June 27, 2025

EMNRD – Oil Conservation Division
506 W. Texas
Artesia, New Mexico 88210

SUBJECT: Liner Inspection and Closure Report for Shetland 11 CTB 1– May 27, 2025 Site Visit

Incident ID: nAPP2511829379
Facility ID (Name): fAPP2123649550 (SHETLAND 11 CTB 1)
Facility Location: Unit D of Section 11, Township 26 South, Range 31 East, New Mexico
Facility GPS Coordinates: 32.052915, -103.749751
Eddy County, New Mexico

Introduction

KLJ Engineering (KLJ) has prepared this report on behalf of Devon Energy Production Company, LP (Devon) to detail the recent liner inspection conducted at the Shetland 11 CTB 1 (Site) on May 27, 2025, following the release of produced water that occurred on April 24, 2025.

Site Information and Background

The Site is located approximately 25.1 miles southeast of Loving, New Mexico, on Bureau of Land Management (BLM) property. The Site lies within Unit D, Section 11, Township 26 South, Range 31 East, in Eddy County. KLJ conducted a liner inspection and associated site characterization in accordance with 19.15.29.11 and 19.15.29.12 of the New Mexico Administrative Code (NMAC) to assess the integrity of the containment system and evaluate any potential environmental impacts resulting from a release.

Release Description and Immediate Response

On April 24, 2025, a Devon lease operator discovered a nipple on the water transfer pump failed inside the secondary containment, resulting in the release of approximately 18 barrels (bbls) of produced water. Initial response actions were conducted by the operator and included source elimination, photographic documentation of the affected area, volume estimation, and an attempt to recover released fluids. Photographic documentation of the secondary containment, liner, tanks, and equipment where the release occurred is included in the Liner Inspection Field Notes & Photolog Report (**Appendix A**).

Devon submitted the initial Notice of Release (NOR) to the New Mexico Energy, Minerals, and Natural Resources Department – Oil Conservation Division (NMOCD) on April 28, 2025, through the Operator's Electronic Permitting and Payment Portal. The initial Form C-141 was subsequently submitted on April 30, 2025.

Site Characterization Summary

The Site lies within Qep – Eolian and piedmont deposits of upland plains and piedmont areas, (Holocene to middle Pleistocene) Interlayed eolian sands and piedmont-slope deposits (New Mexico Bureau of Geology and Mineral Resources). Terrain for the Site and immediate surrounding area includes plains and alluvial fans at elevations ranging from 2,842 feet to 4,000 feet above mean sea level (amsl). Parent

material consists of mixed alluviam for sandstone, shale and limestone, with a petrocalcic restrictive feature ranging from 7 to 20 inches in depth. The site is not considered prime farmland and ranges between 8 inches to 24 inches of average annual precipitation. Soil within the Site tends to be well-drained, with very high runoff potential and very low water-holding capacity.

The USDA – Web Soil Survey (WSS) identifies the predominant soil type at the Site as Simona-Bippus complex that is deep to very deep, with surface textures ranging from loamy fine sand, very fine sandy loam, fine sandy loam, sandy loam, silty loam, loam, clay loam, or silty clay loam. The underlying layers include loam, silt loam, silty clay loam, sandy loam, fine sandy loam, or loamy fine sand. These soils may have thin stratas of sand, silt, very fine sand, or very fine sandy loam.

Vegetation reflects a grassland community dominated by giant sacaton, with other common grasses including alkali sacaton, tobosa, vine mesquite, plains bristlegrass, and twoflower trichloris. Shrubs such as fourwing saltbush and mesquite are present but are historically sparse. Giant sacaton contributes significant aboveground biomass, offering valuable forage while enhancing site stability by reducing runoff, promoting infiltration, and minimizing erosion.

No surface water features were identified within 300 feet of the Site. The nearest significant watercourse is 1.34 miles north; the closest playa lake is 4.24 miles southeast, and the nearest wetland is 1.15 miles southeast (USFWS NWI, 2025). These distances comply with the requirements of 19.15.29.12(C)(4) NMAC.

Per the New Mexico Office of the State Engineer (NMOSE) Points of Diversion (POD) Map, the nearest POD is C-04644-POD1, located approximately 0.89 miles to the northeast of the Site. The POD is identified as a temporary borehole used to determine depth to groundwater. The well record indicates that the temporary borehole was drilled to a depth of 80 ft bgs, and no groundwater was encountered. The nearest freshwater pit tank that accumulates rainwater and is used for stock watering purposes, POD LWD-01187-POD1, is located 0.76 miles west, northwest of the Site.

Karst potential for the Site is identified as medium, with the nearest area of no karst potential located 1.97 miles to the north. The Site is in a FEMA flood hazard area identified as FEMA Zone X (undetermined hazard); the nearest identified FEMA flood hazard area, classified as Zone A, is 0.08 miles to the northwest.

Additional information detailing the results of the site characterization findings can be found in **Appendix B**.

Closure Criteria

Table 1 summarizes key site and incident information relevant to closure evaluation, as required under 19.15.29.11-12 NMAC. This includes details such as release source, location, containment status, and site-specific features that may influence closure requirements. While contamination thresholds, sampling depths, and applicable concentration limits are not listed in this table, the information provided supports regulatory assessment of whether the release meets criteria for closure. In accordance with 19.15.29.11(A)(5)(a) NMAC, if the release occurred within lined, impermeable secondary containment with no evidence of escape, it may qualify for reduced remediation requirements or a No Further Action (NFA) determination.

Table 1: Release Information and Closure Criteria Limits			
Depth to Ground Water Determination: < 50 feet bgs			
Site Name	Shetland 11 CTB 1	Company	Devon Energy Production Company, LP
Facility ID/API Number	fAPP2123649550	PLSS/GPS	D-11-26S-31E/32.052915, -103.749751
Lease ID	NMNM141619 NMNM105841494	Land Status	Bureau of Land Management
Incident ID	nAPP2511829379	Date Of Release	4/24/2025
Source of Release	Nipple on water transfer pump failure	Volume Released/Recovered	18 bbls/18 bbls pw
Specific Features	Medium Karst Potential, DTGW pod not within 0.5-mile radius, no surface water within proximity, and FEMA Zone X		

Liner Inspection Activities

KLJ Environmental Specialists conducted a site visit on May 27, 2025. Notification was submitted to Devon via email on May 22, 2025, and official notification was submitted via the Operator's Electronic Permitting and Payment Portal on May 22, 2025, in accordance with Subsection D of 19.15.29.11(A)(5)(a)(iii) NMAC prior to the inspection. A copy of the notification is provided in **Appendix C**.

KLJ personnel conducted a visual inspection of the secondary containment to verify liner integrity. The visual inspection included observations for any perforations in the liner that could lead to a breach of the secondary containment. The inspection concluded there were no visible indications of rips, cuts, tears, or weathering in any condition that showed signs of the liner needing repairs or replacements. Photographic documentation of the liner inspection is included in the Liner Inspection Field Notes & Photolog Report (**Appendix A**).

Conclusion

Based on the findings of the liner inspection, KLJ concludes that liner integrity is adequate to contain fluids and there are no further actions required in relation to incident nAPP2511829379.

Based on the site assessment and activities conducted, Devon respectfully requests closure of incident nAPP2511829379 with a No Further Action (NFA) determination.

Submitted and prepared by:
KLJ Engineering

Written By
Name: Monica Peppin
Title: Environmental Specialist II
Signature: _____

Reviewed By
Name: Will Harmon, P.G.
Title: Environmental Project Manager
Signature: _____

Included Appendices

Appendix A – LINER INSPECTION FIELD NOTES & PHOTOLOG REPORT

Appendix B – CLOSURE CRITERIA RESEARCH

Appendix C – CORRESPONDENCE

APPENDIX A

LINER INSPECTION FIELD NOTES & PHOTOLOG REPORT

Environmental Liner Inspection Field Notes & Photolog Report

Site & Incident Information

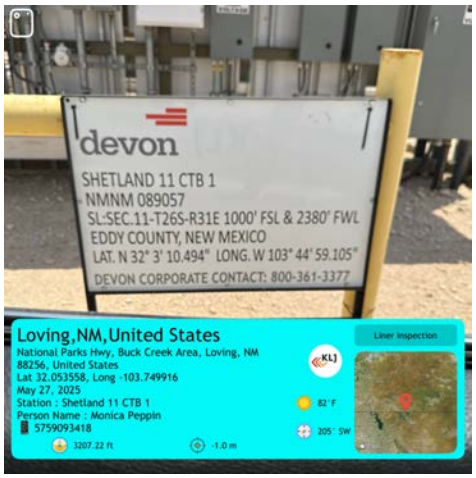
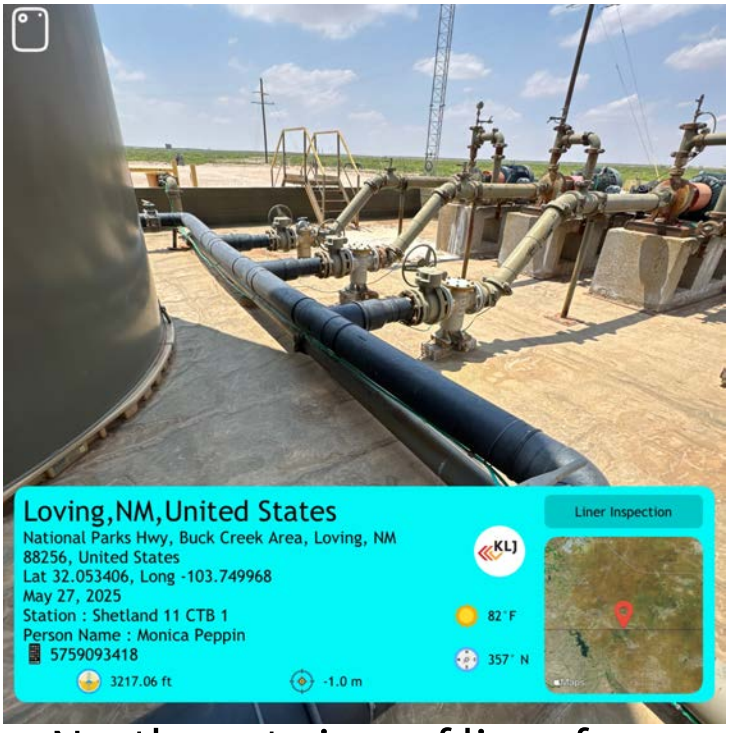
Client:	Devon Energy	**Date:**	5.27.2025
Site Name:	Shetland 11 CTB 1	**Arrival Time:**	9:45 AM
Incident ID:	nAPP2511829379		
Client Contact:	Jim Raley		
Land Status:	BLM		
County:	Eddy		
Lease ID:	NMNM089057		
Facility ID/API #:	fAPP2123649550		
32.052915, -103.749751			

Photo of Lease Sign

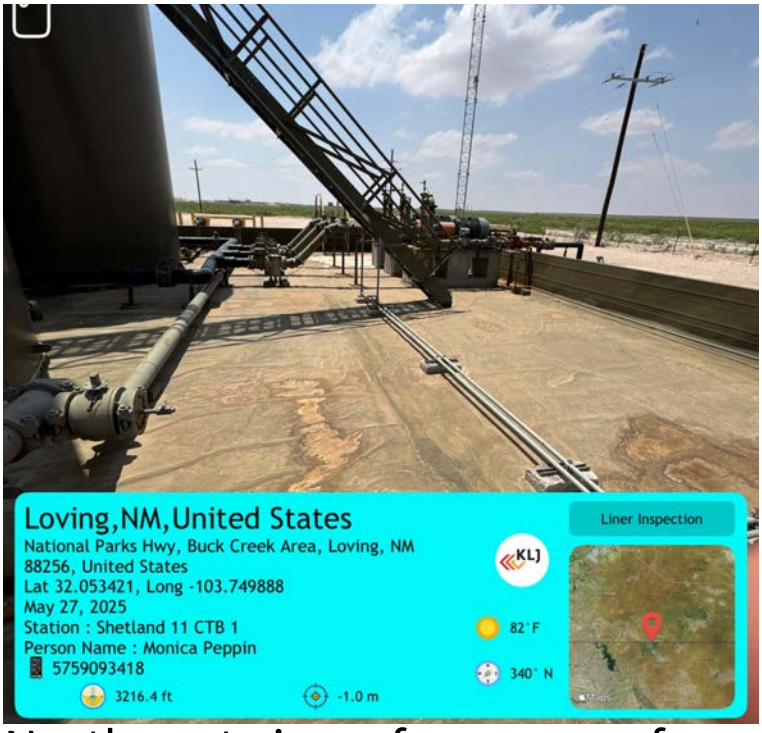
Observations and Field Notes

- 9:45 AM - Arrive on site. Complete JHA and check surroundings for hazards.
- 9:46 AM - Begin liner inspection by walking around containment area and checking for any perforations, rips, tears, punctures, or degrading of liner.
- 9:55 AM - Liner inspected around all equipment, tanks, containment walls, and from outside wall area of containment.
- 9:57 AM - Complete walk around and begin taking photos of containment area. Photos taken at all different angles and positions around the containment to verify liner integrity.
- 10:06 AM - Liner was cleaned prior to inspection by crew with pressure washer.

Photolog

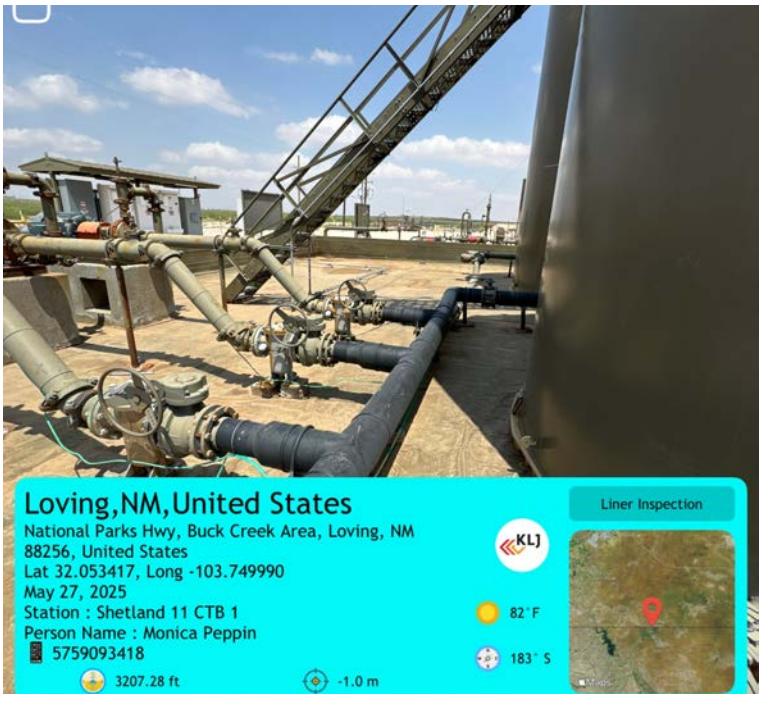


Northwest view of liner from mid-area of containment.



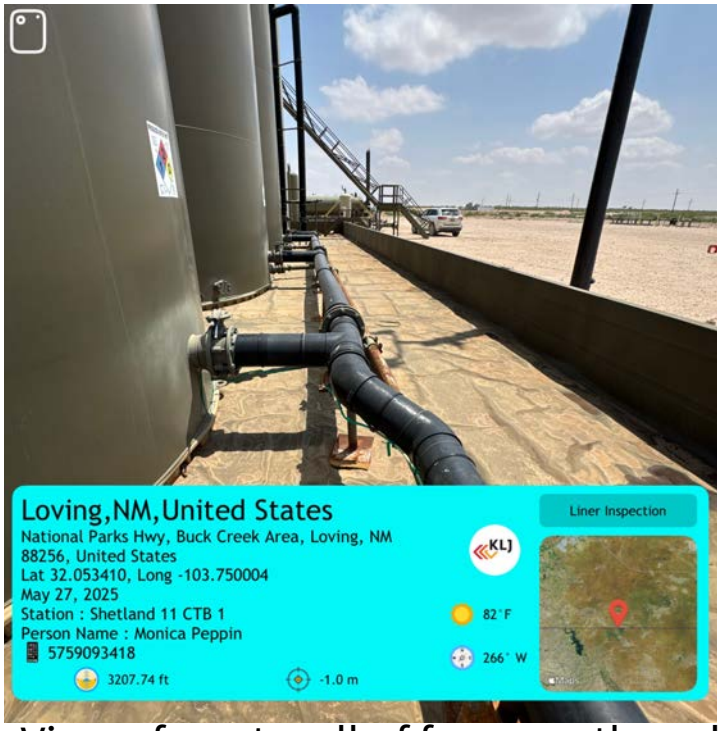
Northwest view of open area from east wall.

South view of east wall of containment.



Facing east viewing liner of north end of containment.

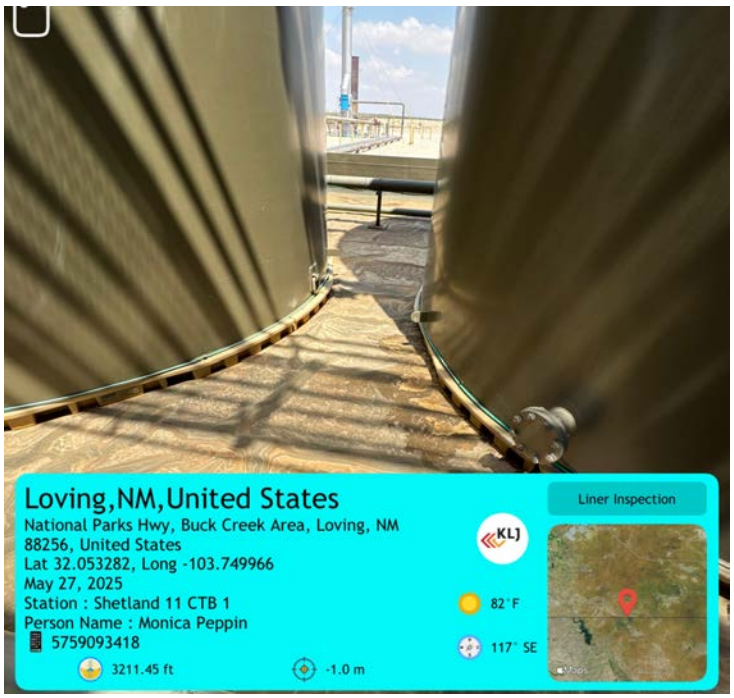
Photolog



View of west wall of from north end of containment.

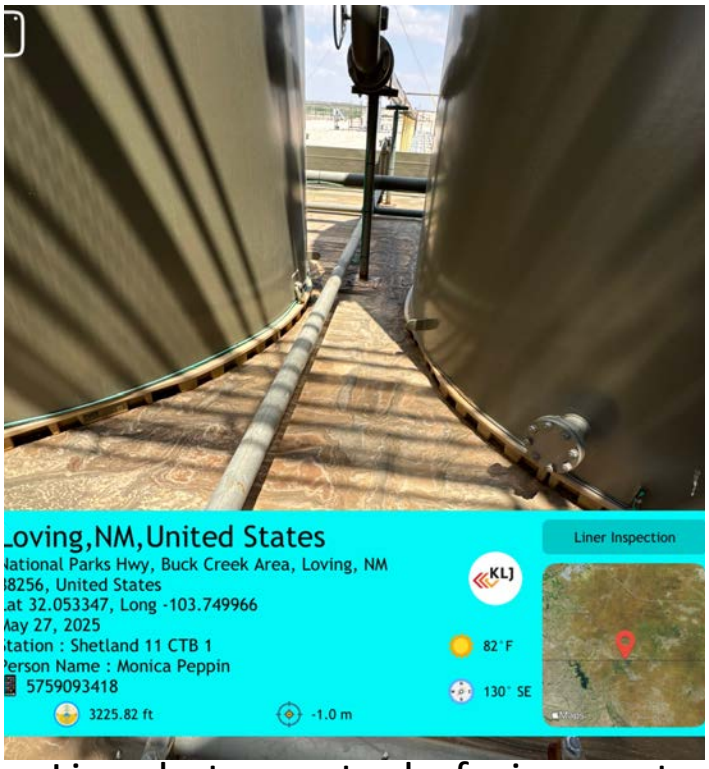
Liner between tanks on south end of containment.

View of north end of containment facing northeast.

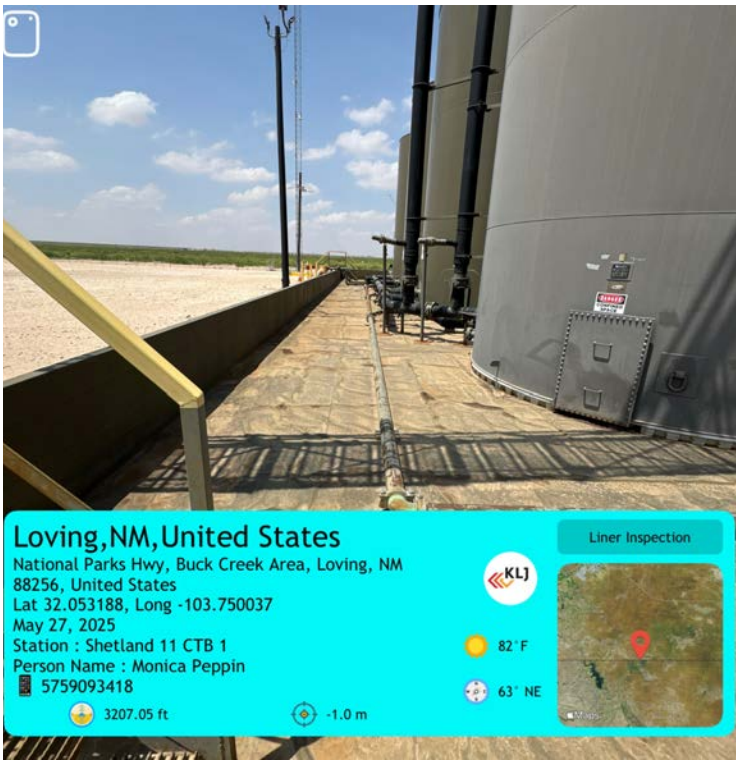


Facing northeast viewing liner between middle tanks.

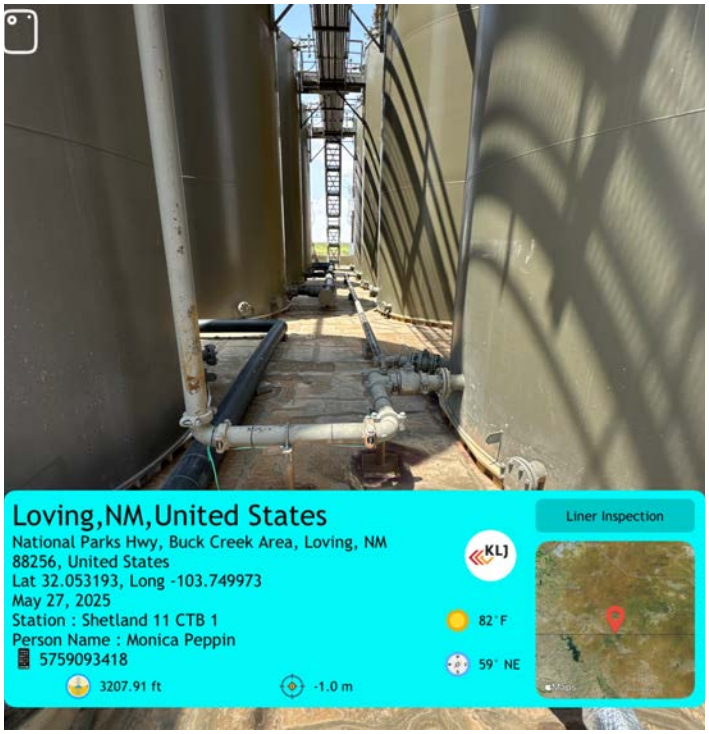
Photolog



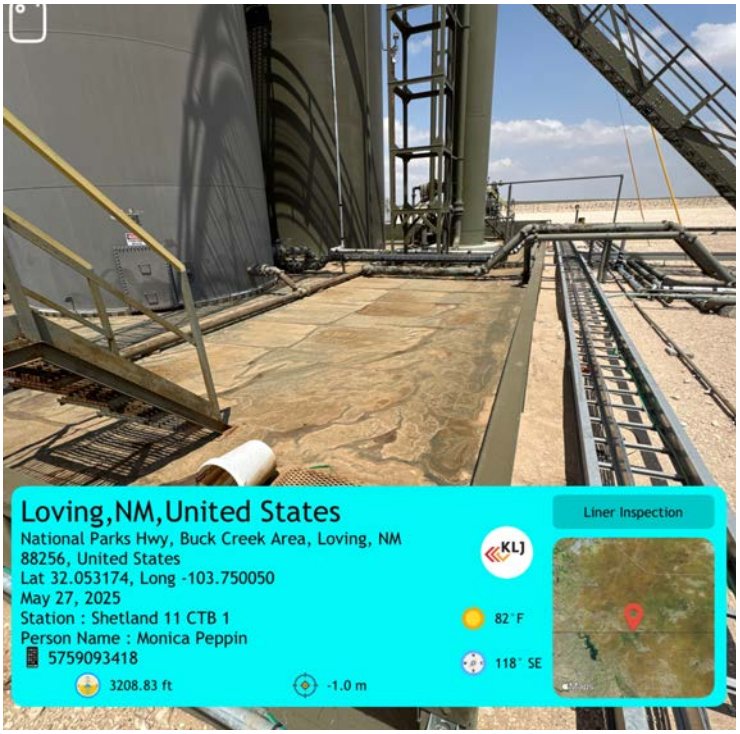
Liner between tanks facing west from east side of containment.



Liner on west wall of containment facing north.



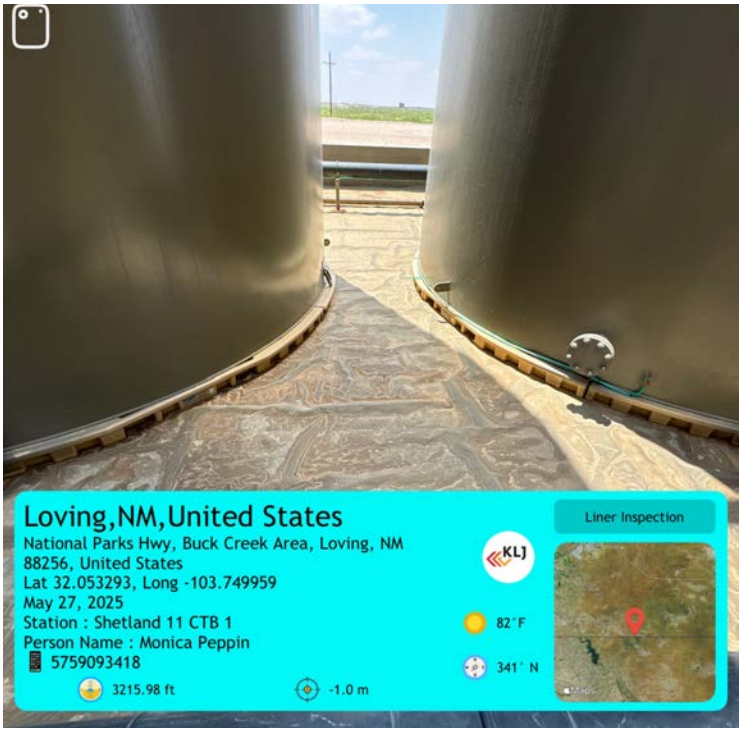
Liner between tanks from south end facing north.



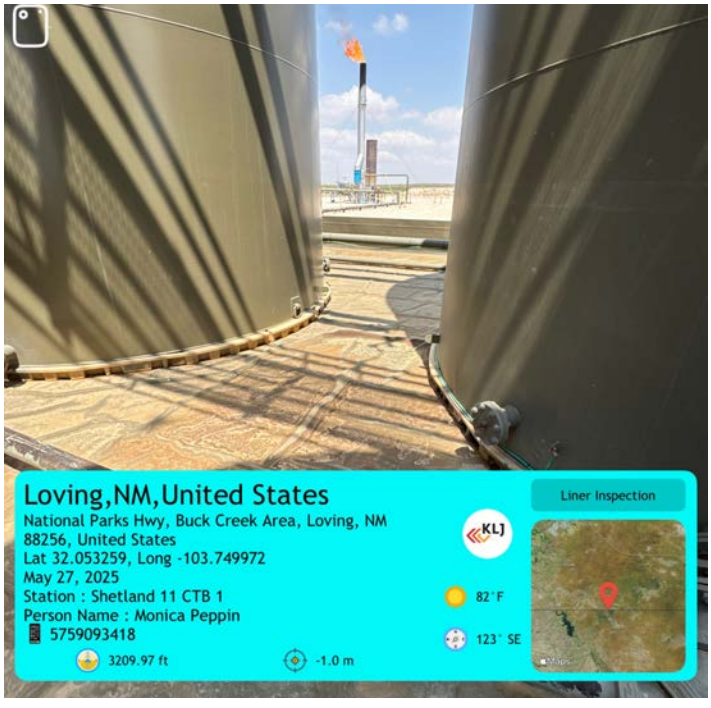
Liner area from southwest corner of containment facing east.

Photolog

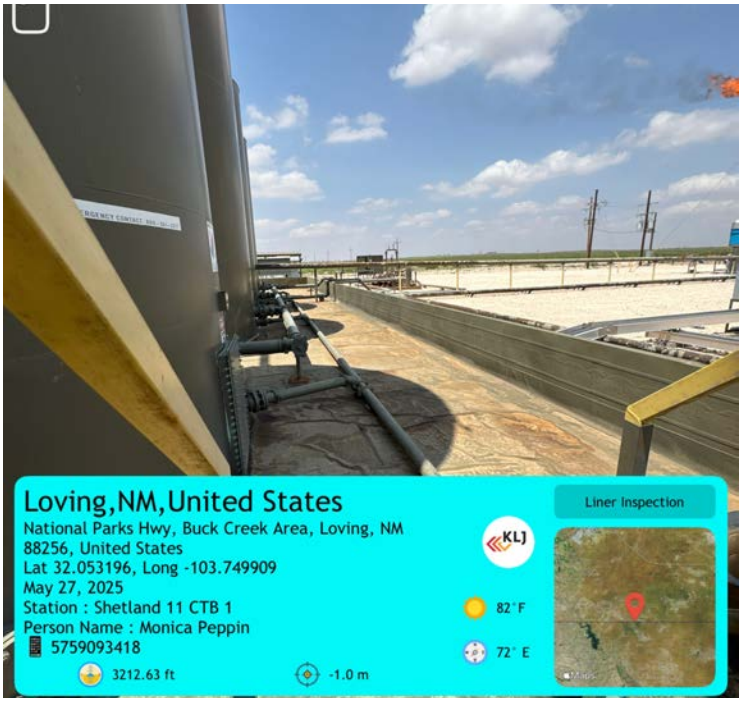
View of liner facing west from east side on south area of containment.



View of liner between tanks on north end of containment.



View of liner between tanks facing northeast from west side.



East wall of containment facing north.

Additional Notes & Recommendations

- Upload documents to folder
- Compile data and start drafting closure report
- Submit report for approval
- Liner integrity is confirmed. No signs of degrading or wear and tear of liner, photos taken as visual observation for reporting.
- Liner is capable of containing fluids from going onto the ground outside of the secondary containment.

Acknowledgement & Signature

Technician:	Monica Peppin	**Date:**	May 8, 2025
Signature:		**Departure Time:**	10:30 AM

APPENDIX B

CLOSURE CRITERIA RESEARCH

Shetland 11 CTB 1

Incident ID: nAPP2511829379
Approx. Area: 6,882 sq ft

Shetland 11 CTB 1 Nearest DTGW Pod

5/11/2025, 3:23:16 PM

Override 1

GIS WATERS PODs

Pending

OSE Pod C-04644-POD1

Distance

0.89 miles

Pod Type

DTGW Temp Borehole

Depth

80 ft bgs

1:9,153

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Maxar

Monica Peppin

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

PLUGGING RECORD

NOTE: **A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC**

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: BH-01-22 C-04644

Well owner: Plains All American Pineline, L.P. Phone No.: 713-646-4100

Mailing address: 333 Clay Street, Suite 1600

City: Houston State: Texas Zip code: 77002

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Talon/LPE

2) New Mexico Well Driller License No.: NM-1800 Expiration Date: 06-2024

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Jarod Michalsky

4) Date well plugging began: 09-07-2022 Date well plugging concluded: 09-07-2022

5) GPS Well Location: Latitude: 32 deg, 3 min, 40.9 sec
Longitude: 103 deg, 44 min, 13.9 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 80 ft below ground level (bgl), by the following manner: Grout from botto mto to p

7) Static water level measured at initiation of plugging: N/A ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 06-13-2022

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

N/A

OSE DII DEC 8 2022 PM3:45

2022 DEC -1 PM 3:36

Version: September 8, 2009
Page 1 of 2

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
	Grout from 80' bgs to 0' bgs	118 gallons		Tremie	

OSE DII DEC 8 2022 PM3:45

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Jarod Mark Michalsky, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Jarod Mark Michalsky — 11/23/2022

Signature of Well Driller — Date

Version: September 8, 2009
Page 2 of 2

U.S. Fish and Wildlife Service
National Wetlands Inventory

Shetland 11 CTB 1 Watercourse
Distance: 1.34 miles

May 11, 2025

Wetlands

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

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

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

U.S. Fish and Wildlife Service
National Wetlands Inventory

Shetland 11 CTB 1
Nearest Playa Lake
Distance: 4.24 miles

May 11, 2025

Wetlands

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

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

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Shetland 11 CTB 1

Distance to Nearest Residence: 1.85 miles

Legend

- Distance from Shetland 11 CTB 1
- Residence

Residence

1.85 miles

Zoom in of distance to Residence

Shetland 11 CTB 1

Google Earth

Image © 2025 Airbus

N

3000 ft

Shetland 11 CTB 1 Domestic Well Proximity

5/11/2025, 3:12:18 PM

Override 1 GIS WATERS PODs

GIS WATERS PODs

Pod LWD-01187-Pod1

Distance

0.76 miles

Pod Type

Livestock watering

1:6,865

0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Maxar

Monica Peppin

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

Renbd: LWD-1187
631011

STATE ENGINEER OFFICE

DECLARATION OF OWNERSHIP OF LIVESTOCK WATER DAM OR TANK
(Note: Read Instructions on Back of Form)

Date of Receipt March 16, 1992 Declaration No. LWD-C-6

1. Name of Declarant BUCK & LARUE JACKSON & BUCK JACKSON TRUST Post Office BOX 671 PECOS TEXAS

County of EDDY State of NEW MEXICO

2. Dam or tank is located in the SE ¼ NW ¼ SE ¼ of Section 10, Township 26S, Range 31E, on _____, a tributary of PECOS RIVER, and is on FEDERAL (State, Federal, Declarants) property.
Water is stored for STOCK WATER, POTENTIAL IRRAGATION purposes. (stock water, if other uses state)
Topography of drainage basin, UNDULATING (steep, rough, rolling, undulating, flat)
Approximate area of drainage basin above dam is square miles 1
Vegetative cover of drainage basin, GRASS, SHRUBS (forest, woodland, shrubs, grass, bare)
Is watercourse normally dry, YES (yes or no)

3. Approximate physical properties of storage dam: height of dam above streambed, or natural ground 10 feet; height of spillway flowline above streambed, or natural ground N/A feet; length of top of dam, 420 feet; width of crest, 30 feet; slope of upstream face, 4 horizontal to 1.0 vertical; slope of downward face, 2 horizontal to 1.0 vertical; nature of riprap or other protection placed over water face of dam, N/A

Give type, size and maximum discharge of outlet pipe, if any, and type of gate used (if none say none). NONE

Maximum water surface area 2 acres; storage capacity 7.8 acre feet; dam contains approximately 3002 cubic yards of earth.

4. Approximate physical properties of spillway; bottom width N/A feet; maximum depth of flow N/A feet; discharge capacity N/A cubic feet per second; spillway is located in GRASSED EARTH (rock, shale, clay, grassed earth, bare earth, etc)

5. Dam or tank was constructed under the supervision of DECLARANT (name agency, declarant or engineer) and was completed in 1964 (give date)
Name of contractor that built dam UNKNOWN

6. Additional information THIS TANK WAS CONSTRUCTED TO FACILITATE STORAGE IN A NATURAL LAKE BED THAT PROVIDED WATER TO DOMESTIC LIVESTOCK PRIOR TO 1907

UNDER NEW MEXICO LAW A DECLARATION IS ONLY A STATEMENT OF DECLARANT'S ... ACCEPTANCE FOR FILING DOES NOT CONSTITUTE APPROVAL OR RECOGNITION OF THE ...

DECLARANT'S CERTIFICATE

I hereby certify that I have read the foregoing statements and know the contents thereof and representations thereon, and that the same are true to the best of my knowledge and belief.

3-9-92
Date

La Lue Hoskins
Declarant

Subscribed and sworn to before me this 9th day of MARCH, 1992

4-12-93
My Commission Expires

SUE RICHMOND
Notary Public, State of Texas
My Commission Expires 4/12/93

Sue Richmond
Notary Public

INSTRUCTIONS

This Declaration shall be executed in triplicate and shall be accompanied by a $1.00 filing fee and submitted to the nearest district office of State Engineer. (Offices are located in Santa Fe, Albuquerque, Roswell and Deming, New Mexico.)

All blanks should be completed as accurately as possible and if figures are estimated add the word "estimated" next to the value. Should any item requested be unknown so state on the form.

If tank or dam is filled by a diversion ditch or well, explain under Item 6 giving the known information on the ditch or well.

Should the dam or tank being declared have been constructed to replace an older structure so note under Item 6 giving the known information on original. (Information needed is location with respect to present structure, its capacity and date of completion.)

If the space on form is not adequate, attach supplemental sheets to form.

If possible, Declaration should also be accompanied by affidavits of persons who have first hand knowledge of the history of the works or by other evidence sufficient to substantiate the claim.

STATE OF NEW MEXICO

STATE ENGINEER OFFICE

ELUID MARTINEZ
STATE ENGINEER

ROSWELL

DISTRICT II
1900 West Second St.
Roswell, New Mexico 88201
(505) 622-6521

April 14, 1992

FILE: LWD-C-3 thru LWD-C-11
LWD-C-13 thru LWD-C-16
C-2248 thru C-2250

Buck and Larue Jackson
Box 671
Pecos, TX 79772

Dear Mr. and Mrs. Jackson:

Enclosed are copies of "Investigative Reports" prepared for use by the State Engineer Office in conjunction with the Declarations of Ownership of Livestock Water Dam or Tank and Declarations of Owner of Underground Water Right which you recently filed.

If you have any questions about these reports or feel that you have additional information available which might clarify certain points, please contact either Craig Hipple or me.

Sincerely,

Richard C. Cibak
Pecos River Basin Supervisor

RCC/tg
Enclosures
cc: Santa Fe
Hydro Section

INVESTIGATIVE REPORT

DATE: April 13, 1992

TO: LWD-C-6

FROM: Mike Stapleton, Water Resource Technician II

SUBJECT: Livestock Watering Dam - LWD-C-6

WELL:	SUBDIVISION	SECTION	TOWNSHIP	RANGE	ACRES
	SE¼NW¼SE¼	10	26S	31E	

LAND:

USE: Livestock Watering

STATEMENTS: Field investigation conducted April 6, 1992, revealed that LWD-C-6 is at the above declared location. This LWD is not shown on the Phantom Banks Quadrangle Map. It is holding water and in use for livstock watering.

SUMMARY: Taking into account the field investigation of April 6, 1992, it appears that this LWD is little more than an excavated pit tank and has very little potential for irrigation use considering that it is filled by rainfall.

Mike Stapleton
Water Resource Technician II

MS/tg
cc: Santa Fe
Hydro Section

STATE OF NEW MEXICO

STATE ENGINEER OFFICE

ELUID MARTINEZ
STATE ENGINEER

ROSWELL

DISTRICT II
1900 West Second St.
Roswell, New Mexico 88201
(505) 622-6521

April 3, 1992

FILE: C-2248 thru C-2250;
LWD-C-3 thru LWD-C-16

Buck and Larue Jackson
Box 671
Pecos, Texas 79772

Dear Mr. and Mrs. Jackson:

Enclosed are your copies of Declaration of Owner of Underground Water Right, and Declaration of Ownership of Livestock Water Dam or Tank, as numbered above, which have been filed for record in the office of the State Engineer.

Please refer to these numbers in all future correspondence concerning these declarations.

The filing of these declarations does not indicate affirmation or rejection of the statements contained therein.

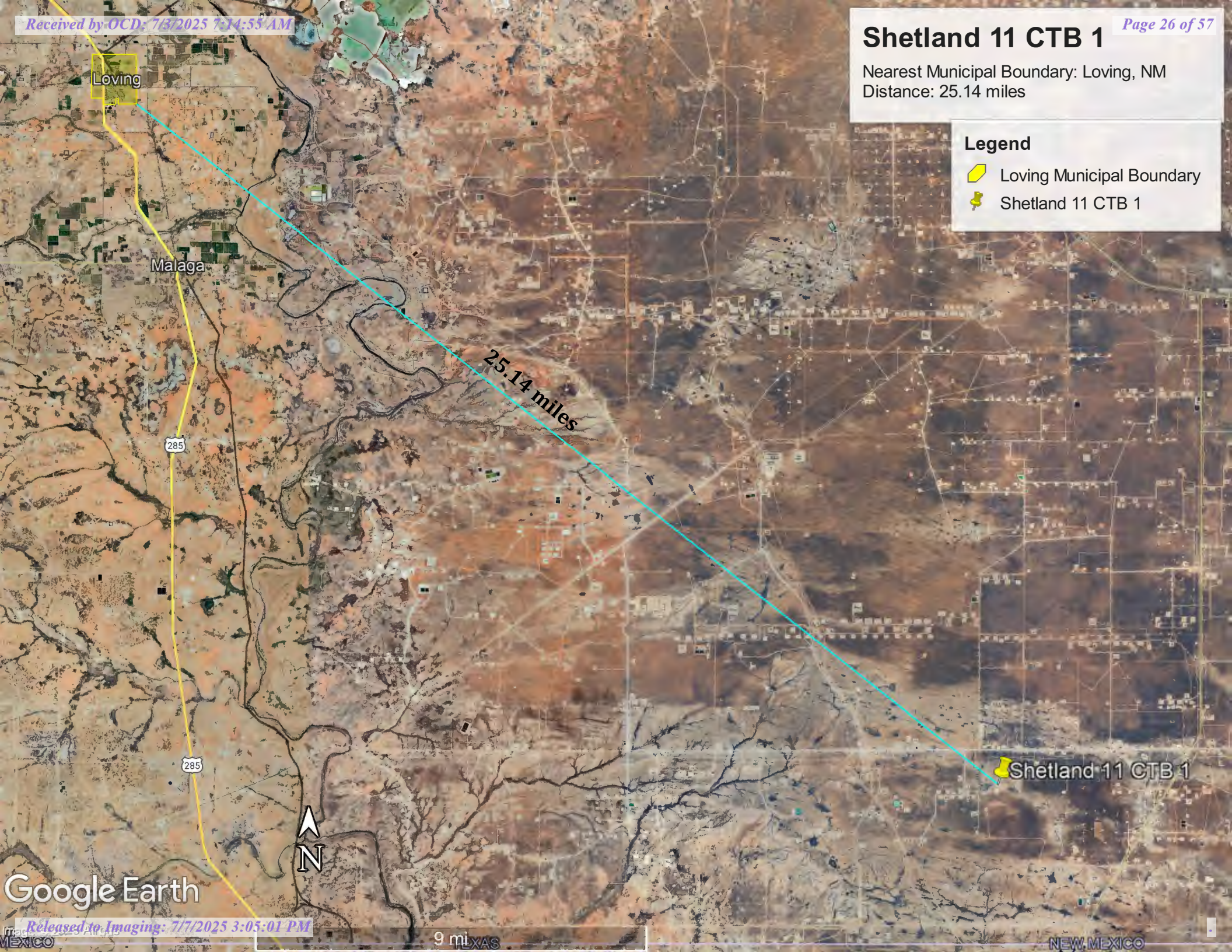
Sincerely,

Richard C. Cibak
Pecos River Basin Supervisor

RCC/tg
Enclosure
cc: Santa Fe
Hydro Section

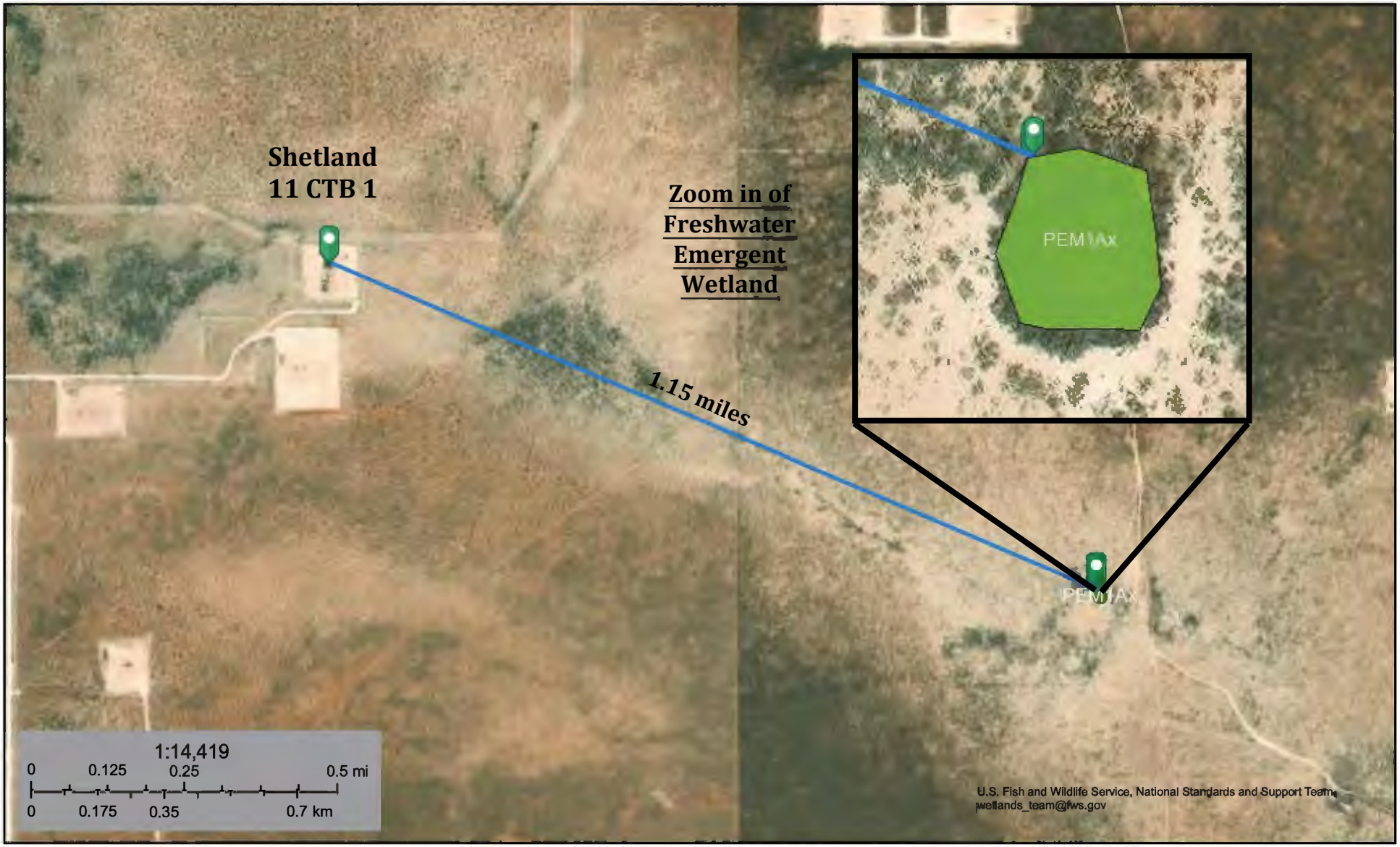
Shetland 11 CTB 1

Nearest Municipal Boundary: Loving, NM
Distance: 25.14 miles



U.S. Fish and Wildlife Service
National Wetlands Inventory

Shetland 11 CTB 1 Nearest Wetlands Feature Distance: 1.15 miles



May 11, 2025

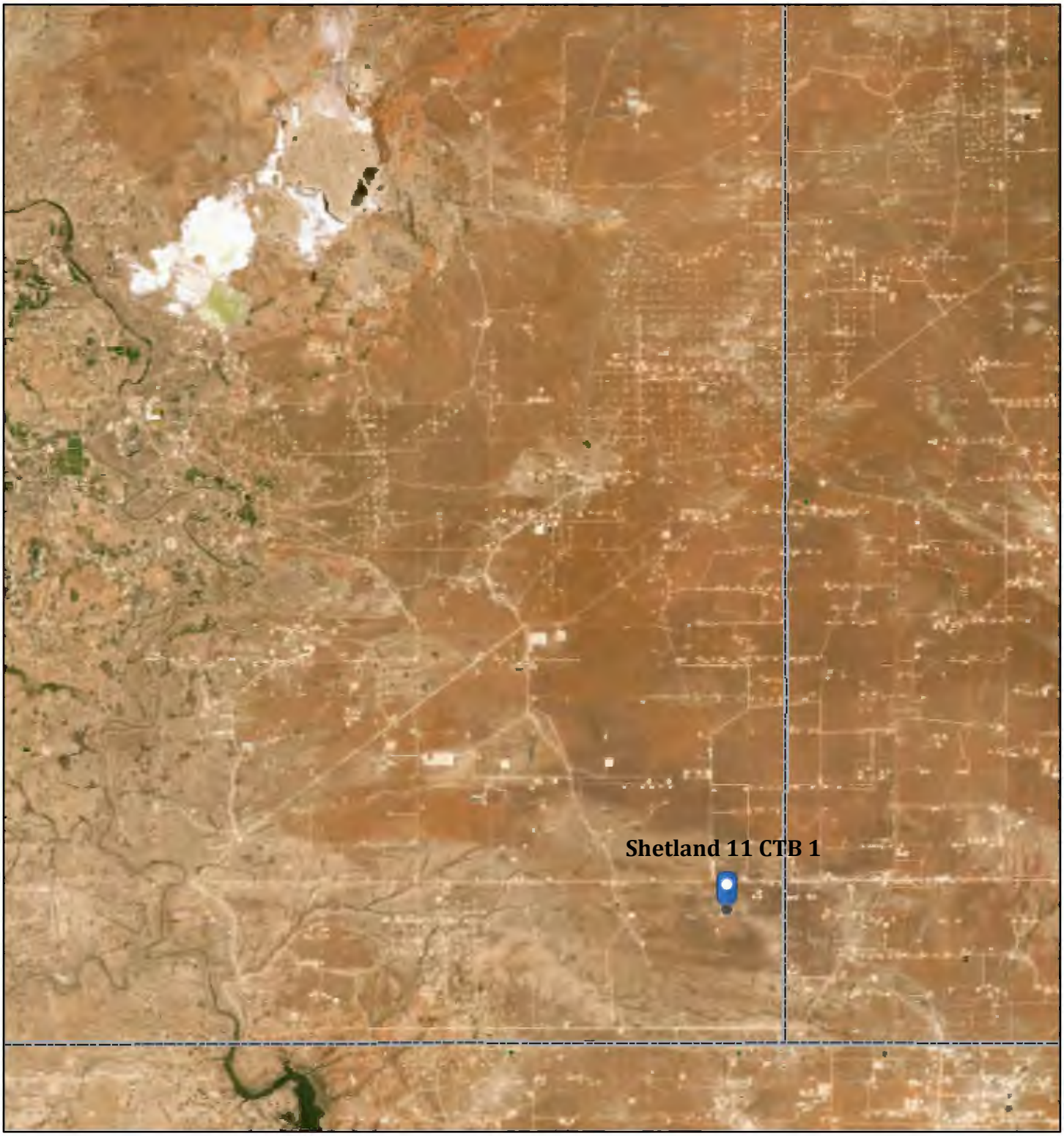
Wetlands

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

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

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Shetland 11 CTB 1 Subsurface Mines



5/11/2025, 3:28:13 PM

1:288,895

0 2 4 8 mi

0 3.25 6.5 13 km

Mining_Ghost_Towns

Counties

REE_Districts

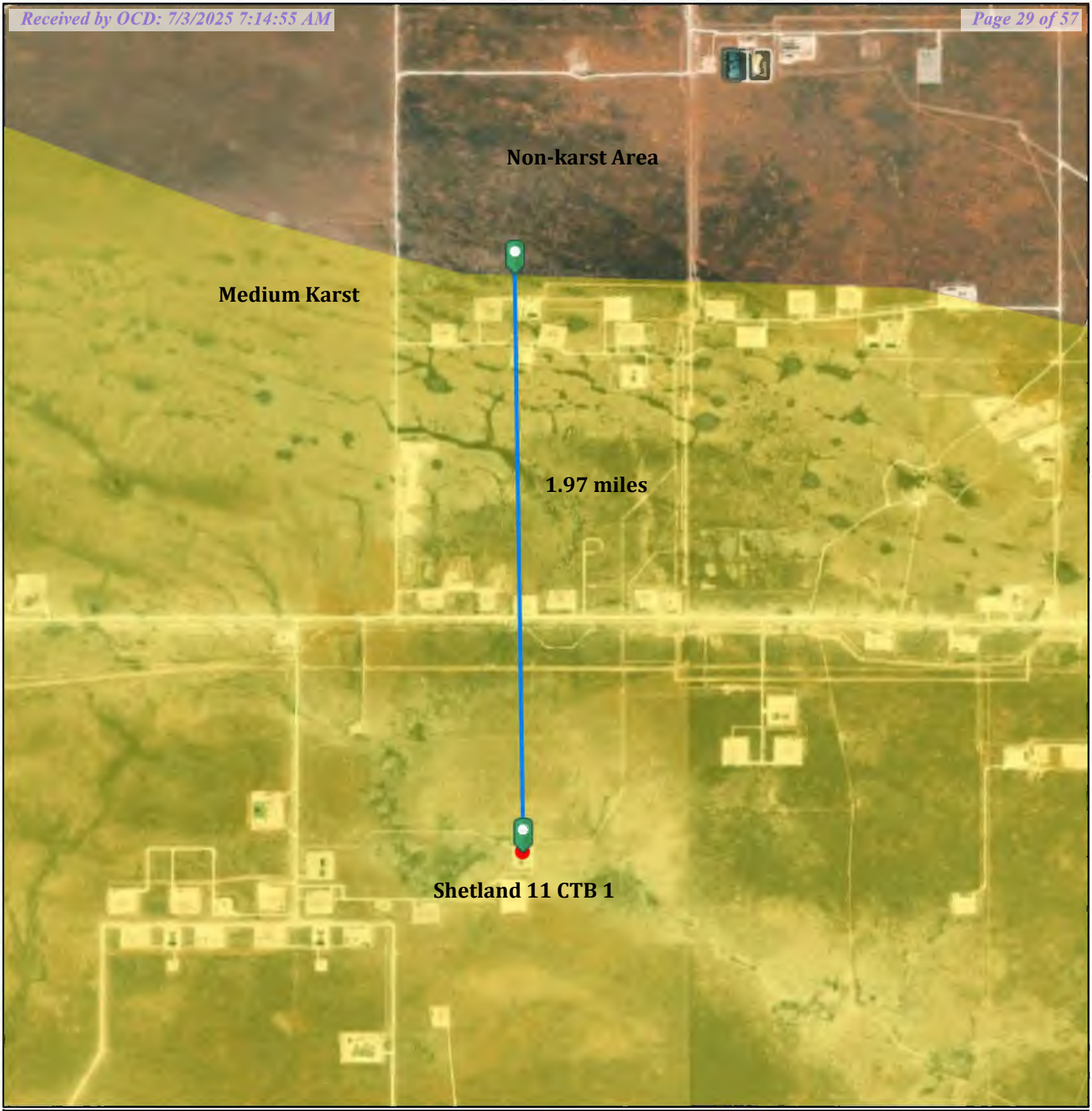
Fe skarn, carbonate-hosted Pb-Zn

REE-Th-U veins, fluorite veins

New Mexico Bureau of Geology and Mineral Resources, Earthstar Geographics, NMBGMR

ArcGIS Web AppBuilder

New Mexico Bureau of Geology and Mineral Resources | Bureau of Land Management | New Mexico Bureau of Geology and Mineral Resources | New Mexico Bureau of Geology & Mineral Resources |



Shetland 11 CTB 1 Karst Potential

0 0.17 0.35 0.7 mi

N

New Mexico State Land Office

Disclaimer:
The New Mexico State Land Office assumes no responsibility or liability for, or in connection with the accuracy, reliability or use of the information provided herein with respect to State Land Office data or data from other sources.

Data pertaining to New Mexico State Trust Lands are provisional and subject to revision, and do not constitute an official record of title. Official records may be reviewed at the New Mexico State Land Office in Santa Fe, New Mexico.

User drawn points

Karst_Potential_NM

Potential

Critical

High

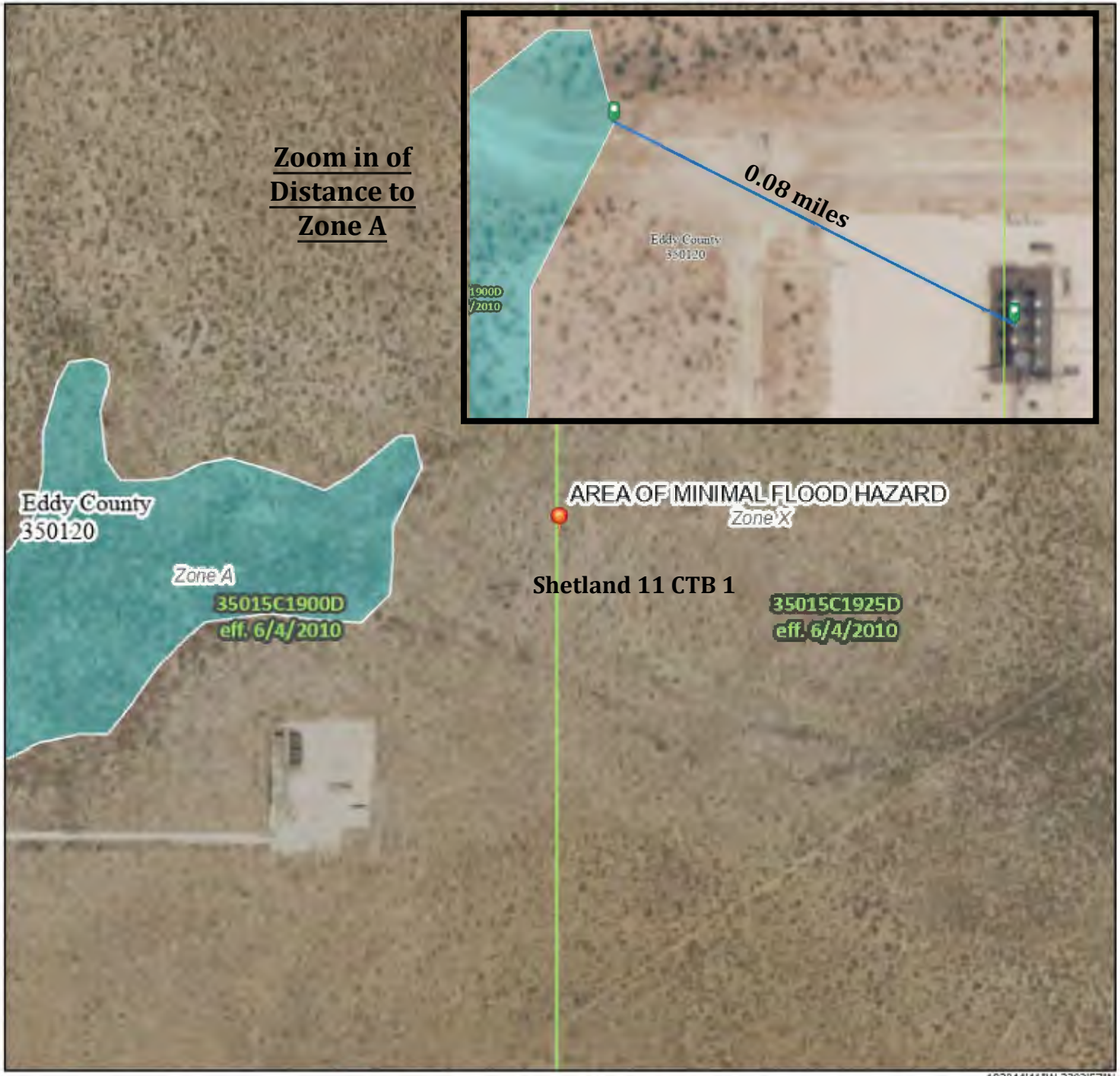
Medium

Map Created: 5/11/2025

National Flood Hazard Layer FIRMette

FEMA

103°45'19"W 32°3'27"N



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

1:6,000

103°44'41"W 32°2'57"N

Basemap Imagery Source: USGS National Map 2023

Legend

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

- SPECIAL FLOOD HAZARD AREAS
  - Without Base Flood Elevation (BFE) *Zone A, V, A99*
  - With BFE or Depth *Zone AE, AO, AH, VE, AR*
  - Regulatory Floodway
- OTHER AREAS OF FLOOD HAZARD
  - 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
  - Future Conditions 1% Annual Chance Flood Hazard *Zone X*
  - Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
  - Area with Flood Risk due to Levee *Zone D*
- OTHER AREAS
  - NO SCREEN Area of Minimal Flood Hazard *Zone X*
  - Effective LOMRs
  - Area of Undetermined Flood Hazard *Zone D*
- GENERAL STRUCTURES
  - Channel, Culvert, or Storm Sewer
  - Levee, Dike, or Floodwall
- OTHER FEATURES
  - 20.2 Cross Sections with 1% Annual Chance
  - 17.5 Water Surface Elevation
  - Coastal Transect
  - 513 Base Flood Elevation Line (BFE)
  - Limit of Study
  - Jurisdiction Boundary
  - Coastal Transect Baseline
  - Profile Baseline
  - Hydrographic Feature
- MAP PANELS
  - Digital Data Available
  - No Digital Data Available
  - Unmapped

N

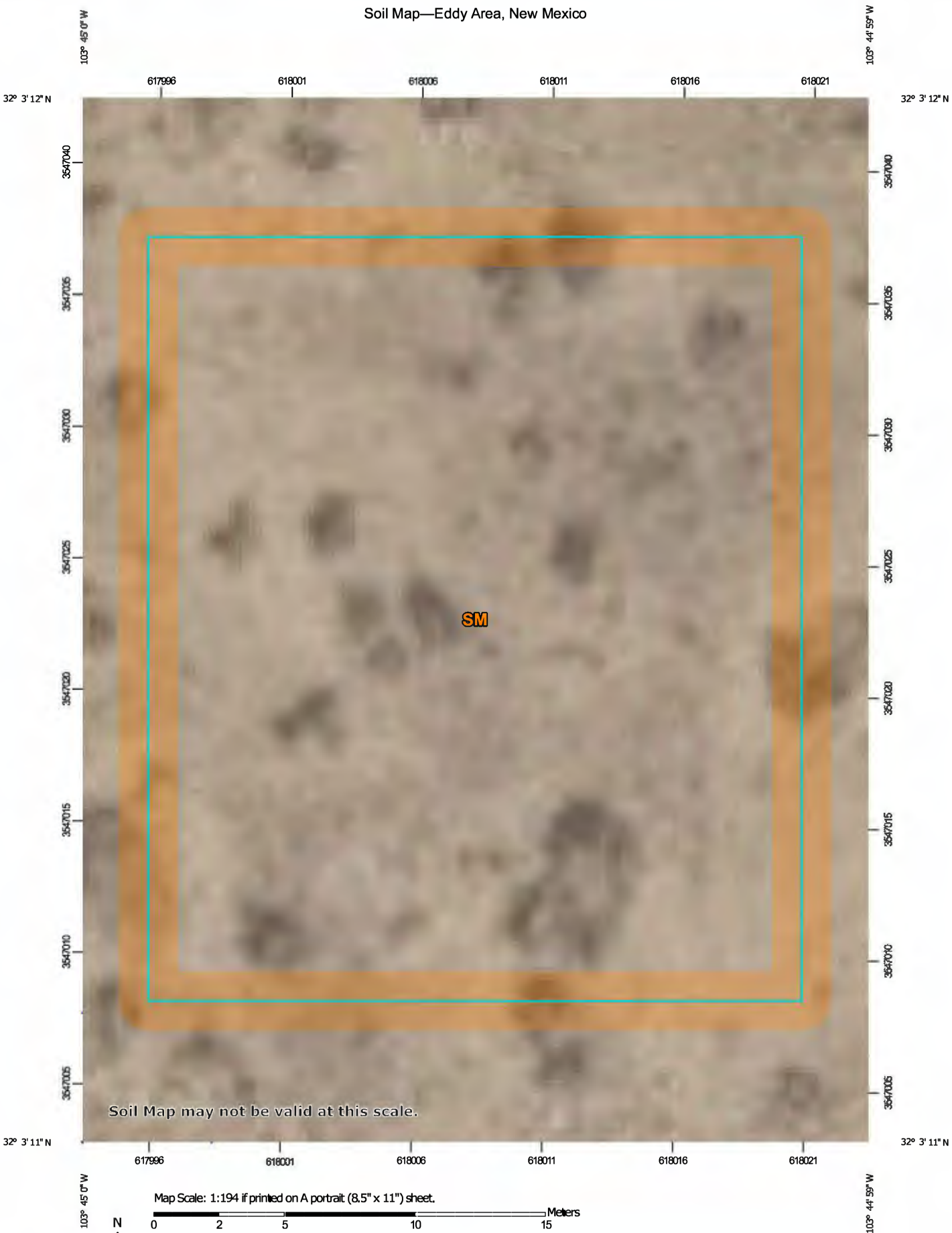
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/11/2025 at 8:52 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

Soil Map—Eddy Area, New Mexico



Map Scale: 1:194 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 2 5 10 15

Feet: 0 5 10 20 30

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

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 20, Sep 3, 2024

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
SM	Simona-Bippus complex, 0 to 5 percent slopes	0.2	100.0%
Totals for Area of Interest		**0.2**	**100.0%**

Eddy Area, New Mexico

SM—Simona-Bippus complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1w5x
Elevation: 1,800 to 5,000 feet
Mean annual precipitation: 8 to 24 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: 55 percent
Bippus and similar soils: 30 percent
Minor components: 15 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
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

Description of Bippus

Setting

Landform: Flood plains, alluvial fans
Landform position (three-dimensional): Talf, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 37 inches: silty clay loam
H2 - 37 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 40 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 8.7 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R070BC017NM - Bottomland
Hydric soil rating: No

Minor Components

Simona

Percent of map unit: 8 percent
Ecological site: R070BD002NM - Shallow Sandy
Hydric soil rating: No

Bippus

Percent of map unit: 7 percent
Ecological site: R070BC017NM - Bottomland

USDA Natural Resources Conservation Service

Ecological site R070BC017NM
Bottomland

Accessed: 05/11/2025

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on broad valleys, flood plains or basins at the lowest position in relation to adjacent landscapes. They are derived from mixed alluvium for sandstone, shale and limestone. It is found at the mouth of intermittent drainages or draws. Slopes are level to nearly level, averaging less than 3 percent. Elevations range from 2,842 to 4,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Alluvial flat (2) Valley floor (3) Basin floor
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Rare to frequent
Ponding frequency	None
Elevation	2,842–4,000 ft
Slope	1–3%
Aspect	Aspect is not a significant factor

Climatic features

The climate of the area is “semi-arid continental”. The average annual precipitation ranges from 8 to 13 inches. Variations of 5 inches, more or less, are common. Over 80 percent of the precipitation falls from April through October. Most
of the summer precipitation comes in the form of high intensity – short duration thunderstorms.

Temperatures are characterized by distinct seasonal changes and large annual and diurnal temperature changes. The average annual temperature is 61 degrees with extremes of 25 degrees below zero in the winter to 112 degrees in the summer.

The average frost-free season is 207 to 220 days. The last killing frost is in late March or early April, and the first killing frost is in late October or early November.

Temperature and rainfall both favor warm season perennial plant growth. In years of abundant spring moisture, annual forbs and cool season grasses can make up an important component of this site. This site receives overflow from heavy summer rains periodically. Occasionally water will stand on the surface for short periods. When this happens frequently, or when water stands for longer periods, only the plants that can tolerate inundation, such as giant sacaton, will survive. During drought periods or when long periods occur between overflows, a variety of plants will move in and establish on the site.

Table 3. Representative climatic features

Frost-free period (average)	221 days
Freeze-free period (average)	240 days
Precipitation total (average)	13 in

Influencing water features

This site may be associated or influenced by wetlands and/or streams but does not normally meet wetland criteria.

Soil features

The soils of this site are deep and very deep. Surface textures are loamy fine sand, very fine sandy loam, fine sandy loam, sandy loam, silty loam, loam, clay loam or silty clay loam. The underlying layers may be loam, silt loam, clay loam, silty clay loam, sandy loam, fine sandy loam or loamy fine sand. These soils may have thin stratas of sand, silt, clay, very fine sand or very fine sandy loam. The soils have rapid to moderately slow permeability.

Minimum and maximum values listed below represent the characteristic soils for this site.

Characteristic Soils:
Glendale
Bippus
Bigetty
Largo
Harkey
Pecos
Pima
Dev
Pima Varient

Table 4. Representative soil features

Surface texture	(1) Loamy fine sand (2) Loam (3) Fine sandy loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Moderately slow to rapid
Soil depth	72 in
Surface fragment cover <=3"	0–10%
Surface fragment cover >3"	0–1%
Available water capacity (0-40in)	3–8 in

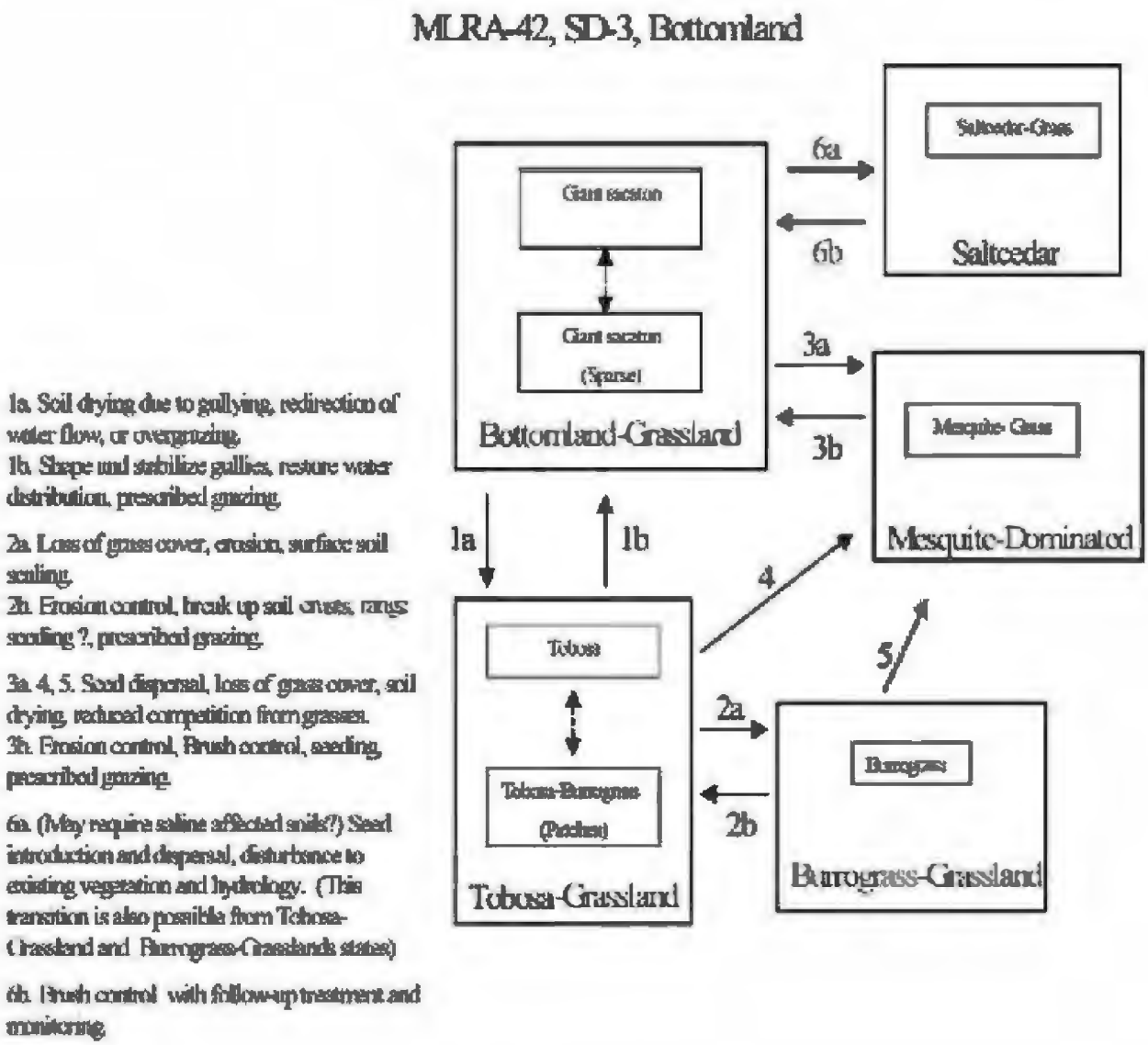
Calcium carbonate equivalent (0-40in)	3–15%
Electrical conductivity (0-40in)	0–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0–5
Soil reaction (1:1 water) (0-40in)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–15%
Subsurface fragment volume >3" (Depth not specified)	0–1%

Ecological dynamics

The Bottomland site occurs on broad valleys and flood plains at the lowest positions on the landscape and is subject to periodic flooding. This periodic flooding and deep wetting essentially determine vegetation patterns on this site. The Bottomland site is associated with and often found at the mouth of Draw sites. The potential plant community exhibits a tall grass aspect largely dominated by giant sacaton. Soil drying due to overgrazing, gullying, and redirection or blockage of water flow may cause the transition to a tobosa-dominated state. A state dominated by burrograss may result due to continued loss of tobosa, erosion, and soil surface sealing—especially on silt loam and silty clay loam textured surface soils. A mesquite-dominated state may result from the loss of grass cover and dispersal of mesquite seed. Saltcedar may invade in response to changes in the historical flow regimes and the introduction of its seed—especially along stream channels or on soils adjacent to areas with a high water table.

State and transition model

Plant Communities and Transitional Pathways (diagram)



State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

Bottomland Grassland: The historic plant community is principally dominated by giant sacaton. Some additional grass species representative of this site include alkali sacaton, tobosa, vine mesquite, plains bristlegrass, and twoflower trichloris. Fourwing saltbush and mesquite are two of the more common shrubs associated with this site, but in the historic community they are sparsely scattered across the site. Giant sacaton has the capability to produce large amounts of aboveground biomass, which provides important forage for livestock and helps to slow runoff, increase infiltration, and protect the site from erosion. Grazing in the spring, deferring grazing in the fall, or during dry summers, can maximize forage production.4 Mowing giant sacaton during the summer may improve forage

quality and accessibility while minimizing negative effects on production.3 Fire has produced mixed results depending on time of year and fire intensity. Several growing seasons may be required for giant sacaton to recover pre-burn production levels. Overgrazing, drought, or fire can cause a decrease in giant sacaton, vine mesquite, alkali sacaton, plains bristlegrass, and twoflower trichloris. A sparser, less vigorous sacaton community may result. Continued loss of grass cover increases erosion, effectively drying the site causing the transition to an alternate grassland state (Tobosa Grassland). Diagnosis: Giant sacaton is the dominant grass. Grass cover is uniform. Litter cover is high, and bare patches are few and less than 2 m in length. Shrubs are sparse, averaging less than three percent canopy cover.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	2125	3188	4250
Shrub/Vine	200	300	400
Forb	175	262	350
Total	**2500**	**3750**	**5000**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	35-40%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	40-45%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	15-20%

Figure 5. Plant community growth curve (percent production by month). NM2817, R042XC017NM Bottomland HCPC. R042XC017NM Bottomland HCPC Warm Season Plant Community.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	10	10	25	30	15	5	0	0

State 2
Tobosa Grassland

Community 2.1
Tobosa Grassland

Additional States: Tobosa Grassland: This state is characterized by the predominance of tobosa. On fine-textured soils that receive surface run-in water, tobosa may attain dense almost pure stands. On drier sites that receive less water due to gullying, or due to decreased infiltration, associated with loss of grass cover, tobosa occurs in scattered patches with large areas of bare ground. Burrograss is the sub-dominant species. In the absence of grazing, tobosa tends to stagnate and accumulates large amounts of standing dead material. Rotational grazing, or burning during years with adequate precipitation following fire may help to maximize tobosa production and forage quality.1,12 Burning during years with below average precipitation may limit increases in tobosa yield the first year

following fire.6 Diagnosis: Tobosa is the dominant grass species. Grass cover is variable (depending on the degree of site degradation) ranging from uniform to patchy. Transition to Tobosa Grassland (1a) The transition to a tobosa-dominated community is believed to result from decreased available soil moisture due to the redirection or blockage of run-in water, gullying, or overgrazing. Roads or other physical barriers on site or off site may cause the redirection or blockage of run-in water. Reduction of overland flow and decreased residence time of stand water may favor tobosa dominance. Tobosa is favored by sites that receive periodic flooding, but cannot withstand extended periods of inundation. Overgrazing increases runoff rates and gully formation, reduces infiltration, effectively drying the site. Sites with finer textured soils may have a greater susceptibility for dominance by tobosa. 12 Key indicators of approach to transition: Decreased vigor and cover of giant sacaton Increase in the amount of tobosa Reduced overland flow and residence time of standing water Formation of gullies or deepening of existing channels Transition back to Bottomland Grassland (1b) The natural hydrology of the site must be restored. Culverts, turnouts, or rerouting roads may help re-establish natural overland flow, if roads or trails have blocked or altered the flow of run-in water. Erosion control structures or shaping and filling gullies may help regain natural flow patterns and establish vegetation if the flow has been channeled. Prescribed grazing will help establish proper forage utilization and maintain grass cover and litter necessary to protect the site from accelerated erosion.

State 3
Burrograss Grassland

Community 3.1
Burrograss Grassland

Burrograss Grassland: Burrograss is the dominant species. Tobosa is typically present in varying amounts, usually in patches or clumps occupying the more moist depressions. Burrograss ranks poor as a forage grass, but begins growth early and is used to some extent when young and green. Burrograss is favored by calcareous fine textured soils and spreads by seed and stolons. It produces large amounts of seed with wiry awns that help in dissemination, and in augering the hardened callus (tip of the seed) into the soil. The ability of burrograss to auger into soils enables it to establish and expand on bare soils prone to crust over with physical and biological crusts. Diagnosis: Burrograss is the dominant grass species. Grass cover is variable ranging from patchy to very patchy. Large bare areas are present and interconnected. Physical crusts are present and may occupy most of the bare areas. Transition to Burrograss Grassland (2a) Loss of grass cover, decreased soil moisture, soil surface sealing, and erosion enable this transition. As grass cover declines, organic matter and infiltration decrease. Erosion increases, removing soil and nutrients from bare areas, which results in soil sealing. Burrograss produces substantial amounts of viable seed and is one of the few grasses able to maintain, and even increase, on bottomland soils that are sealed by biological and physical crusts. Key indicators of approach to transition: Decrease in cover of tobosa Increased amount of bare ground Increased evidence of physical and biological crusts. Transition back to Tobosa Grassland (2b) Erosion control structures may help regain natural overland flow and increase vegetation cover (see transition1b above). Re-establishing grass cover will further decrease erosion and increase infiltration. Breaking up physical crusts by soil disturbance may promote infiltration and seedling emergence. Seeding may be necessary if inadequate seed source remains. Prescribed grazing will help establish proper forage utilization and maintain grass cover.

State 4
Mesquite-Dominated

Community 4.1
Mesquite-Dominated

Mesquite-Dominated State: This state is characterized by the dominance of mesquite, and by accelerated erosion. Grass cover is variable, but typically patchy. Diagnosis: Mesquite is the dominant species in aspect and composition. Grass cover is typically patchy with large, interconnected bare areas present. Giant sacaton and alkali sacaton are absent or restricted to small patches. Tobosa or burrograss are the dominant grasses on this site. Rills and gullies may be common and actively eroding. Transition to Mesquite-Dominated (3a, 4, 5) The reasons for different pathways in transitions to a mesquite-dominated state versus a tobosa or burrograss grassland with few shrubs are not known. Dispersal of shrub seed, persistent loss of grass cover, and competition between shrubs and remaining grasses for resources may drive this transition. Loss of grass cover reduces infiltration, decreasing available soil moisture necessary for grass seedling establishment. Reduced soil moisture may favor mesquite

establishment and survival. Accelerated erosion due to loss of grass cover can relocate organic matter and nutrients from shrub interspaces, and concentrate them around shrub bases.14 This relocation of resources further increases the shrubs competitive advantage. Key indicators of approach to transition: Increase in size and frequency of bare patches. Loss of grass cover in shrub interspaces. Increased signs of erosion. Transition back to Bottomland Grassland (3b) Erosion control methods such as shaping and filling gullies, net wire diversions, rock and brush dams, etc. may be needed to curtail erosion and restore site hydrology. Brush control will be necessary to overcome competition between shrubs and grass seedlings. Seeding may expedite recovery or may be necessary if an adequate seed source is no longer remaining. Prescribed grazing will help ensure adequate deferment and proper forage utilization following grass establishment. The degree to which this site is capable of recovery depends on the restoration of hydrology, the extent of degradation to soil resources, and adequate rainfall necessary to establish grasses.

State 5
Saltcedar State

Community 5.1
Saltcedar State

Saltcedar State: Saltcedar is an aggressive invader that typically invades on fine-textured soils where its roots can reach the water table, but once established it can survive without access to ground water. It reaches maximum density where the water table is from 1.5 to 6 m deep, and forms more open stands where the water table is deeper. 9,10 Saltcedar is a prolific seed producer. It is resistant to fire, periods of inundation with water, salinity, and re-sprouts following cutting. Saltcedar can also increase soil salinity by up-taking salts and concentrating them in its leaves and subsequent shedding of the leaves to the soil surface. Diagnosis: This state is characterized by the presence of saltcedar. Saltcedar cover is variable ranging from sparse to dense. Densities may depend on such variables as depth to ground water, timing and duration of flood events, and soil texture and salinity. Grass cover varies in response to saltcedar density. Transition to Saltcedar State (6a) It is not know if this transition occurs only on saline affected soils, or if it can occur on non-saline sites. Salty Bottomland sites typically have a higher susceptibility to the invasion of saltcedar. The invasion of saltcedar is associated with saline soils, the presence of saltcedar on adjacent sites and dispersal of its seed, and disturbance to existing vegetation or hydrology. Saltcedar propagules must be present to invade and establish on bottomland sites. Disturbance such as fire, grazing, or drought may facilitate the establishment of saltcedar by decreasing the vigor of native vegetation and providing bare areas for saltcedar seedling establishment with minimal competition. Changes in seasonal timing, rate and volume of run-in water may facilitate the establishment of saltcedar on Bottomland sites.8 Damming rivers has reduced flow volume and caused shifts in the timing of peak flow from spring to summer. The reduced flows have increased fine sediments, creating the ideal conditions for saltcedar seedling establishment. Summer water discharges provide water at times consistent with saltcedar seed production. Increases in salinity due to return of irrigation water to streams and ditches may also support the establishment of saltcedar. (This transition should also possible from the Tobosa-Grassland and Burrograss-Grassland states). Key indicators of approach to transition: Increase in size and frequency of bare patches. Changes in timing and volume of peak discharge Increased soil salinity Presence of saltcedar propagules Transition back to Bottomland Grassland (6b) Saltcedar control is costly and often labor intensive. Control programs utilizing herbicide, or herbicide in conjunction with mechanical control or prescribed fire have proven effective in some instances. 5,7,11 Without restoring historical flow regimes, extensive follow-up management may be necessary to maintain the bottomland grassland.13

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1				2438–2625	
	big sacaton	SPWR2	*Sporobolus wrightii*	2438–2625	–
2				263–375	
	tobosagrass	PLMU3	*Pleuraphis mutica*	263–375	–
	alkali sacaton	SPAI	*Sporobolus airoides*	263–375	–
3				263–375	
	vine mesquite	PAOB	*Panicum obtusum*	263–375	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	263–375	–
4				113–188	
	cane bluestem	BOBA3	*Bothriochloa barbinodis*	113–188	–
	white tridens	TRAL2	*Tridens albescens*	113–188	–
	false Rhodes grass	TRCR9	*Trichloris crinita*	113–188	–
5				113–188	
	Grass, perennial	2GP	*Grass, perennial*	113–188	–
Shrub/Vine					
6				113–188	
	fourwing saltbush	ATCA2	*Atriplex canescens*	113–188	–
7				38–113	
	honey mesquite	PRGL2	*Prosopis glandulosa*	38–113	–
8				38–113	
	Apache plume	FAPA	*Fallugia paradoxa*	38–113	–
	American tarwort	FLCE	*Flourensia cernua*	38–113	–
	littleleaf sumac	RHMI3	*Rhus microphylla*	38–113	–
9				38–113	
	Shrub (>.5m)	2SHRUB	*Shrub (>.5m)*	38–113	–
Forb					
10				75–188	
	coyote gourd	CUPA	*Cucurbita palmata*	75–188	–
	common sunflower	HEAN3	*Helianthus annuus*	75–188	–
	broadleaved pepperweed	LELA2	*Lepidium latifolium*	75–188	–
	globemallow	SPHAE	*Sphaeralcea*	75–188	–
11				75–188	
	Forb (herbaceous, not grass nor grass-like)	2FORB	*Forb (herbaceous, not grass nor grass-like)*	75–188	–

Animal community

This site provides habitats which support a resident animal community that is characterized by black-tailed jackrabbit, yellow-faced pocket gopher, coyote, meadowlark, mourning dove, scaled quail, sparrow hawk, Western spadefoot toad and Western diamondback rattlesnake. Where this site includes riparian vegetation along the Pecos and Black rivers, the resident animal community is characterized by raccoon, gray fox, muskrat, red-winged blackbird, summer tanager, ferruginous hawk, mourning dove, Gambel's quail, killdeer, tree lizard, Eastern fence lizard, tiger salamander, leopard frog, bullfrog and checkered garter shake.

Most resident birds and Bullock's oriole, blue grosbeak, painted bunting, Swainson's hawk and mourning dove nest. Where aquatic macrophytes occur, yellow-throated warbler nest. Sandhill crane and long-billed curlew winter along the Pecos River and American avocet and blacknecked stilt utilize this site during migration. The golden eagle utilizes larger trees for roosting and occasionally, nesting.

Hydrological functions

The runoff curve numbers are determined by field investigations using hydraulic cover conditions and hydrologic soil groups.

Hydrologic Interpretations
Soil Series----- Hydrologic Group
Bippus---------- B
Bigetty--------- C
Glendale-------- B
Harkey---------- B
Largo----------- B
Pima------------ B
Dev------------- A
Pecos----------- D/B

Recreational uses

This site offers recreation potential for hiking, nature observation and photography in addition to antelope, quail and dove hunting.

Natural beauty is enhanced by the constrast between this lush vegetated site and the drier, more barren sites which surround it.

Wood products

This site has no real potential for wood products. Where woody species have increased, they can be used for curiosities or small furniture.

Other products

This site is well suited for all kinds and classes of livestock, during all seasons of the year. It is best suited for cows during the growing season. Periodic removal of excess coarse stalk material by burning, shredding or mowing every other year will help to keep new growth avaialble to livestock. Burning, if practiced, should be done in late winter or early spring when soil surface moisture is present. Retrogression is characterized by a decrease in vine-mesquite and vigor of giant sacaton. Alkali sacaton, plains bristlegrass and twoflower trichloris decrease. This causes an increase in tobosa to a point of being a colony type of vegetation. Continued retrogression can cause severe water erosion that can destroy the potential of this site.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month
Similarity Index - Ac/AUM
100 - 76---------- 1.0 – 2.3
75 – 51----------- 2.0 – 3.3
50 – 26----------- 3.4 – 6.0
25 – 0------------ 6.1 - +

Other references

Literature References:

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Contributors

David Trujillo
Don Sylvester

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

   _____

2. **Presence of water flow patterns:**

   _____

3. **Number and height of erosional pedestals or terracettes:**

   _____

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

   _____

5. **Number of gullies and erosion associated with gullies:**

   _____

6. **Extent of wind scoured, blowouts and/or depositional areas:**

   _____

7. **Amount of litter movement (describe size and distance expected to travel):**

   _____

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

   _____

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

   _____

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

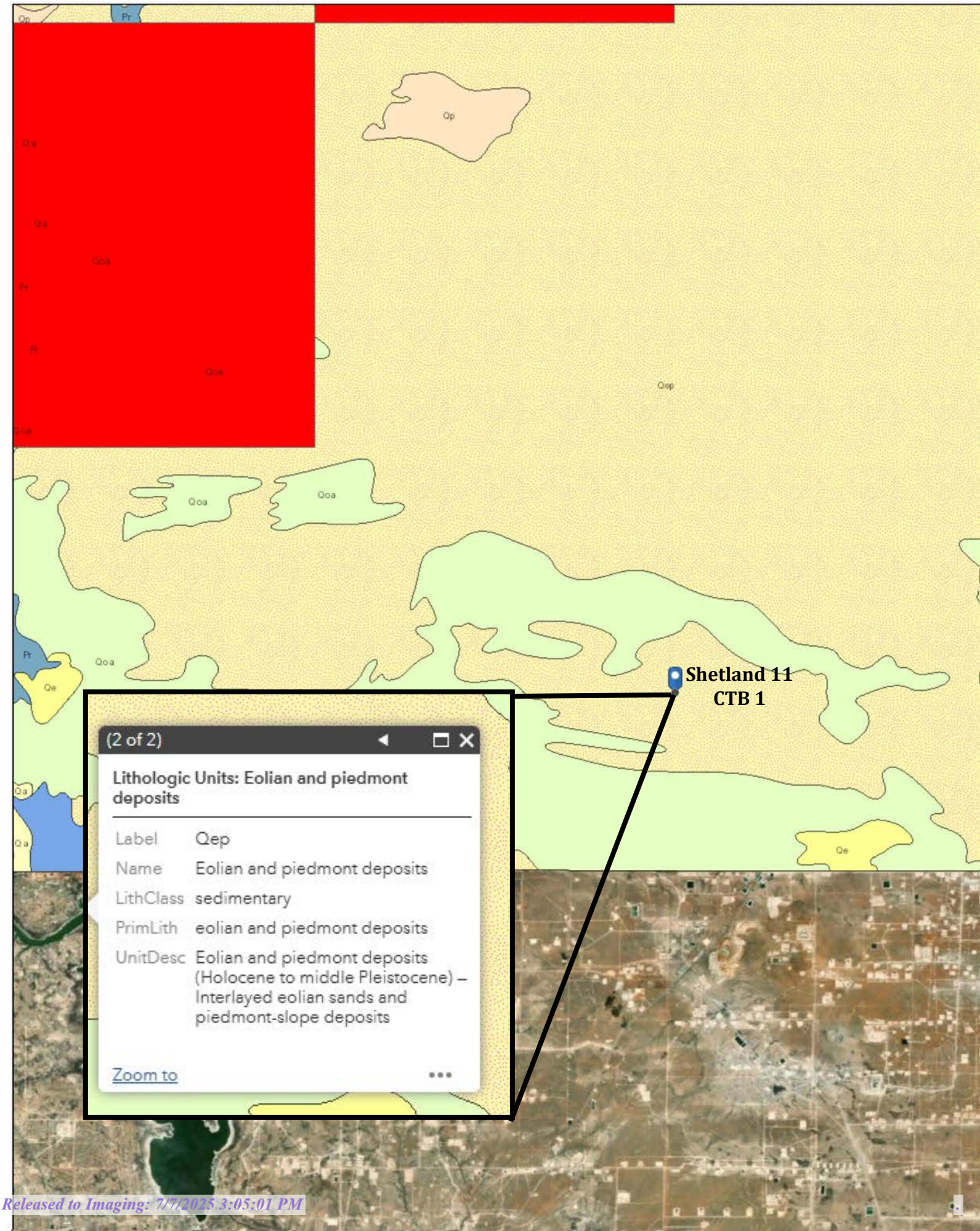
14. **Average percent litter cover (%) and depth (in):**

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

17. **Perennial plant reproductive capability:**

Shetland 11 CTB 1 - Geological Map



APPENDIX C

CORRESPONDENCE

Outlook

Re: [EXTERNAL] nAPP2511829379 Shetland 11 CTB 1 Liner Inspection Notification

From Raley, Jim <Jim.Raley@dvn.com>
Date Thu 2025-05-22 8:16 PM
To Monica Peppin <Monica.Peppin@kljeng.com>
Cc Will Harmon <will.harmon@kljeng.com>

Submitted 5/22/2025

Jim Raley - Enviro Professional
Permian Basin - Devon Energy
575-689-7597

From: Monica Peppin <Monica.Peppin@kljeng.com>
Date: Thursday, May 22, 2025 at 5:04 PM
To: Raley, Jim <Jim.Raley@dvn.com>
Cc: Will Harmon <will.harmon@kljeng.com>
Subject: [EXTERNAL] nAPP2511829379 Shetland 11 CTB 1 Liner Inspection Notification

Jim,

Here is the liner inspection notification for the Shetland 11 CTB 1. I have it planned for Tuesday, the 27th of May. If it needs any adjustments to time and date, just let me know.

KLJ Engineering anticipates conducting liner inspection activities at the following site on Tuesday, May 27, 2025 at approximately 9:30 AM. Details Below:

Proposed Date:	5/27/2025
Time Frame:	9-10 AM
Site Name:	Shetland 11 CTB 1
Incident ID:	nAPP2511829379
API/Facility ID:	fAPP2123649550

Liner Inspection Notification	
Incident ID and Site Name:	**nAPP2511829379 Shetland 11 CTB 1**
API # and Corresponding Agency:	**fAPP2123649550 NMOCD/BLM**
Question	**Answer (Fill In)**
What is the liner inspection surface area in square feet (secondary containmet):	6525 sq ft
Have all the impacted materials been removed from the liner and cleaned?	Yes 5.5.25
Liner inspection date pursuant to Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC: 48 HOURS PRIOR TO INSPECTION	5/27/2025
Time liner inspection will commence:	9:30 AM
Please provide any information necessary for observers to contact inspector: (Name and Number)	Monica Peppin 575.909.3418
Please provide any information necessary for navigation to liner inspection site and coordinates	C1/Pipeline Rd. West on Pipeline for 5.21 miles/left on lease rd south for 0.91 miles, left going east for 0.90

(Lat/Long)	miles and dead end on site. 32.052915, -103.749977

Thank you,
MP

Monica Peppin, A.S.
Environmental Specialist II
KLJ
575-213-9010 Direct
575-909-3418 Cell
Carlsbad, NM 88220
kljeng.com

Book time to meet with me

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

QUESTIONS

Action 481364

QUESTIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 481364
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2511829379**
Incident Name	**NAPP2511829379 SHETLAND 11 CTB 1 @ 0**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Closure Report Received**
Incident Facility	**[fAPP2123649550] SHETLAND 11 CTB 1**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	SHETLAND 11 CTB 1
Date Release Discovered	04/24/2025
Surface Owner	Federal

Incident Details	
Please answer all the questions in this group.	
Incident Type	Produced Water Release
Did this release result in a fire or is the result of a fire	No
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	*Not answered.*
Produced Water Released (bbls) Details	Cause: Equipment Failure | Pump | Produced Water | Released: 18 BBL | Recovered: 18 BBL | Lost: 0 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	Yes
Condensate Released (bbls) Details	*Not answered.*
Natural Gas Vented (Mcf) Details	*Not answered.*
Natural Gas Flared (Mcf) Details	*Not answered.*
Other Released Details	*Not answered.*
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	Nipple on water transfer pump failed. Allowing fluids to be released to lined secondary containment. Fluids fully recovered.

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QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 481364
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	**No, according to supplied volumes this does not appear to be a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**No**
Reasons why this would be considered a submission for a notification of a major release	*Unavailable.*
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: James Raley Title: EHS Professional Email: jim.raley@dvn.com Date: 07/03/2025

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QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 481364
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Site Characterization	
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	Between 75 and 100 (ft.)
What method was used to determine the depth to ground water	NM OSE iWaters Database Search
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Between 1 and 5 (mi.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between 1 and 5 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Between 1 and 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between ½ and 1 (mi.)
Any other fresh water well or spring	Between ½ and 1 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 1 and 5 (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Between 1 and 5 (mi.)
Categorize the risk of this well / site being in a karst geology	Medium
A 100-year floodplain	Between 300 and 500 (ft.)
Did the release impact areas not on an exploration, development, production, or storage site	No

Remediation Plan	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
Requesting a remediation plan approval with this submission	Yes
Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	Yes
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	05/20/2025
On what date will (or did) the final sampling or liner inspection occur	05/22/2025
On what date will (or was) the remediation complete(d)	05/22/2025
What is the estimated surface area (in square feet) that will be remediated	6882
What is the estimated volume (in cubic yards) that will be remediated	0
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.	
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 481364
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Remediation Plan (continued)	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:	
(Select all answers below that apply.)	
Is (or was) there affected material present needing to be removed	Yes
Is (or was) there a power wash of the lined containment area (to be) performed	Yes
OTHER (Non-listed remedial process)	*Not answered.*
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
I hereby agree and sign off to the above statement	Name: James Raley Title: EHS Professional Email: jim.raley@dvn.com Date: 07/03/2025
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 481364
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Liner Inspection Information	
Last liner inspection notification (C-141L) recorded	**466702**
Liner inspection date pursuant to Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC	**05/27/2025**
Was all the impacted materials removed from the liner	**Yes**
What was the liner inspection surface area in square feet	**6525**

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	Yes
Have the lateral and vertical extents of contamination been fully delineated	**Yes**
Was this release entirely contained within a lined containment area	**Yes**
What was the total surface area (in square feet) remediated	6882
What was the total volume (cubic yards) remediated	0
Summarize any additional remediation activities not included by answers (above)	Liner Inspected

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

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

I hereby agree and sign off to the above statement	Name: James Raley Title: EHS Professional Email: jim.raley@dvn.com Date: 07/03/2025

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CONDITIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 481364
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

CONDITIONS

Created By	Condition	Condition Date
scwells	None	7/7/2025