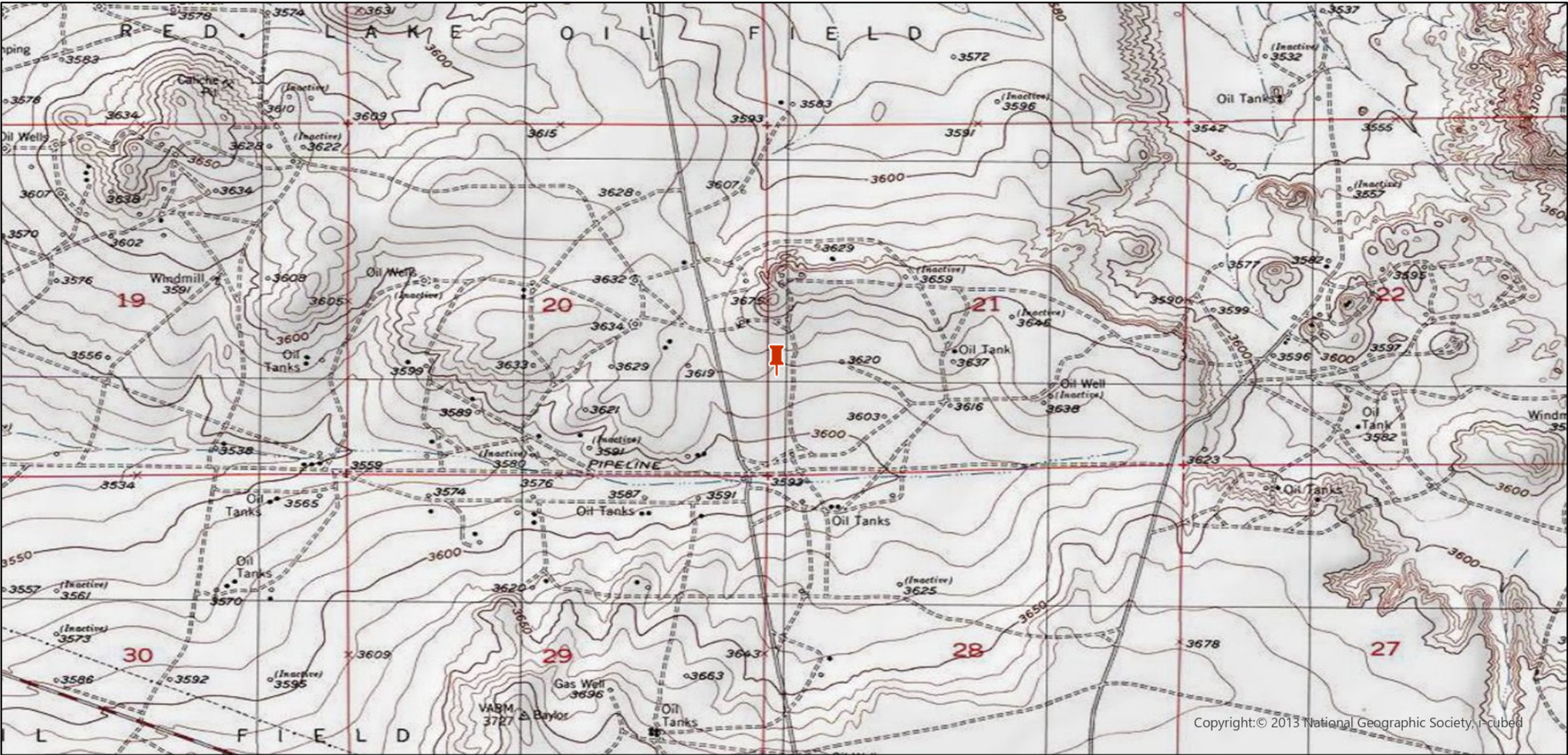
Cynthia Jordan
Project Scientist

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

LONGFELLOW ENERGY, LP
SANTANA STATE COM 20CD WELLPAD
EDDY COUNTY, NEW MEXICO
NMOCD REFERENCE #: NAPP2401651809



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							600	100	NE	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	1/18/2024	Vertical	On-Site	Grab	In-Situ	20,000.0	26,830.0	23,270.0	3,870.0	19,400.0	3,560.0	449.0	2.47
DV-001.0-04.0-S	4	1/18/2024	Vertical	On-Site	Grab	In-Situ	624.0	13.3	13.3	<10.0	13.3	<10.0	<10.0	<10.0
DV-001.0-05.0-S	5	4/26/2024	Vertical	On-Site	Grab	In-Situ	144.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DV-001.0-06.0-S	6	4/27/2024	Vertical	On-Site	Grab	In-Situ	304.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DV-002.0-00.0-S	0	1/18/2024	Vertical	On-Site	Grab	In-Situ	15,800.0	25,960.0	22,300.0	3,000.0	19,300.0	3,660.0	381.0	3.48
DV-002.0-04.0-S	4	1/18/2024	Vertical	On-Site	Grab	In-Situ	336.0	86.3	86.3	<10.0	86.3	<10.0	<10.0	<10.0
DV-003.0-00.0-P	0	1/18/2024	Vertical	Off-Site	Grab	In-Situ	1,760.0	9,550.0	8,370.0	1,300.0	7,070.0	1,180.0	111.0	<10.0
DV-003.0-04.0-P	4	1/18/2024	Vertical	Off-Site	Grab	In-Situ	48.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DV-004.0-00.0-P	0	1/18/2024	Vertical	Off-Site	Grab	In-Situ	4,080.0	9,906.0	8,476.0	766.0	7,710.0	1,430.0	40.9	<10.0
DV-004.0-04.0-P	4	1/18/2024	Vertical	Off-Site	Grab	In-Situ	144.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DV-005.0-00.0-P	0	1/18/2024	Vertical	Off-Site	Grab	In-Situ	1,840.0	7,070.0	5,740.0	<10.0	5,740.0	1,330.0	<10.0	<10.0
DV-005.0-02.0-P	2	1/18/2024	Vertical	Off-Site	Grab	In-Situ	32.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DV-006.0-00.0-P	0	1/18/2024	Vertical	Off-Site	Grab	In-Situ	832.0	1,218.0	939.0	<10.0	939.0	279.0	<10.0	<10.0
DV-006.0-01.0-P	1	1/18/2024	Vertical	Off-Site	Grab	In-Situ	32.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DV-007.0-00.0-P	0	1/18/2024	Vertical	Off-Site	Grab	In-Situ	112.0	101.8	81.4	<10.0	81.4	20.4	<10.0	<10.0
DV-007.0-00.3-P	0	4/29/2024	Vertical	Off-Site	Grab	In-Situ	32.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DV-007.1-00.0-P	1	4/28/2024	Vertical	Off-Site	Grab	In-Situ	32.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DV-008.0-00.0-P	0	1/18/2024	Vertical	Off-Site	Grab	In-Situ	48.0	15.9	15.9	<10.0	15.9	<10.0	<10.0	<10.0
Horizontal Delineation														
DH-001.0-01.0-S	1	1/18/2024	Horizontal	On-Site	Grab	In-Situ	144.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DH-002.0-01.0-S	1	1/18/2024	Horizontal	On-Site	Grab	In-Situ	400.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DH-003.0-01.0-P	1	1/18/2024	Horizontal	Off-Site	Grab	In-Situ	48.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DH-004.0-01.0-P	1	1/18/2024	Horizontal	Off-Site	Grab	In-Situ	32.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DH-005.0-01.0-P	1	1/18/2024	Horizontal	Off-Site	Grab	In-Situ	16.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DH-006.0-01.0-P	1	1/18/2024	Horizontal	Off-Site	Grab	In-Situ	48.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DH-007.0-01.0-P	1	1/18/2024	Horizontal	Off-Site	Grab	In-Situ	48.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DH-008.0-01.0-P	1	1/18/2024	Horizontal	Off-Site	Grab	In-Situ	16.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0

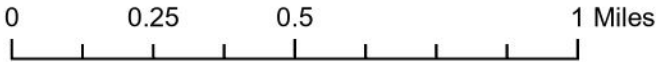


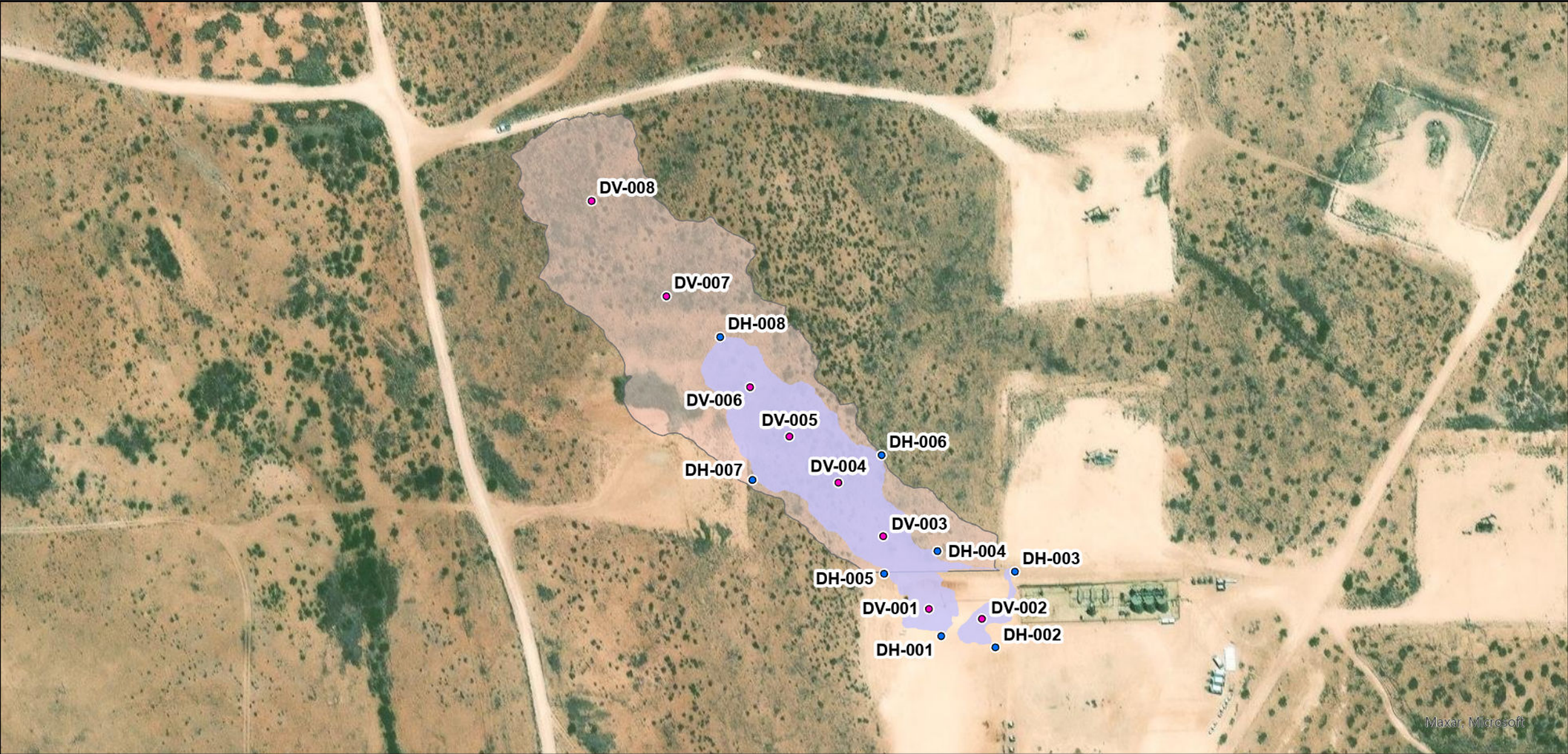
Legend:



Site Location

Site Location Map
Longfellow Energy, LP
Santana State COM 20CD Wellpad
Eddy County, New Mexico
32.816424, -104.189016
NMOCD Reference # NAPP2401651809





Legend:

- | | |
|--------------------------|----------------|
| • Vertical Delineation | Release Area |
| • Horizontal Delineation | Overspray Area |

Delineation Map
Longfellow Energy, LP
Santana State COM 20CD Wellpad
32.816424,-104.189016
Eddy County, New Mexico
NMOCD Reference # NAPP2401651809



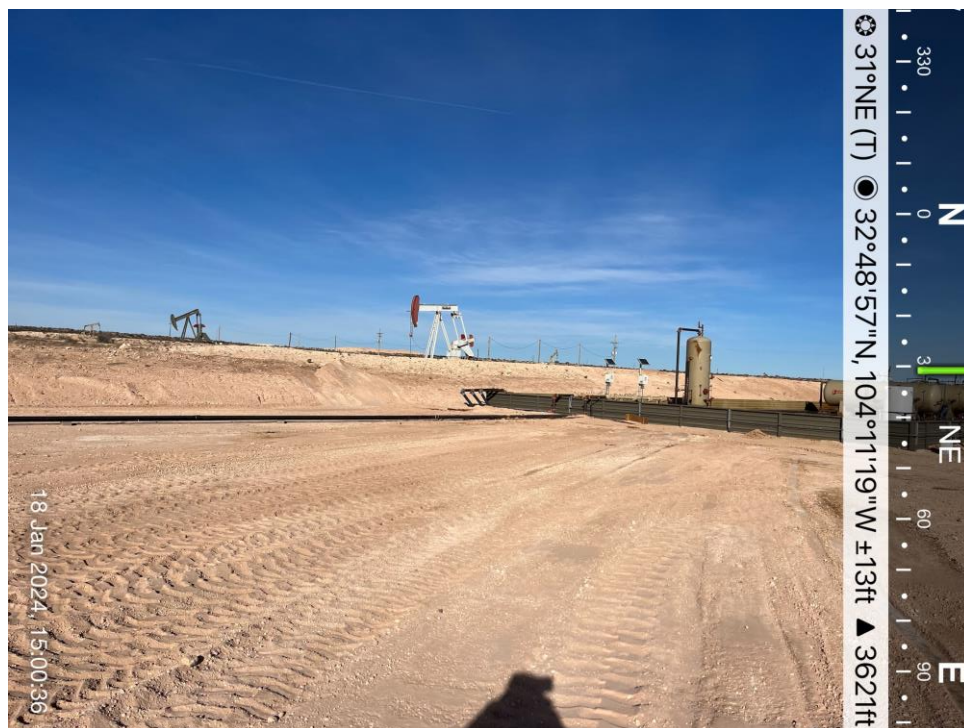


Initial Release

On-Site:



On-Site:





Initial Release

Off-Site:



Off-Site:





Initial Release

Off-Site:



Off-Site:



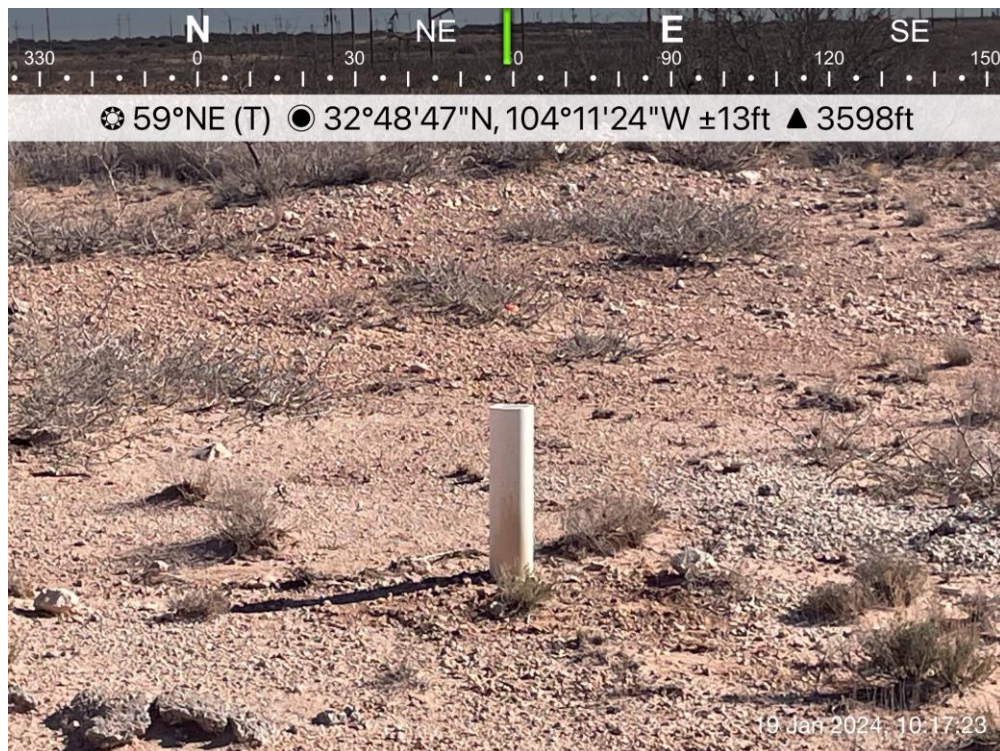


Initial Release

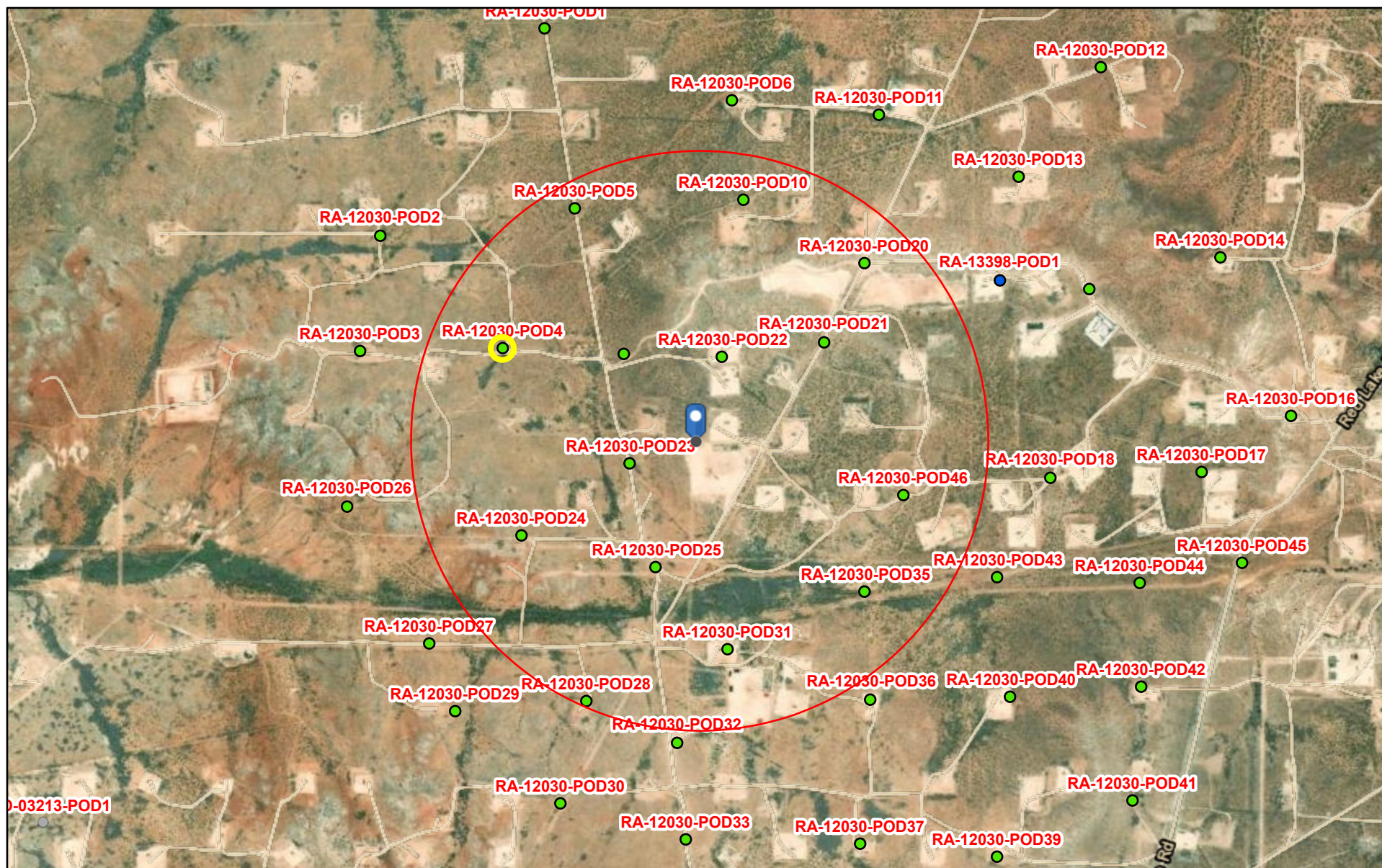
Off-Site:



RA-12030-POD25:



NAPP2401651809 | SANTANA STATE COM 20CD WELLPAD



5/28/2024, 8:22:46 AM

GIS WATERS PODs

● Pending ●
● Active

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

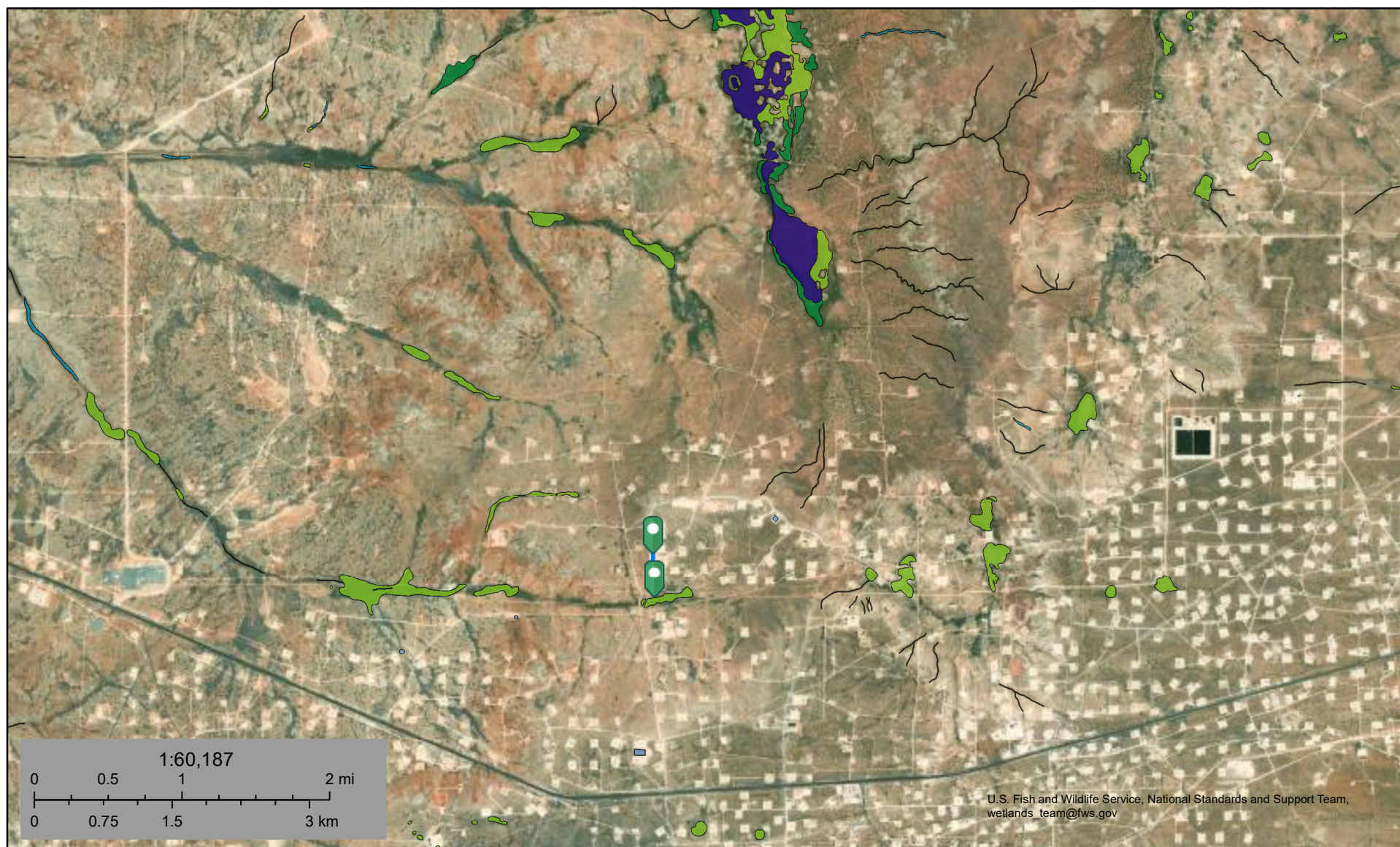
Online web user

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



U.S. Fish and Wildlife Service

National Wetlands Inventory

NAPP2401651809 |
SANTANA STATE COM 20CD WELLPAD

May 28, 2024

Wetlands

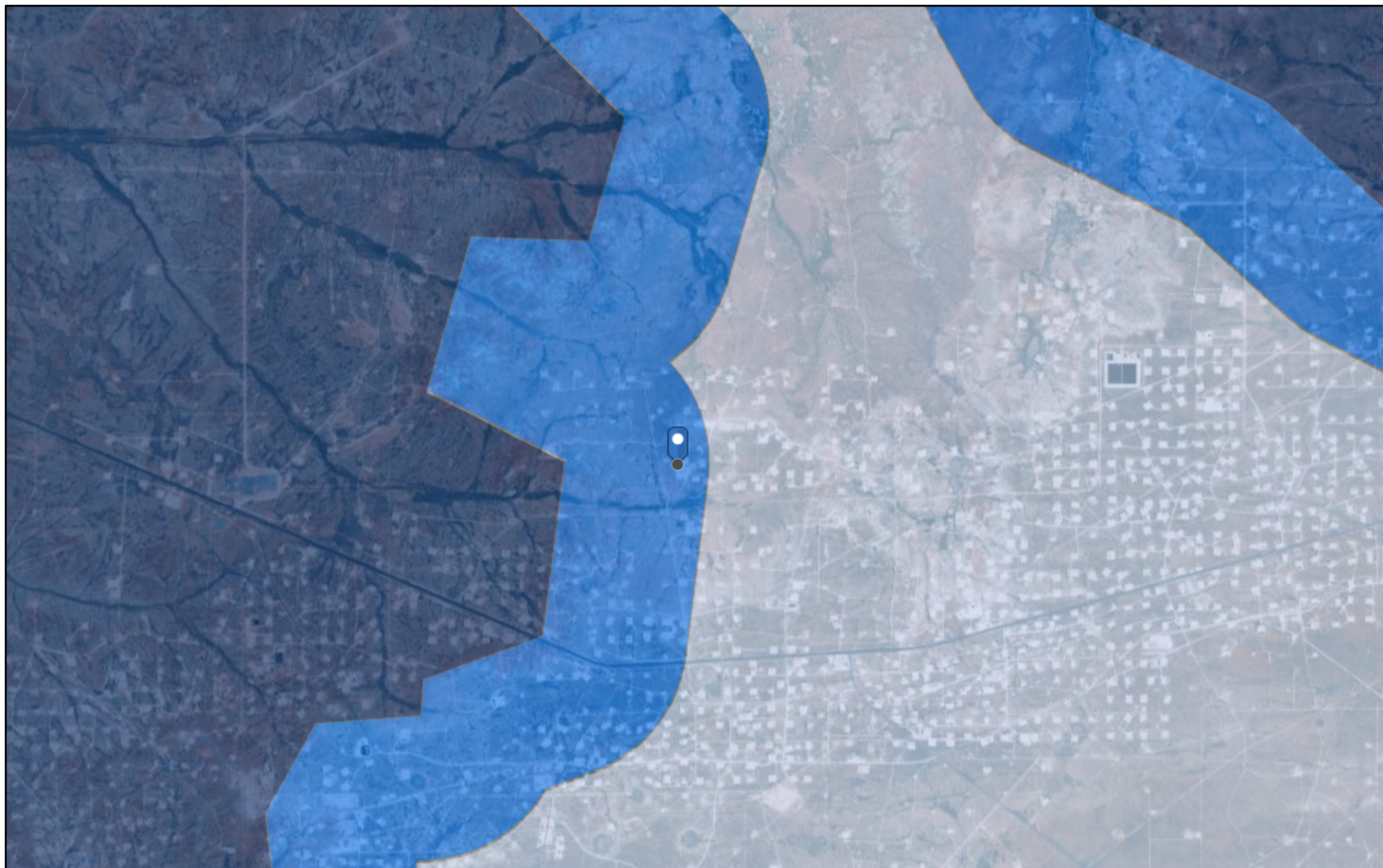
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- 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.

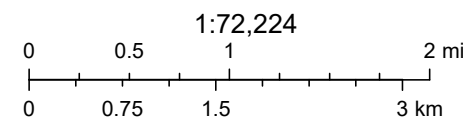
NAPP2401651809 | SANTANA STATE COM 20CD WELLPAD



5/28/2024, 8:32:18 AM

Karst Occurrence Potential

	High		Medium
			Low



BLM, OCD, New Mexico Tech, Earthstar Geographics

National Flood Hazard Layer FIRMMette



104°11'39"W 32°49'14"N



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

1:6,000

104°11'2"W 32°48'44"N

Released to Imaging: 7/30/2024 4:18:56 PM

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 Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



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 5/28/2024 at 11:09 AM 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.



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 **Eddy Area, New Mexico**

**NAPP2401651809 | SANTANA
STATE COM 20CD WELLPAD**



May 28, 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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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

Custom Soil Resource Report

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

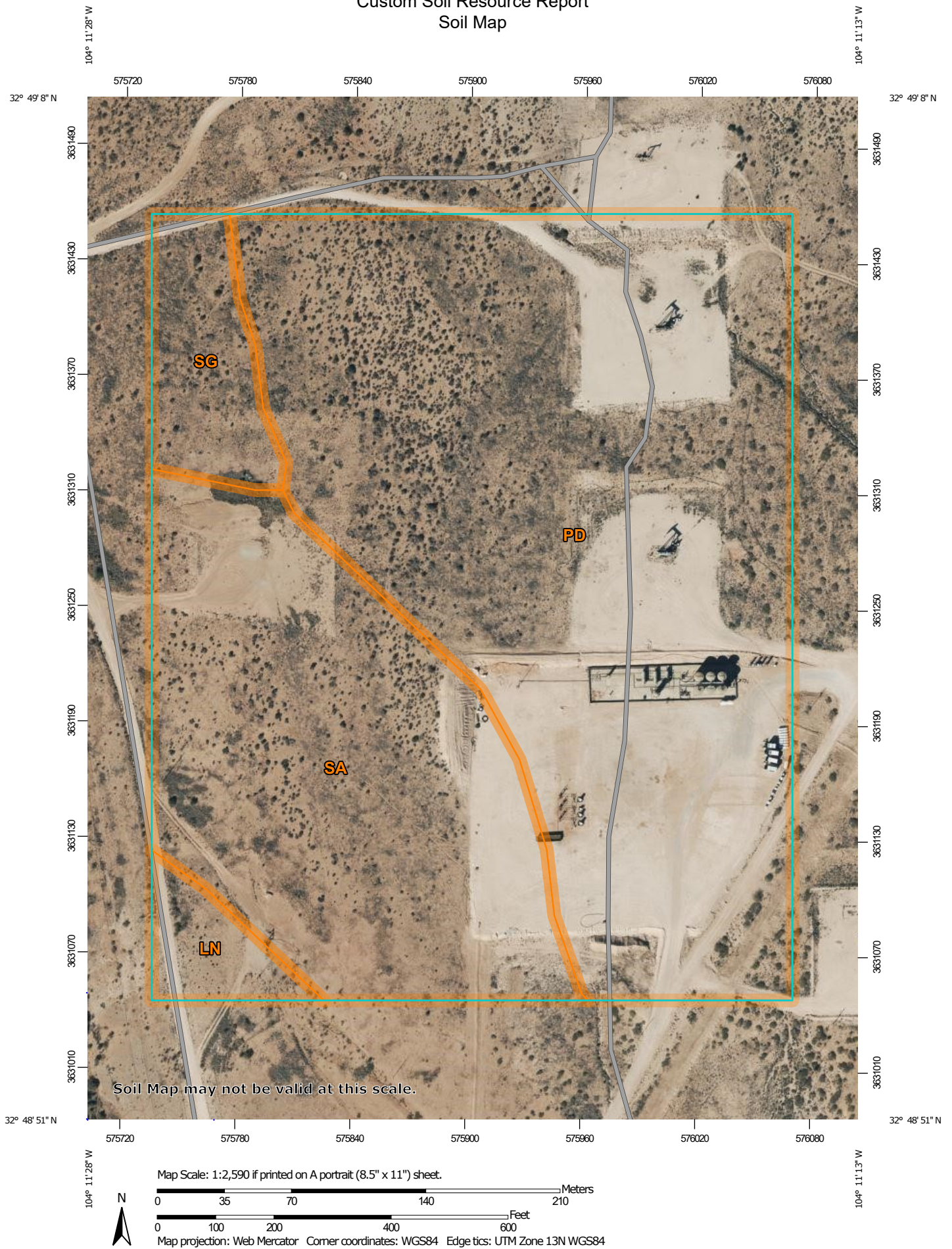
Custom Soil Resource Report

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



Custom Soil Resource Report

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: Eddy Area, New Mexico
Survey Area Data: Version 19, Sep 7, 2023

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

Date(s) aerial images were photographed: Nov 12, 2022—Dec 2, 2022

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.

Custom Soil Resource Report

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
LN	Largo-Stony land complex, 0 to 25 percent slopes	0.9	2.7%
PD	Pajarito-Dune land complex, 0 to 3 percent slopes	20.9	61.5%
SA	Simona sandy loam, 0 to 3 percent slopes	10.3	30.3%
SG	Simona gravelly fine sandy loam, 0 to 3 percent slopes	1.9	5.5%
Totals for Area of Interest		33.9	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.

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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.

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Eddy Area, New Mexico**LN—Largo-Stony land complex, 0 to 25 percent slopes****Map Unit Setting***National map unit symbol:* 1w50*Elevation:* 2,000 to 5,700 feet*Mean annual precipitation:* 6 to 14 inches*Mean annual air temperature:* 57 to 70 degrees F*Frost-free period:* 180 to 260 days*Farmland classification:* Not prime farmland**Map Unit Composition***Largo and similar soils:* 41 percent*Stony land:* 40 percent*Minor components:* 19 percent*Estimates are based on observations, descriptions, and transects of the mapunit.***Description of Largo****Setting***Landform:* Plains, alluvial fans*Landform position (three-dimensional):* Talf, rise*Down-slope shape:* Convex, linear*Across-slope shape:* Linear*Parent material:* Calcareous alluvium**Typical profile***H1 - 0 to 4 inches:* loam*H2 - 4 to 47 inches:* silt loam*H3 - 47 to 65 inches:* loam**Properties and qualities***Slope:* 1 to 5 percent*Depth to restrictive feature:* More than 80 inches*Drainage class:* Well drained*Runoff class:* Low*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)*Depth to water table:* More than 80 inches*Frequency of flooding:* None*Frequency of ponding:* None*Calcium carbonate, maximum content:* 15 percent*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)*Available water supply, 0 to 60 inches:* High (about 10.0 inches)**Interpretive groups***Land capability classification (irrigated):* 3e*Land capability classification (nonirrigated):* 7e*Hydrologic Soil Group:* B*Ecological site:* R070BC007NM - Loamy*Hydric soil rating:* No

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Minor Components**Simona**

Percent of map unit: 7 percent

Ecological site: R070BD002NM - Shallow Sandy

Hydric soil rating: No

Largo

Percent of map unit: 6 percent

Ecological site: R070BC017NM - Bottomland

Hydric soil rating: No

Pajarito

Percent of map unit: 6 percent

Ecological site: R070BD003NM - Loamy Sand

Hydric soil rating: No

PD—Pajarito-Dune land complex, 0 to 3 percent slopes**Map Unit Setting**

National map unit symbol: 1w55

Elevation: 3,000 to 5,000 feet

Mean annual precipitation: 10 to 15 inches

Mean annual air temperature: 60 to 64 degrees F

Frost-free period: 190 to 220 days

Farmland classification: Not prime farmland

Map Unit Composition

Pajarito and similar soils: 46 percent

Dune land: 45 percent

Minor components: 9 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pajarito**Setting**

Landform: Plains, interdunes, dunes

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 9 inches: fine sandy loam

H2 - 9 to 36 inches: fine sandy loam

H3 - 36 to 72 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

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Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 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: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Description of Dune Land**Setting**

Landform: Dune fields
Landform position (two-dimensional): Shoulder, backslope, footslope
Landform position (three-dimensional): Talf
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 6 inches: sandy loam
H2 - 6 to 60 inches: sandy loam

Interpretive groups

Land capability classification (irrigated): None specified
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Minor Components**Rock outcrop**

Percent of map unit: 5 percent
Hydric soil rating: No

Largo

Percent of map unit: 4 percent
Ecological site: R070BC007NM - Loamy
Hydric soil rating: No

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SA—Simona sandy loam, 0 to 3 percent slopes**Map Unit Setting**

National map unit symbol: 1w5v
Elevation: 3,000 to 4,200 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Simona and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Simona**Setting**

Landform: Plains, alluvial fans
Landform position (three-dimensional): Rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 6 inches: sandy loam
H2 - 6 to 20 inches: fine sandy loam
H3 - 20 to 24 inches: indurated

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 7 to 24 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: 15 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 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R070BD002NM - Shallow Sandy

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Hydric soil rating: No

Minor Components**Unnamed soils**

Percent of map unit: 4 percent

Hydric soil rating: No

Playa

Percent of map unit: 1 percent

Landform: Flood-plain playas

Landform position (three-dimensional): Talf

Down-slope shape: Convex

Across-slope shape: Convex, linear

Ecological site: R070BC017NM - Bottomland

Hydric soil rating: Yes

SG—Simona gravelly fine sandy loam, 0 to 3 percent slopes**Map Unit Setting**

National map unit symbol: 1w5w

Elevation: 2,750 to 5,000 feet

Mean annual precipitation: 8 to 16 inches

Mean annual air temperature: 57 to 70 degrees F

Frost-free period: 180 to 230 days

Farmland classification: Not prime farmland

Map Unit Composition

Simona and similar soils: 95 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Simona**Setting**

Landform: Plains, alluvial fans

Landform position (three-dimensional): Rise

Down-slope shape: Convex, linear

Across-slope shape: Linear

Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 19 inches: gravelly fine sandy loam

H2 - 19 to 23 inches: indurated

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 7 to 20 inches to petrocalcic

Drainage class: Well drained

Runoff class: Very high

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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: 15 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 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: R070BD002NM - Shallow Sandy

Hydric soil rating: No

Minor Components**Simona**

Percent of map unit: 4 percent

Ecological site: R070BD002NM - Shallow Sandy

Hydric soil rating: No

Playa

Percent of map unit: 1 percent

Landform: Playas

Landform position (three-dimensional): Talf

Down-slope shape: Concave, convex

Across-slope shape: Concave, linear

Ecological site: R070BC017NM - Bottomland

Hydric soil rating: Yes

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 degraded; they 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

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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;

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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:

Custom Soil Resource Report

— 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:

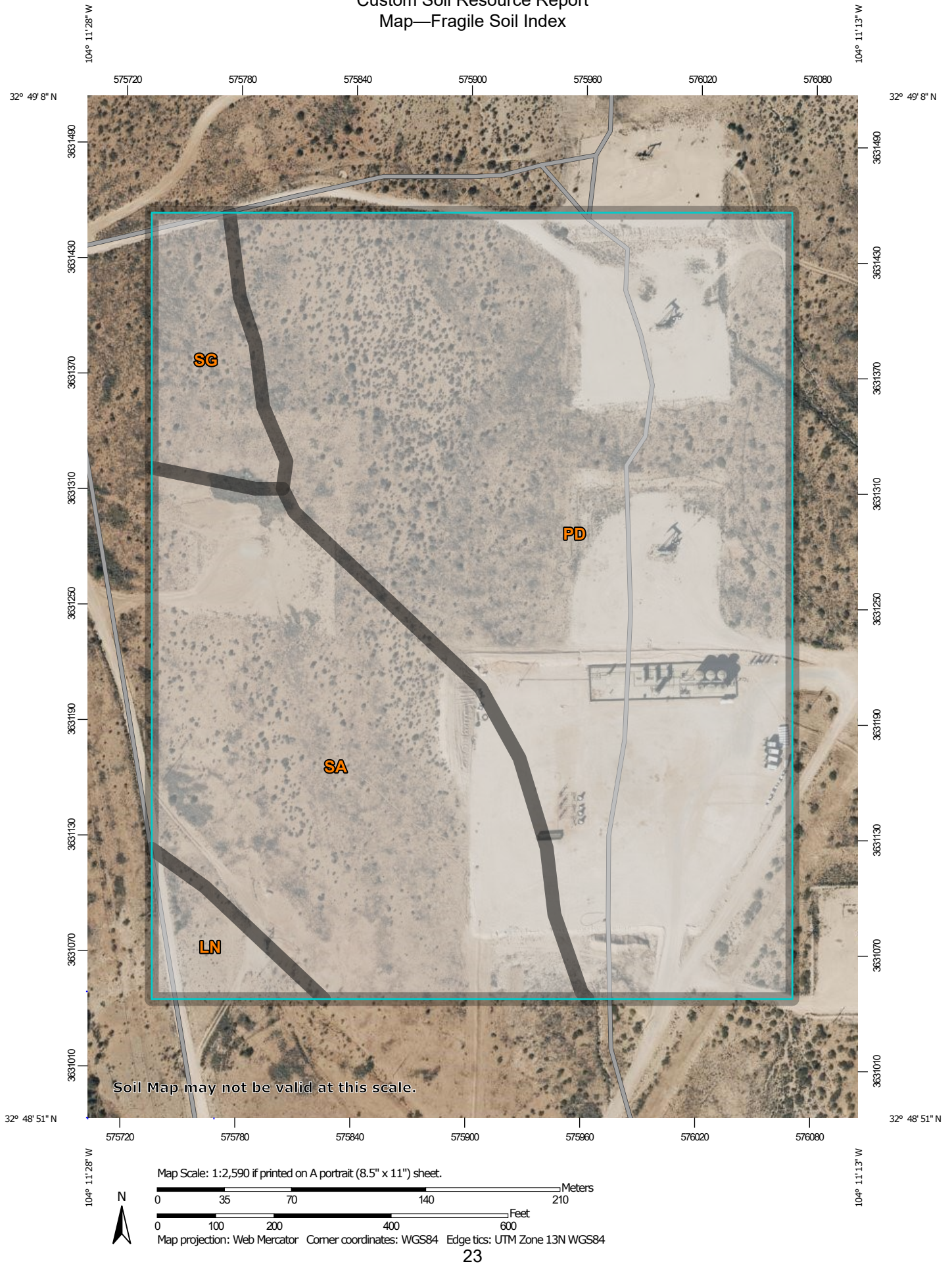
— Poorly structured soils that have an extremely low content of organic matter, are very shallow, have low vegetative cover, occur on very steep slopes, and are in dry or very dry climates;

— 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



Custom Soil Resource Report








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: Eddy Area, New Mexico
Survey Area Data: Version 19, Sep 7, 2023

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

Date(s) aerial images were photographed: Nov 12, 2022—Dec 2, 2022

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.

Custom Soil Resource Report

Tables—Fragile Soil Index

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
LN	Largo-Stony land complex, 0 to 25 percent slopes	Not rated	Largo (41%)		0.9	2.7%
			Stony land (40%)			
			Simona (7%)			
			Largo (6%)			
			Pajarito (6%)			
PD	Pajarito-Dune land complex, 0 to 3 percent slopes	Not rated	Pajarito (46%)		20.9	61.5%
			Dune land (45%)			
			Rock outcrop (5%)			
			Largo (4%)			
SA	Simona sandy loam, 0 to 3 percent slopes	Not rated	Simona (95%)		10.3	30.3%
			Unnamed soils (4%)			
			Playa (1%)			
SG	Simona gravelly fine sandy loam, 0 to 3 percent slopes	Not rated	Simona (95%)		1.9	5.5%
			Simona (4%)			
			Playa (1%)			
Totals for Area of Interest					33.9	100.0%

Rating	Acres in AOI	Percent of AOI
Null or Not Rated	33.9	100.0%
Totals for Area of Interest	33.9	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.

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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.

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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

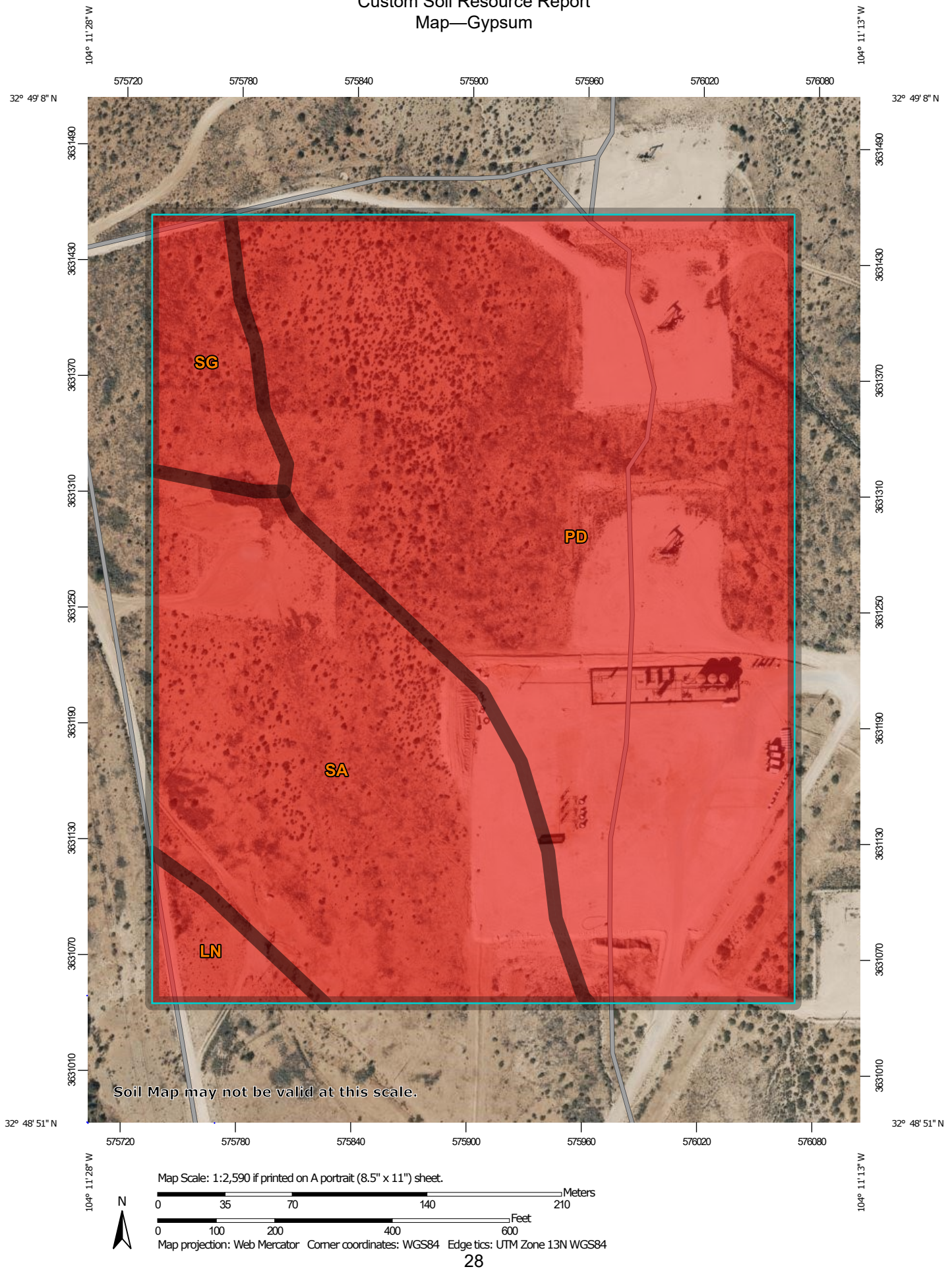
Soil Chemical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil chemical properties include pH, cation exchange capacity, calcium carbonate, gypsum, and electrical conductivity.

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




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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: Eddy Area, New Mexico
Survey Area Data: Version 19, Sep 7, 2023

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

Date(s) aerial images were photographed: Nov 12, 2022—Dec 2, 2022

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.

Custom Soil Resource Report

Table—Gypsum

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
LN	Largo-Stony land complex, 0 to 25 percent slopes	0	0.9	2.7%
PD	Pajarito-Dune land complex, 0 to 3 percent slopes	0	20.9	61.5%
SA	Simona sandy loam, 0 to 3 percent slopes	0	10.3	30.3%
SG	Simona gravelly fine sandy loam, 0 to 3 percent slopes	0	1.9	5.5%
Totals for Area of Interest			33.9	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

Custom Soil Resource Report

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

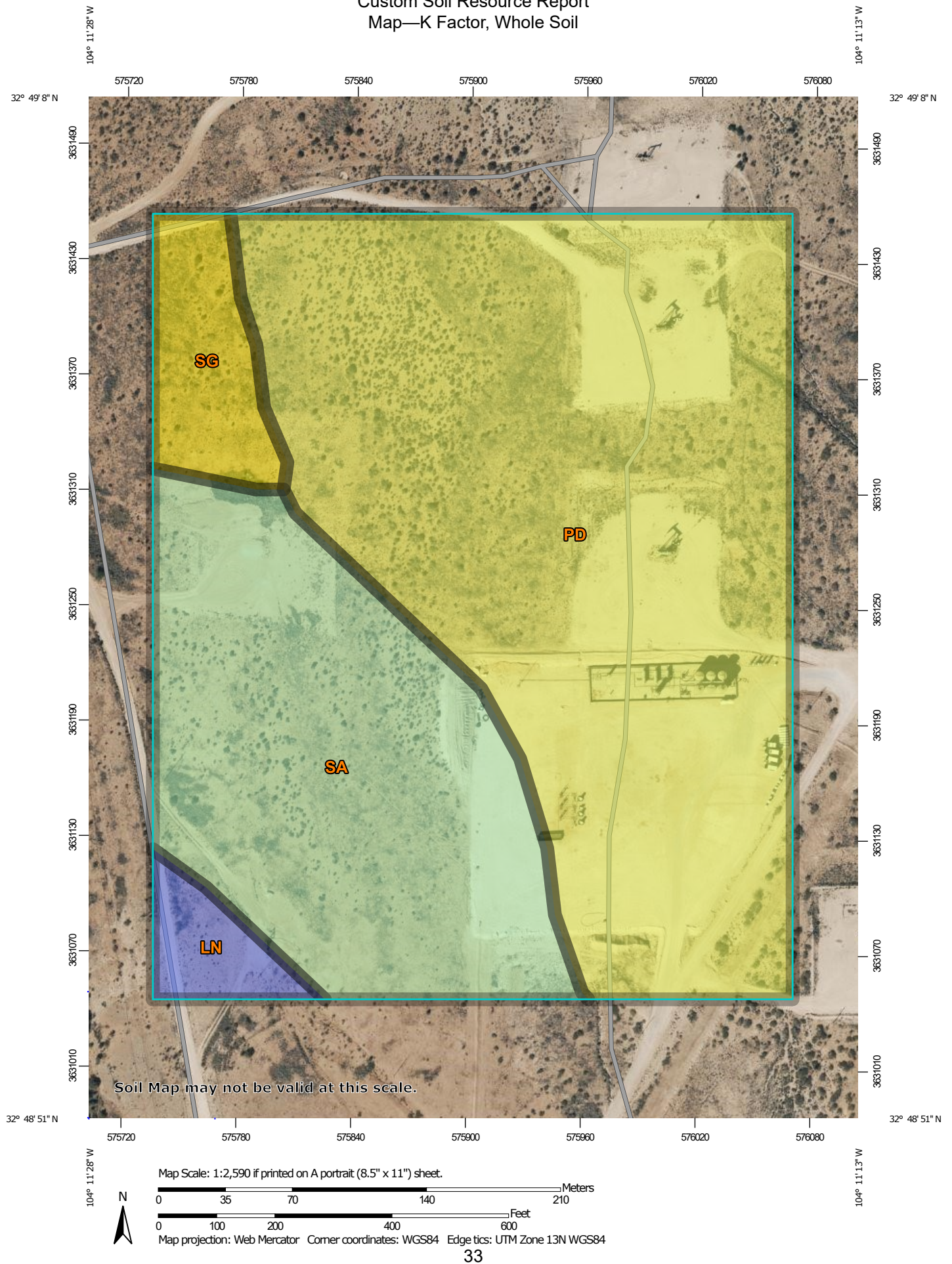
Custom Soil Resource Report

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
	Rails
	Interstate Highways
	US Routes
	Major Roads
	Local Roads
	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: Eddy Area, New Mexico
Survey Area Data: Version 19, Sep 7, 2023

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

Date(s) aerial images were photographed: Nov 12, 2022—Dec 2, 2022

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.

Custom Soil Resource Report

Table—K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
LN	Largo-Stony land complex, 0 to 25 percent slopes	.49	0.9	2.7%
PD	Pajarito-Dune land complex, 0 to 3 percent slopes	.20	20.9	61.5%
SA	Simona sandy loam, 0 to 3 percent slopes	.28	10.3	30.3%
SG	Simona gravelly fine sandy loam, 0 to 3 percent slopes	.17	1.9	5.5%
Totals for Area of Interest			33.9	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

Custom Soil Resource Report

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.

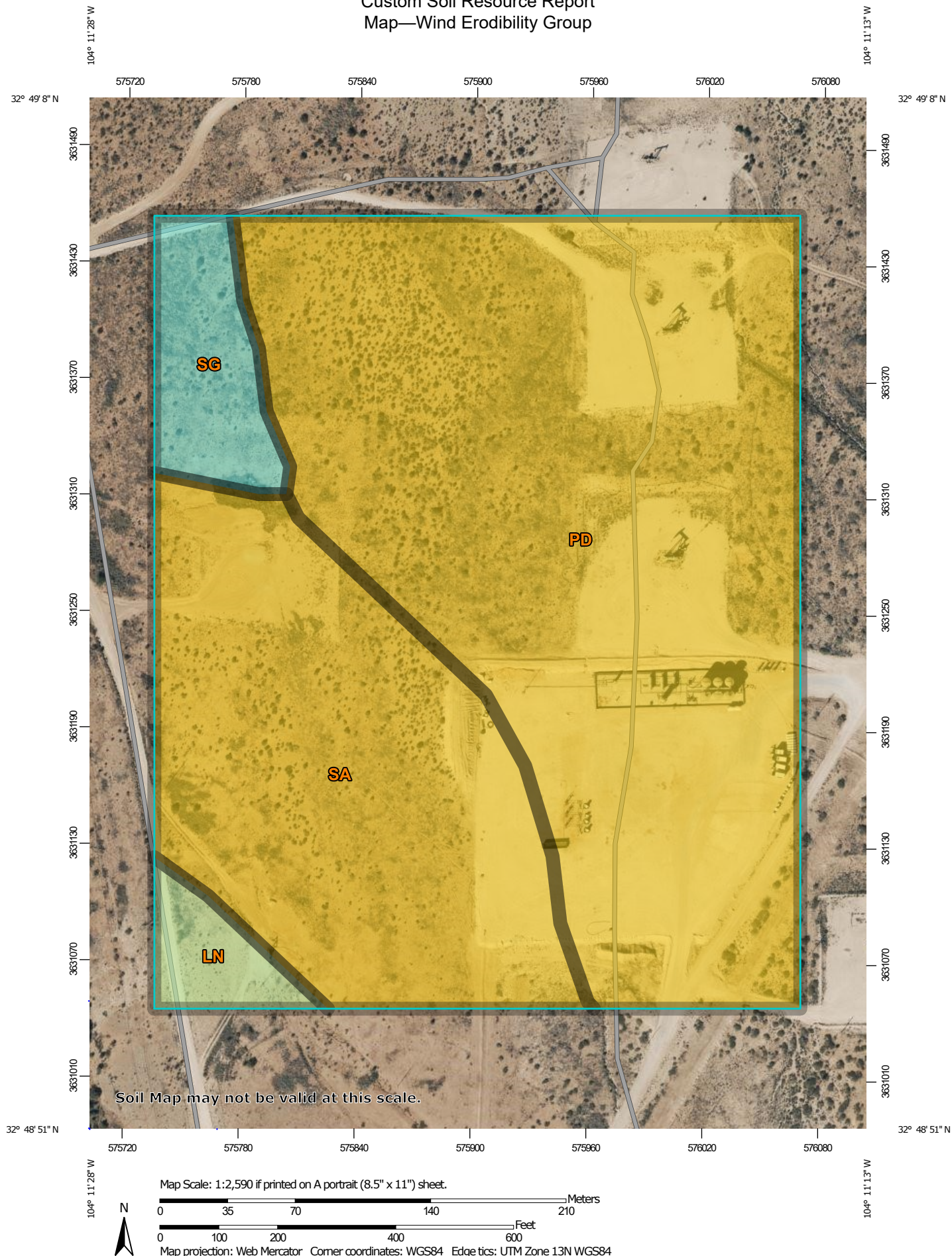
When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

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



Custom Soil Resource Report

Table—Wind Erodibility Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
LN	Largo-Stony land complex, 0 to 25 percent slopes	4L	0.9	2.7%
PD	Pajarito-Dune land complex, 0 to 3 percent slopes	3	20.9	61.5%
SA	Simona sandy loam, 0 to 3 percent slopes	3	10.3	30.3%
SG	Simona gravelly fine sandy loam, 0 to 3 percent slopes	5	1.9	5.5%
Totals for Area of Interest			33.9	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

Custom Soil Resource Report

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.

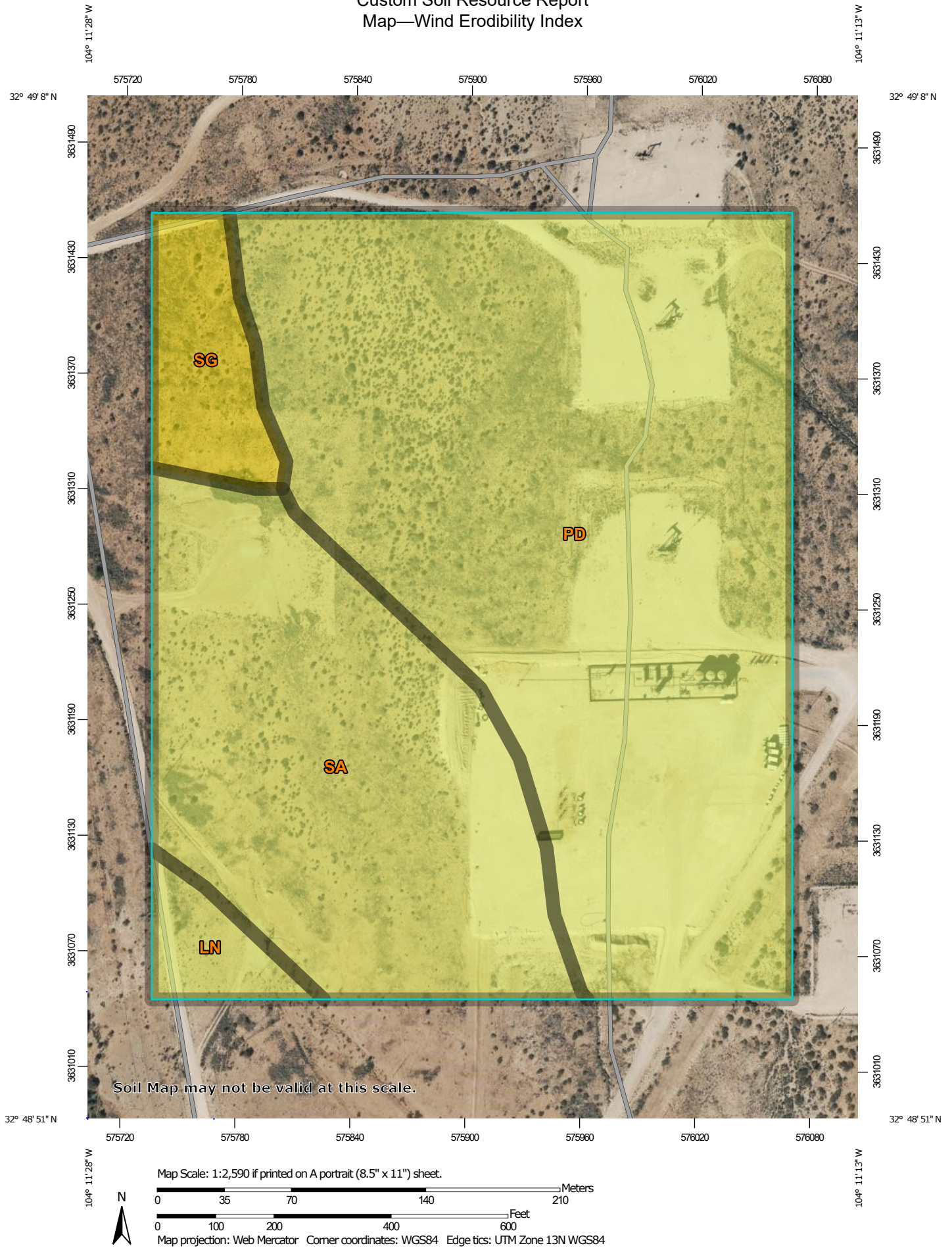
Tie-break Rule: Lower

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.

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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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Survey Area Data: Version 19, Sep 7, 2023

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Date(s) aerial images were photographed: Nov 12, 2022—Dec 2, 2022

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Custom Soil Resource Report

Table—Wind Erodibility Index

Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
LN	Largo-Stony land complex, 0 to 25 percent slopes	86	0.9	2.7%
PD	Pajarito-Dune land complex, 0 to 3 percent slopes	86	20.9	61.5%
SA	Simona sandy loam, 0 to 3 percent slopes	86	10.3	30.3%
SG	Simona gravelly fine sandy loam, 0 to 3 percent slopes	56	1.9	5.5%
Totals for Area of Interest			33.9	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

Custom Soil Resource Report

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

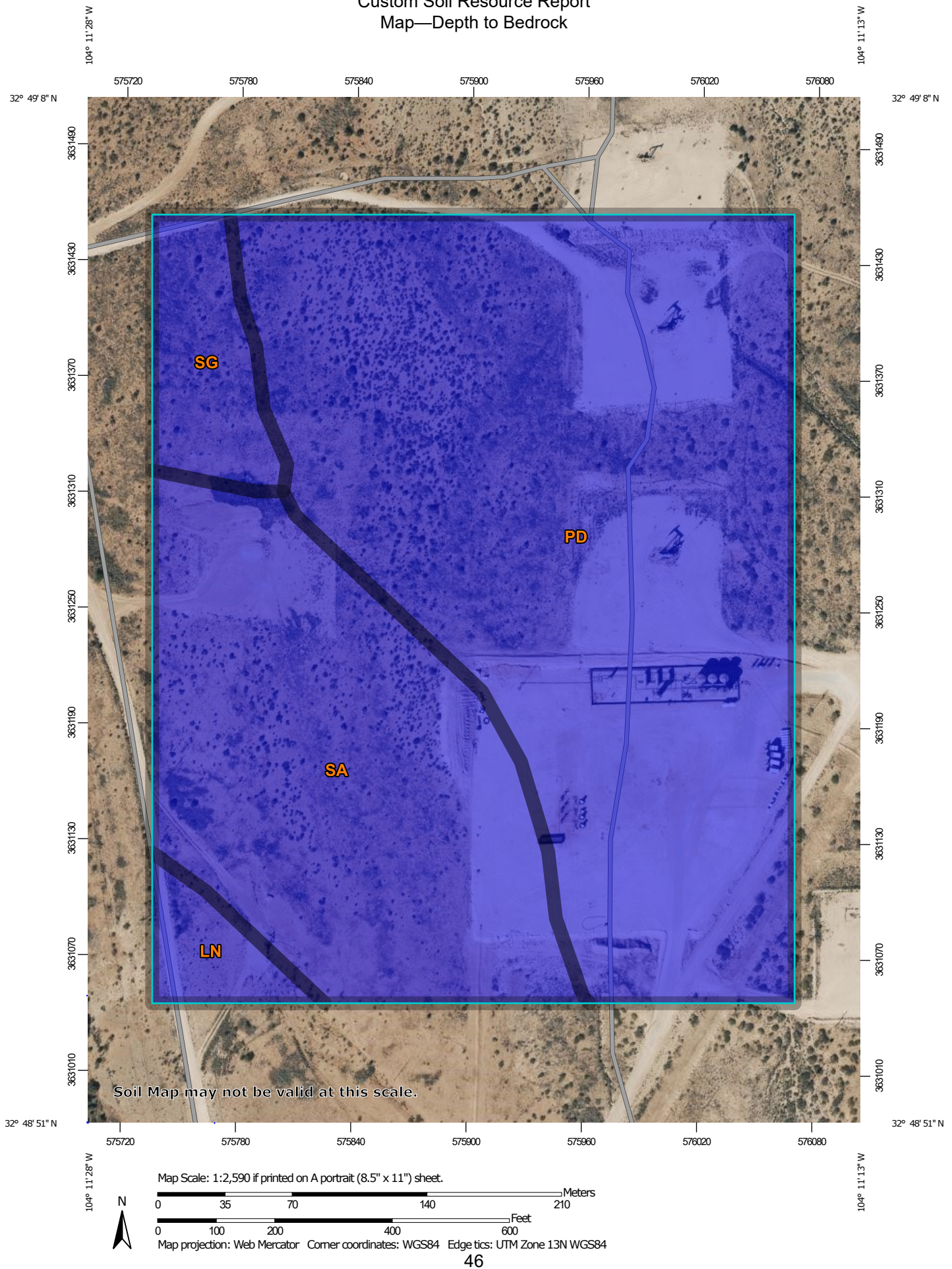
Custom Soil Resource Report

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



Custom Soil Resource Report







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.

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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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Date(s) aerial images were photographed: Nov 12, 2022—Dec 2, 2022

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Custom Soil Resource Report

Table—Depth to Bedrock

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
LN	Largo-Stony land complex, 0 to 25 percent slopes	>200	0.9	2.7%
PD	Pajarito-Dune land complex, 0 to 3 percent slopes	>200	20.9	61.5%
SA	Simona sandy loam, 0 to 3 percent slopes	>200	10.3	30.3%
SG	Simona gravelly fine sandy loam, 0 to 3 percent slopes	>200	1.9	5.5%
Totals for Area of Interest			33.9	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

Custom Soil Resource Report

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.

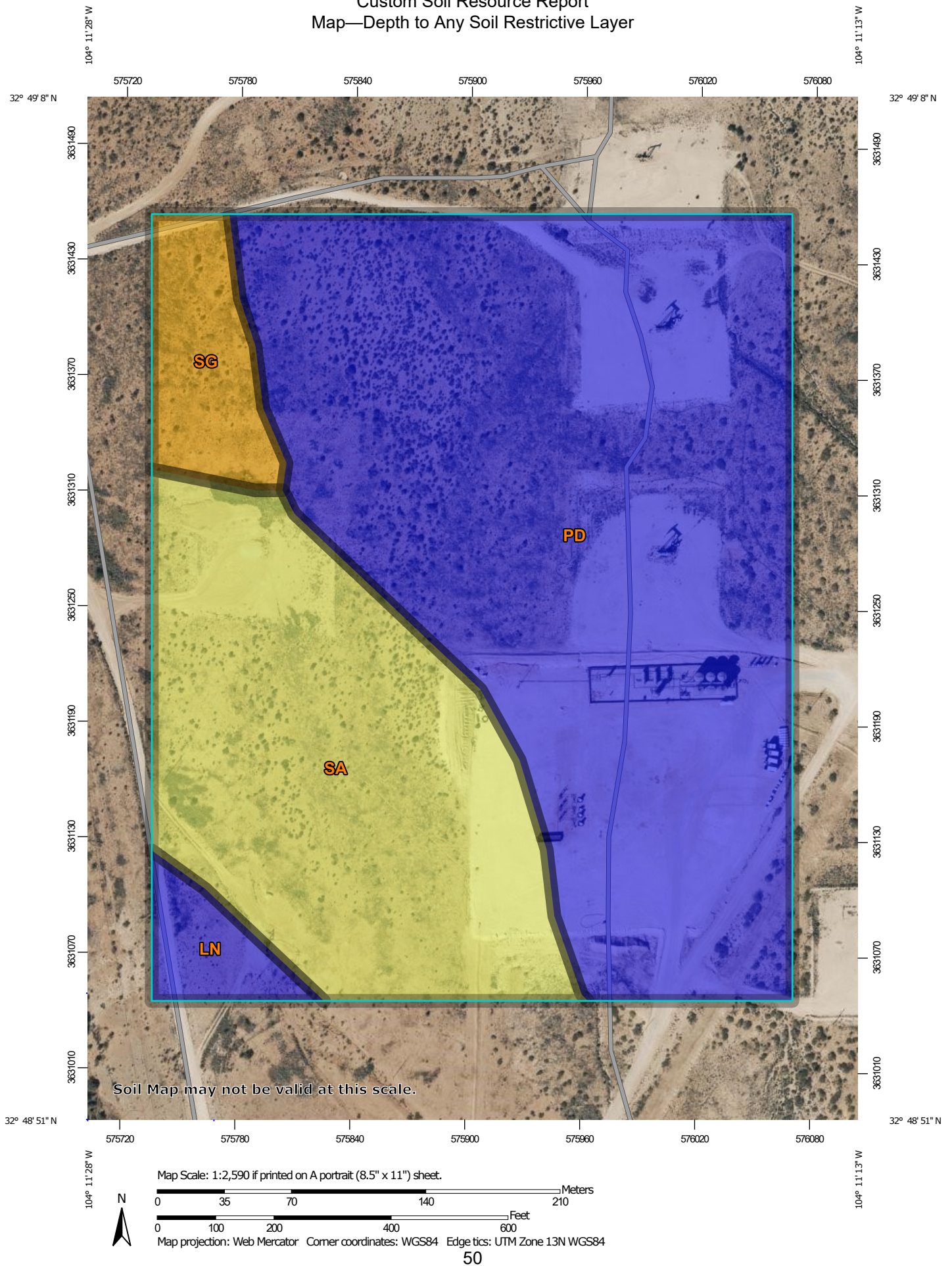
Depth to Any Soil Restrictive Layer

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



Custom Soil Resource Report








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.

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

Soil Survey Area: Eddy Area, New Mexico
Survey Area Data: Version 19, Sep 7, 2023

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

Date(s) aerial images were photographed: Nov 12, 2022—Dec 2, 2022

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.

Custom Soil Resource Report

Table—Depth to Any Soil Restrictive Layer

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
LN	Largo-Stony land complex, 0 to 25 percent slopes	>200	0.9	2.7%
PD	Pajarito-Dune land complex, 0 to 3 percent slopes	>200	20.9	61.5%
SA	Simona sandy loam, 0 to 3 percent slopes	51	10.3	30.3%
SG	Simona gravelly fine sandy loam, 0 to 3 percent slopes	48	1.9	5.5%
Totals for Area of Interest			33.9	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

Custom Soil Resource Report

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

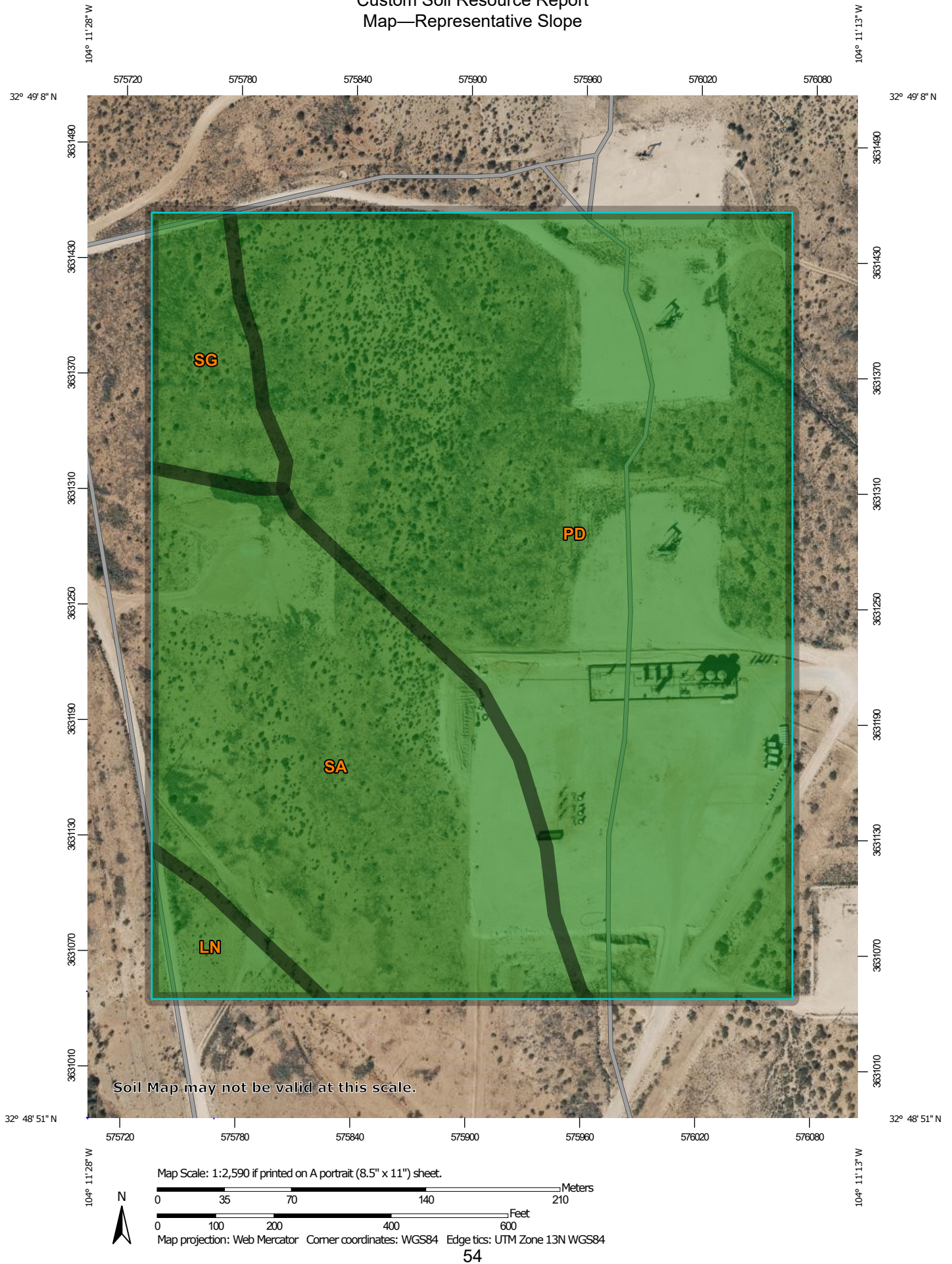
This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

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



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
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.

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: Eddy Area, New Mexico
 Survey Area Data: Version 19, Sep 7, 2023

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

Date(s) aerial images were photographed: Nov 12, 2022—Dec 2, 2022

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.

Custom Soil Resource Report

Table—Representative Slope

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
LN	Largo-Stony land complex, 0 to 25 percent slopes	3.0	0.9	2.7%
PD	Pajarito-Dune land complex, 0 to 3 percent slopes	2.0	20.9	61.5%
SA	Simona sandy loam, 0 to 3 percent slopes	2.0	10.3	30.3%
SG	Simona gravelly fine sandy loam, 0 to 3 percent slopes	2.0	1.9	5.5%
Totals for Area of Interest			33.9	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

Custom Soil Resource Report

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.

References

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- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

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NMSLO Seed Mix**Sandy Loam (SL)****SANDY LOAM (SL) SITES SEED MIXTURE:**

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
<u>Grasses:</u>			
Galleta grass	Viva, VNS, So.	2.5	F
Little bluestem	Cimmaron, Pastura	2.5	F
Blue grama	Hachita, Lovington	2.0	D
Sideoats grama	Vaughn, El Reno	2.0	F
Sand dropseed	VNS, Southern	1.0	S
<u>Forbs:</u>			
Indian blanketflower	VNS, Southern	1.0	D
Parry penstemon	VNS, Southern	1.0	D
Blue flax	Appar	1.0	D
Desert globemallow	VNS, Southern	1.0	D
<u>Shrubs:</u>			
Fourwing saltbush	VNS, Southern	2.0	D
Common winterfat	VNS, Southern	1.0	F
Apache plume	VNS, Southern	0.75	F
Total PLS/acre		17.75	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box

- VNS, Southern – No Variety Stated, seed should be from a southern latitude collection of this species.
- Double above seed rates for broadcast or hydroseeding.
- If Parry penstemon is not available, substitute firecracker penstemon.
- If desert globemallow is not available, substitute scarlet globemallow or Nelson globemallow.
- If a species is not available, provide a suggested substitute to the New Mexico Land Office for approval. Increasing all other species proportionately may be acceptable.





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

January 25, 2024

DAN DUNKELBERG

TRINITY OILFIELD SERVICES & RENTALS, LLC

P. O. BOX 2587

HOBBS, NM 88241

RE: SANTANA STATE COM 20 CD WELL

Enclosed are the results of analyses for samples received by the laboratory on 01/22/24 14:42.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager



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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DH-001.0-01.0-S (H240278-01)

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	01/23/2024	ND	2.18	109	2.00	0.187		
Toluene*	<0.050	0.050	01/23/2024	ND	2.17	109	2.00	0.00469		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.18	109	2.00	0.206		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.39	106	6.00	0.371		
Total BTEX	<0.300	0.300	01/23/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.7 % 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	144	16.0	01/23/2024	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/23/2024	ND	211	106	200	1.55	
DRO >C10-C28*	<10.0	10.0	01/23/2024	ND	216	108	200	2.08	
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 124 % 48.2-134

Surrogate: 1-Chlorooctadecane 108 % 49.1-148

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*=Accredited Analyte

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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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DH-002.0-01.0-S (H240278-02)

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	01/23/2024	ND	2.18	109	2.00	0.187		
Toluene*	<0.050	0.050	01/23/2024	ND	2.17	109	2.00	0.00469		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.18	109	2.00	0.206		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.39	106	6.00	0.371		
Total BTEX	<0.300	0.300	01/23/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.5 % 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	400	16.0	01/23/2024	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	01/23/2024	ND	211	106	200	1.55		
DRO >C10-C28*	<10.0	10.0	01/23/2024	ND	216	108	200	2.08		
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND						

Surrogate: 1-Chlorooctane 123 % 48.2-134

Surrogate: 1-Chlorooctadecane 110 % 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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DH-003.0-01.0-P (H240278-03)

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	01/23/2024	ND	2.18	109	2.00	0.187		
Toluene*	<0.050	0.050	01/23/2024	ND	2.17	109	2.00	0.00469		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.18	109	2.00	0.206		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.39	106	6.00	0.371		
Total BTEX	<0.300	0.300	01/23/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.3 % 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	48.0	16.0	01/23/2024	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	01/23/2024	ND	211	106	200	1.55		
DRO >C10-C28*	<10.0	10.0	01/23/2024	ND	216	108	200	2.08		
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND						

Surrogate: 1-Chlorooctane 123 % 48.2-134

Surrogate: 1-Chlorooctadecane 112 % 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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DH-004.0-01.0-P (H240278-04)

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	01/23/2024	ND	2.18	109	2.00	0.187		
Toluene*	<0.050	0.050	01/23/2024	ND	2.17	109	2.00	0.00469		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.18	109	2.00	0.206		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.39	106	6.00	0.371		
Total BTEX	<0.300	0.300	01/23/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.8 % 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	32.0	16.0	01/23/2024	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	01/23/2024	ND	211	106	200	1.55		
DRO >C10-C28*	<10.0	10.0	01/23/2024	ND	216	108	200	2.08		
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND						

Surrogate: 1-Chlorooctane 126 % 48.2-134

Surrogate: 1-Chlorooctadecane 113 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DH-005.0-01.0-P (H240278-05)

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	01/23/2024	ND	2.18	109	2.00	0.187		
Toluene*	<0.050	0.050	01/23/2024	ND	2.17	109	2.00	0.00469		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.18	109	2.00	0.206		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.39	106	6.00	0.371		
Total BTEX	<0.300	0.300	01/23/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.3 % 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	16.0	16.0	01/23/2024	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	01/23/2024	ND	211	106	200	1.55		
DRO >C10-C28*	<10.0	10.0	01/23/2024	ND	216	108	200	2.08		
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND						

Surrogate: 1-Chlorooctane 122 % 48.2-134

Surrogate: 1-Chlorooctadecane 108 % 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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DH-006.0-01.0-P (H240278-06)

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	01/23/2024	ND	2.18	109	2.00	0.187		
Toluene*	<0.050	0.050	01/23/2024	ND	2.17	109	2.00	0.00469		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.18	109	2.00	0.206		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.39	106	6.00	0.371		
Total BTEx	<0.300	0.300	01/23/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.9 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: CT						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	48.0	16.0	01/23/2024	ND	416	104	400	10.9		

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	01/23/2024	ND	211	106	200	1.55	
DRO >C10-C28*	<10.0	10.0	01/23/2024	ND	216	108	200	2.08	
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 121 % 48.2-134

Surrogate: 1-Chlorooctadecane 108 % 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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DH-007.0-01.0-P (H240278-07)

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	01/23/2024	ND	2.18	109	2.00	0.187		
Toluene*	<0.050	0.050	01/23/2024	ND	2.17	109	2.00	0.00469		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.18	109	2.00	0.206		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.39	106	6.00	0.371		
Total BTEX	<0.300	0.300	01/23/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.8 % 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	48.0	16.0	01/23/2024	ND	416	104	400	10.9		

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	01/23/2024	ND	211	106	200	1.55		
DRO >C10-C28*	<10.0	10.0	01/23/2024	ND	216	108	200	2.08		
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND						

Surrogate: 1-Chlorooctane 127 % 48.2-134

Surrogate: 1-Chlorooctadecane 113 % 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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DH-008.0-01.0-P (H240278-08)

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	01/23/2024	ND	2.10	105	2.00	1.69	
Toluene*	<0.050	0.050	01/23/2024	ND	2.12	106	2.00	1.60	
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.14	107	2.00	1.31	
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.36	106	6.00	1.24	
Total BTEX	<0.300	0.300	01/23/2024	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	16.0	16.0	01/23/2024	ND	416	104	400	10.9	

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	01/23/2024	ND	204	102	200	0.362	
DRO >C10-C28*	<10.0	10.0	01/23/2024	ND	191	95.3	200	2.32	
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 102 % 48.2-134

Surrogate: 1-Chlorooctadecane 88.0 % 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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-001.0-00.0-S (H240278-09)

BTEx 8021B		mg/kg		Analyzed By: JH				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	2.47	2.00	01/23/2024	ND	2.10	105	2.00	1.69	
Toluene*	83.1	2.00	01/23/2024	ND	2.12	106	2.00	1.60	
Ethylbenzene*	131	2.00	01/23/2024	ND	2.14	107	2.00	1.31	
Total Xylenes*	232	6.00	01/23/2024	ND	6.36	106	6.00	1.24	
Total BTEX	449	12.0	01/23/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 137 % 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	20000	16.0	01/23/2024	ND	416	104	400	10.9	

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*	3870	50.0	01/23/2024	ND	204	102	200	0.362	
DRO >C10-C28*	19400	50.0	01/23/2024	ND	191	95.3	200	2.32	
EXT DRO >C28-C36	3560	50.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 510 % 48.2-134

Surrogate: 1-Chlorooctadecane 320 % 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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-001.0-04.0-S (H240278-10)

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	01/23/2024	ND	2.10	105	2.00	1.69		
Toluene*	<0.050	0.050	01/23/2024	ND	2.12	106	2.00	1.60		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.14	107	2.00	1.31		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.36	106	6.00	1.24		
Total BTEX	<0.300	0.300	01/23/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 119 % 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	624	16.0	01/23/2024	ND	416	104	400	10.9		

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	01/23/2024	ND	204	102	200	0.362		
DRO >C10-C28*	13.3	10.0	01/23/2024	ND	191	95.3	200	2.32		
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND						

Surrogate: 1-Chlorooctane 99.5 % 48.2-134

Surrogate: 1-Chlorooctadecane 87.3 % 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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-002.0-00.0-S (H240278-11)

BTEx 8021B		mg/kg		Analyzed By: JH				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	3.48	2.00	01/23/2024	ND	2.10	105	2.00	1.69	
Toluene*	68.6	2.00	01/23/2024	ND	2.12	106	2.00	1.60	
Ethylbenzene*	108	2.00	01/23/2024	ND	2.14	107	2.00	1.31	
Total Xylenes*	201	6.00	01/23/2024	ND	6.36	106	6.00	1.24	
Total BTEX	381	12.0	01/23/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 136 % 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	15800	16.0	01/23/2024	ND	416	104	400	10.9	

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*	3000	50.0	01/23/2024	ND	204	102	200	0.362	
DRO >C10-C28*	19300	50.0	01/23/2024	ND	191	95.3	200	2.32	
EXT DRO >C28-C36	3660	50.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 455 % 48.2-134

Surrogate: 1-Chlorooctadecane 380 % 49.1-148

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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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-002.0-04.0-S (H240278-12)

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	01/23/2024	ND	2.10	105	2.00	1.69	
Toluene*	<0.050	0.050	01/23/2024	ND	2.12	106	2.00	1.60	
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.14	107	2.00	1.31	
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.36	106	6.00	1.24	
Total BTEX	<0.300	0.300	01/23/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 114 % 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	336	16.0	01/23/2024	ND	416	104	400	10.9	

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	01/23/2024	ND	204	102	200	0.362	
DRO >C10-C28*	86.3	10.0	01/23/2024	ND	191	95.3	200	2.32	
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 99.8 % 48.2-134

Surrogate: 1-Chlorooctadecane 87.1 % 49.1-148

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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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-003.0-00.0-P (H240278-13)

BTEx 8021B		mg/kg		Analyzed By: JH				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.500	0.500	01/23/2024	ND	2.10	105	2.00	1.69	
Toluene*	13.3	0.500	01/23/2024	ND	2.12	106	2.00	1.60	
Ethylbenzene*	33.3	0.500	01/23/2024	ND	2.14	107	2.00	1.31	
Total Xylenes*	64.2	1.50	01/23/2024	ND	6.36	106	6.00	1.24	
Total BTEX	111	3.00	01/23/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 145 % 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	1760	16.0	01/23/2024	ND	416	104	400	10.9	

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*	1300	50.0	01/23/2024	ND	204	102	200	0.362	
DRO >C10-C28*	7070	50.0	01/23/2024	ND	191	95.3	200	2.32	
EXT DRO >C28-C36	1180	50.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 197 % 48.2-134

Surrogate: 1-Chlorooctadecane 120 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-003.0-04.0-P (H240278-14)

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	01/23/2024	ND	2.10	105	2.00	1.69		
Toluene*	<0.050	0.050	01/23/2024	ND	2.12	106	2.00	1.60		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.14	107	2.00	1.31		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.36	106	6.00	1.24		
Total BTEX	<0.300	0.300	01/23/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 114 % 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	48.0	16.0	01/23/2024	ND	416	104	400	10.9		

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	01/23/2024	ND	204	102	200	0.362	
DRO >C10-C28*	<10.0	10.0	01/23/2024	ND	191	95.3	200	2.32	
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 111 % 48.2-134

Surrogate: 1-Chlorooctadecane 96.0 % 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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-004.0-00.0-P (H240278-15)

BTEx 8021B		mg/kg		Analyzed By: JH				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.200	0.200	01/23/2024	ND	2.10	105	2.00	1.69	
Toluene*	1.44	0.200	01/23/2024	ND	2.12	106	2.00	1.60	
Ethylbenzene*	11.2	0.200	01/23/2024	ND	2.14	107	2.00	1.31	
Total Xylenes*	28.2	0.600	01/23/2024	ND	6.36	106	6.00	1.24	
Total BTEX	40.9	1.20	01/23/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 163 % 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	4080	16.0	01/23/2024	ND	416	104	400	10.9	

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*	766	50.0	01/23/2024	ND	204	102	200	0.362	
DRO >C10-C28*	7710	50.0	01/23/2024	ND	191	95.3	200	2.32	
EXT DRO >C28-C36	1430	50.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 174 % 48.2-134

Surrogate: 1-Chlorooctadecane 163 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-004.0-04.0-P (H240278-16)

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	01/23/2024	ND	2.10	105	2.00	1.69		
Toluene*	<0.050	0.050	01/23/2024	ND	2.12	106	2.00	1.60		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.14	107	2.00	1.31		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.36	106	6.00	1.24		
Total BTEx	<0.300	0.300	01/23/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 114 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: CT						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	144	16.0	01/23/2024	ND	416	104	400	10.9		

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	01/23/2024	ND	204	102	200	0.362	
DRO >C10-C28*	<10.0	10.0	01/23/2024	ND	191	95.3	200	2.32	
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 86.1 % 48.2-134

Surrogate: 1-Chlorooctadecane 74.2 % 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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-005.0-00.0-P (H240278-17)

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	01/23/2024	ND	2.10	105	2.00	1.69		
Toluene*	<0.050	0.050	01/23/2024	ND	2.12	106	2.00	1.60		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.14	107	2.00	1.31		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.36	106	6.00	1.24		
Total BTEX	<0.300	0.300	01/23/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 121 % 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	1840	16.0	01/23/2024	ND	416	104	400	10.9		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<50.0	50.0	01/23/2024	ND	204	102	200	0.362	
DRO >C10-C28*	5740	50.0	01/23/2024	ND	191	95.3	200	2.32	
EXT DRO >C28-C36	1330	50.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 108 % 48.2-134

Surrogate: 1-Chlorooctadecane 143 % 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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-005.0-02.0-P (H240278-18)

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	01/23/2024	ND	2.10	105	2.00	1.69		
Toluene*	<0.050	0.050	01/23/2024	ND	2.12	106	2.00	1.60		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.14	107	2.00	1.31		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.36	106	6.00	1.24		
Total BTEX	<0.300	0.300	01/23/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 116 % 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	32.0	16.0	01/23/2024	ND	416	104	400	10.9		

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	01/23/2024	ND	204	102	200	0.362	
DRO >C10-C28*	<10.0	10.0	01/23/2024	ND	191	95.3	200	2.32	
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 97.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 85.0 % 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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-006.0-00.0-P (H240278-19)

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	01/23/2024	ND	2.10	105	2.00	1.69		
Toluene*	<0.050	0.050	01/23/2024	ND	2.12	106	2.00	1.60		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.14	107	2.00	1.31		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.36	106	6.00	1.24		
Total BTEX	<0.300	0.300	01/23/2024	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	832	16.0	01/23/2024	ND	416	104	400	10.9		

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	01/23/2024	ND	204	102	200	0.362	
DRO >C10-C28*	939	10.0	01/23/2024	ND	191	95.3	200	2.32	
EXT DRO >C28-C36	279	10.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 87.0 % 48.2-134

Surrogate: 1-Chlorooctadecane 73.4 % 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:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-006.0-01.0-P (H240278-20)

BTEX 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	01/23/2024	ND	2.10	105	2.00	1.69		
Toluene*	<0.050	0.050	01/23/2024	ND	2.12	106	2.00	1.60		
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.14	107	2.00	1.31		
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.36	106	6.00	1.24		
Total BTEX	<0.300	0.300	01/23/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 111 % 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	32.0	16.0	01/23/2024	ND	416	104	400	10.9		

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	01/23/2024	ND	204	102	200	0.362	
DRO >C10-C28*	<10.0	10.0	01/23/2024	ND	191	95.3	200	2.32	
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 88.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 77.3 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager

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Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report


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A handwritten signature in black ink, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager

		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: Longfellow Energy	
City: Hobbs				Attn: Rocky Pugh	
State: NM Zip: 88241				Address:	
Phone #: Hobbs				City:	
Fax #:				State:	
Project #: Saniana State Com 20 CD well				Zip:	
Project Name: dan@trinityoilfieldservices.com				Phone #:	
Project Location:				Fax #:	
Sampler Name: TT				SAMPLING	
FOR LAB USE ONLY				DATE	
Lab I.D.				TIME	
Sample I.D.				Chloride	
1 DH-001.0-01.0-S				TPH	
2 DH-002.0-01.0-S				BTEX	
3 DH-003.0-01.0-P					
4 DH-004.0-01.0-P					
5 DH-005.0-01.0-P					
6 DH-006.0-01.0-P					
7 DH-007.0-01.0-P					
8 DH-008.0-01.0-P					
9 DV-001.0-00.0-S					
10 DV-001.0-04.0-S					
PLEASE NOTE: Liability and Damages: Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analysis. All claims including those for negligence and any other cause whatsoever, shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claims are based upon any of the above stated remedies or otherwise.					
Relinquished By:				Verbal Result:	
Received By:				Yes No Add'l Phone #:	
Relinquished By:				All Results are emailed. Please provide Email address:	
Date: 7/23/24					
Time: 1442					
Received By:					
Date:					
Time:					
REMARKS:					
Delivered By: (Circle One)				Turnaround Time:	
Observed Temp. °C				Standard X	
Corrected Temp. °C				Bacteria (only) Sample Condition	
Cool Intact Yes No				Cool Intact Yes No	
Thermometer ID #140				Observed Temp. °C	
Correction Factor 0 °C				Corrected Temp. °C	

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

Page 24 of 24



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

January 25, 2024

DAN DUNKELBERG

TRINITY OILFIELD SERVICES & RENTALS, LLC

P. O. BOX 2587

HOBBS, NM 88241

RE: SANTANA STATE COM 20 CD WELL

Enclosed are the results of analyses for samples received by the laboratory on 01/22/24 14:42.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

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

Celey D. Keene

Lab Director/Quality Manager



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

Analytical Results For:

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

Received:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-007.0-00.0-P (H240277-01)

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	01/23/2024	ND	2.18	109	2.00	0.187	
Toluene*	<0.050	0.050	01/23/2024	ND	2.17	109	2.00	0.00469	
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.18	109	2.00	0.206	
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.39	106	6.00	0.371	
Total BTEX	<0.300	0.300	01/23/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.4 % 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	112	16.0	01/23/2024	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/23/2024	ND	211	106	200	1.55	
DRO >C10-C28*	81.4	10.0	01/23/2024	ND	216	108	200	2.08	
EXT DRO >C28-C36	20.4	10.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 120 % 48.2-134

Surrogate: 1-Chlorooctadecane 109 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received:	01/22/2024	Sampling Date:	01/18/2024
Reported:	01/25/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELL	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-008.0-00.0-P (H240277-02)

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	01/23/2024	ND	2.18	109	2.00	0.187	
Toluene*	<0.050	0.050	01/23/2024	ND	2.17	109	2.00	0.00469	
Ethylbenzene*	<0.050	0.050	01/23/2024	ND	2.18	109	2.00	0.206	
Total Xylenes*	<0.150	0.150	01/23/2024	ND	6.39	106	6.00	0.371	
Total BTEX	<0.300	0.300	01/23/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.0 % 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	48.0	16.0	01/23/2024	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/23/2024	ND	211	106	200	1.55	
DRO >C10-C28*	15.9	10.0	01/23/2024	ND	216	108	200	2.08	
EXT DRO >C28-C36	<10.0	10.0	01/23/2024	ND					

Surrogate: 1-Chlorooctane 126 % 48.2-134

Surrogate: 1-Chlorooctadecane 111 % 49.1-148

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Notes and Definitions

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

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

Celey D. Keene, Lab Director/Quality Manager

Page 5 of 5



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

May 06, 2024

DAN DUNKELBERG

TRINITY OILFIELD SERVICES & RENTALS, LLC

P. O. BOX 2587

HOBBS, NM 88241

RE: SANTANA STATE COM 20 CD WELLPAD

Enclosed are the results of analyses for samples received by the laboratory on 04/30/24 13:45.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

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

Celey D. Keene

Lab Director/Quality Manager



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:	04/30/2024	Sampling Date:	04/26/2024
Reported:	05/06/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELLPAD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-001.0-05.0-S (H242308-01)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	144	16.0	05/06/2024	ND	448	112	400	0.00	

Sample ID: DV-001.0-06.0-S (H242308-02)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	304	16.0	05/06/2024	ND	448	112	400	0.00	

Sample ID: DV-007.1-00.0-P (H242308-03)

BTX 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	05/02/2024	ND	1.96	97.9	2.00	0.816	
Toluene*	<0.050	0.050	05/02/2024	ND	1.94	97.0	2.00	2.00	
Ethylbenzene*	<0.050	0.050	05/02/2024	ND	2.05	102	2.00	3.15	
Total Xylenes*	<0.150	0.150	05/02/2024	ND	6.18	103	6.00	2.59	
Total BTX	<0.300	0.300	05/02/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 120 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	05/06/2024	ND	448	112	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier

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Celey D. Keene, Lab Director/Quality Manager



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:	04/30/2024	Sampling Date:	04/28/2024
Reported:	05/06/2024	Sampling Type:	Soil
Project Name:	SANTANA STATE COM 20 CD WELLPAD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	LONGFELLOW ENERGY		

Sample ID: DV-007.1-00.0-P (H242308-03)

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/02/2024	ND	202	101	200	0.973	
DRO >C10-C28*	<10.0	10.0	05/02/2024	ND	200	99.8	200	3.36	
EXT DRO >C28-C36	<10.0	10.0	05/02/2024	ND					
Surrogate: 1-Chlorooctane	92.5 %	48.2-134							
Surrogate: 1-Chlorooctadecane	95.7 %	49.1-148							

Sample ID: DV-007.0-00.3-P (H242308-04)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	05/06/2024	ND	448	112	400	0.00	
TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/02/2024	ND	202	101	200	0.973	
DRO >C10-C28*	<10.0	10.0	05/02/2024	ND	200	99.8	200	3.36	
EXT DRO >C28-C36	<10.0	10.0	05/02/2024	ND					
Surrogate: 1-Chlorooctane	99.1 %	48.2-134							
Surrogate: 1-Chlorooctadecane	102 %	49.1-148							

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Celey D. Keene, Lab Director/Quality Manager

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

Notes and Definitions

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

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A handwritten signature in black ink, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager

Page 5 of 5

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

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

QUESTIONS

Action 362392

QUESTIONS

Operator: LONGFELLOW ENERGY, LP 8115 Preston Road Dallas, TX 75225	OGRID:
	372210
	Action Number:
	362392
Action Type:	
[C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)	

QUESTIONS

Prerequisites	
Incident ID (n#)	nAPP2401651809
Incident Name	NAPP2401651809 SANTANA STATE COM 20CD WELLPAD @ 30-015-49527
Incident Type	Oil Release
Incident Status	Remediation Plan Received
Incident Well	[30-015-49527] SANTANA STATE COM 20 CD #003H

Location of Release Source	
Please answer all the questions in this group.	
Site Name	Santana State Com 20CD Wellpad
Date Release Discovered	01/15/2024
Surface Owner	State

Incident Details	
Please answer all the questions in this group.	
Incident Type	Oil 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 Separator Crude Oil Released: 50 BBL Recovered: 45 BBL Lost: 5 BBL.
Produced Water Released (bbls) Details	Not answered.
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)	Not answered.

District I

1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II

811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III

1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

QUESTIONS, Page 2

Action 362392

QUESTIONS (continued)

Operator: LONGFELLOW ENERGY, LP 8115 Preston Road Dallas, TX 75225	OGRID:	372210
	Action Number:	362392
	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: David Cain Title: Engineering Technologist Email: david.cain@longfellowenergy.com Date: 07/11/2024
--	---

District I

1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II

811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

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1000 Rio Brazos Rd., Aztec, NM 87410
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1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

QUESTIONS, Page 3

Action 362392

QUESTIONS (continued)

Operator: LONGFELLOW ENERGY, LP 8115 Preston Road Dallas, TX 75225	OGRID:	372210
	Action Number:	362392
	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 26 and 50 (ft.)
What method was used to determine the depth to ground water	Direct Measurement
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 ½ and 1 (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 1 and 5 (mi.)
Any other fresh water well or spring	Between 1000 (ft.) and ½ (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 1000 (ft.) and ½ (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Greater than 5 (mi.)
Categorize the risk of this well / site being in a karst geology	Medium
A 100-year floodplain	Between 1 and 5 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	Yes

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)	20000
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	26830
GRO+DRO (EPA SW-846 Method 8015M)	23270
BTEX (EPA SW-846 Method 8021B or 8260B)	449
Benzene (EPA SW-846 Method 8021B or 8260B)	3.5

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	08/26/2024
On what date will (or did) the final sampling or liner inspection occur	08/26/2024
On what date will (or was) the remediation complete(d)	11/25/2024
What is the estimated surface area (in square feet) that will be reclaimed	66790
What is the estimated volume (in cubic yards) that will be reclaimed	8238
What is the estimated surface area (in square feet) that will be remediated	66790
What is the estimated volume (in cubic yards) that will be remediated	8238

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.

District I

1625 N. French Dr., Hobbs, NM 88240
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District II

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District III

1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
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State of New Mexico
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Oil Conservation Division
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Santa Fe, NM 87505

QUESTIONS, Page 4

Action 362392

QUESTIONS (continued)

Operator: LONGFELLOW ENERGY, LP 8115 Preston Road Dallas, TX 75225	OGRID:	372210
	Action Number:	362392
	Action Type:	[C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Remediation Plan (continued)	
<i>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.</i>	
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:	
<i>(Select all answers below that apply.)</i>	
(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	R360 ARTESIA LLC LANDFARM [FEEM0112340644]
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.
<i>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>	
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: David Cain Title: Engineering Technologist Email: david.cain@longfellowenergy.com Date: 07/11/2024
<i>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.</i>	

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QUESTIONS, Page 5

Action 362392

QUESTIONS (continued)

Operator: LONGFELLOW ENERGY, LP 8115 Preston Road Dallas, TX 75225	OGRID: 372210
	Action Number: 362392
	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

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QUESTIONS, Page 6

Action 362392

QUESTIONS (continued)

Operator: LONGFELLOW ENERGY, LP 8115 Preston Road Dallas, TX 75225	OGRID: 372210
	Action Number: 362392
	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 362392

CONDITIONS

Operator: LONGFELLOW ENERGY, LP 8115 Preston Road Dallas, TX 75225	OGRID:
	372210
	Action Number:
	362392
Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)	

CONDITIONS

Created By	Condition	Condition Date
rhamlet	The Remediation Plan is Conditionally Approved. Due to the sensitive nature of the release area, the variance for 400 ft2 confirmation sample size is denied. The site will need to be remediated to the strictest closure criteria standards. Please make sure all sample locations are fully delineated and floor samples meet OCD Table 1 standards for <50' depth to groundwater. Samples must be analyzed for all constituents listed in Table I of 19.15.29.12 NMAC. Sidewall/Edge samples should be delineated/excavated to 600 mg/kg for chlorides and 100 mg/kg for TPH to define the edge of the release. All sidewall samples should be taken from the sidewall of the excavation. The entire release area, including the overspray area, should have confirmation samples collected every 200 ft2. All off-pad areas must meet reclamation standards set forth in the OCD Spill Rule.	7/30/2024