General Information

NMOCD District:	District 2	Incident ID:	nAPP2431846528
Landowner:	Federal	Facility:	fAPP2207332396
Client:	XTO Energy, Inc.	Site Location:	Brushy Draw 30-31 Fed Battery
Date:	December 14, 2024	Project #:	24E-04918
Client Contact:	Colton Brown	Phone #:	575.988.7329
Vertex PM:	Chad Hensley	Phone #:	575.200.6167

Objective

The objective of the environmental remediation work plan is to identify exceedances found during the site assessment/characterization activity and propose an appropriate remediation technique to address the produced water release at Brushy Draw 30-31 Fed Battery. The release occurred due to corrosion of the bulk line and resulted in 27 barrels (bbl) of crude oil and 108 bbl produced water being released on the facility pad and into the pasture north of the pad as shown on Figure 1 (Attachment 1). Areas of environmental concern identified and delineated include the pad north of the treating equipment and the pasture north of the facility pad. Closure criteria have been selected as per New Mexico Administrative Code 19.15.29. The closure criteria for the site are presented below in Table 1.

Table 1. Closure Criteria for Soils Impacted by a Release DTGW <50 feet bgs

Minimum depth below any point within the horizontal boundary of the release to groundwater less than 10,000 mg/l TDS	Constituent	Limit
< 50 feet	Chloride	600 mg/kg
	TPH (GRO+DRO+MRO)	100 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg

TDS – Total dissolved solids
TPH – Total petroleum hydrocarbons = gasoline range organics (GRO) + diesel range organics (DRO) + motor oil range organics (MRO),
BTEX - Benzene, toluene, ethylbenzene, and xylenes

Site Assessment/Characterization

Vertex performed site characterization activities on November 21 and 22, 2024. A total of 17 sample points were established, and 51 samples were collected for field screening. Samples were obtained at three discrete depths to facilitate horizontal and vertical delineation. Boreholes were advanced and samples were collected with hand tools. Borehole depths did not exceed 4 feet below ground surface due to refusal at a caliche layer. In total, 51 samples were submitted to Eurofins Environmental Testing, Albuquerque, New Mexico, for analysis. The sample locations are presented on Figure 1 (Attachment 1). Laboratory analysis results have been compared to the above noted closure criteria and the results from the characterization activity are presented in Table 2 (Attachment 2). Exceedances to reclamation and remediation criteria are identified in the table as bold with grey background. Daily field reports and laboratory data reports are included in Attachments 3 and 4, respectively. All applicable research as it pertains to closure criteria selection is presented in Attachment 5.

Proposed Remedial Activities

General

The release area will be remediated to closure criteria. Areas identified with contaminant concentrations above closure criteria will be remediated through excavation. Laboratory results from the site assessment/characterization have been referenced to estimate both the

vertical and horizontal limits of the impacts and the volume of soil to be removed. Soil will be excavated to the extent of the known impacts or in 2 foot increments, whichever is less. Field screening will be utilized to confirm removal of impacted soil below the applicable closure criteria. Excavated soils will be stored on a 30mil liner prior to disposal at an approved facility. Once excavation is complete, confirmatory samples will be collected and laboratory analysis completed to confirm closure criteria guidelines are met. Excavations will be backfilled with clean soil sourced locally.

nAPP2431846528 (November 10, 2024) – Crude Oil and Produced Water Released onto Pad and into Pasture

Field screening and laboratory analysis were utilized to find the approximate horizontal and vertical extents of the spill area. A total of 51 samples were collected for analysis. Exceedances to closure criteria identified north of and adjacent to the treating equipment and extending to the pasture off the north edge of the pad will be excavated to closure criteria. Heavy equipment will be used to excavate open areas on the pad to remove contaminated soil. A hydrovac truck will be utilized to identify utility and buried pipelines in multiple areas, and hand tools will be utilized to remove contaminated soil in close proximity to equipment, buried utilities, and pipelines. Confirmation samples will be collected as per New Mexico Oil Conservation Division (NMOCD) guidance and submitted for laboratory analysis of all applicable parameters. Surfaces of the final extents of the excavation will meet the most stringent NMOCD closure criteria. The estimated remediation area is approximately 10,838 square feet as presented on Figure 1 (Attachment 1). Excavation is planned to be completed within 90 days of approval of this Environmental Site Remediation Work Plan.

Should you have any questions or concerns, please do not hesitate to contact Chad Hensley at 575.200.6167 or chensley@vertexresource.com.

Lakin Pullman

Lakin Pullman, B.Sc.
ENVIRONMENTAL SPECIALIST, REPORTING

December 14, 2024
Date

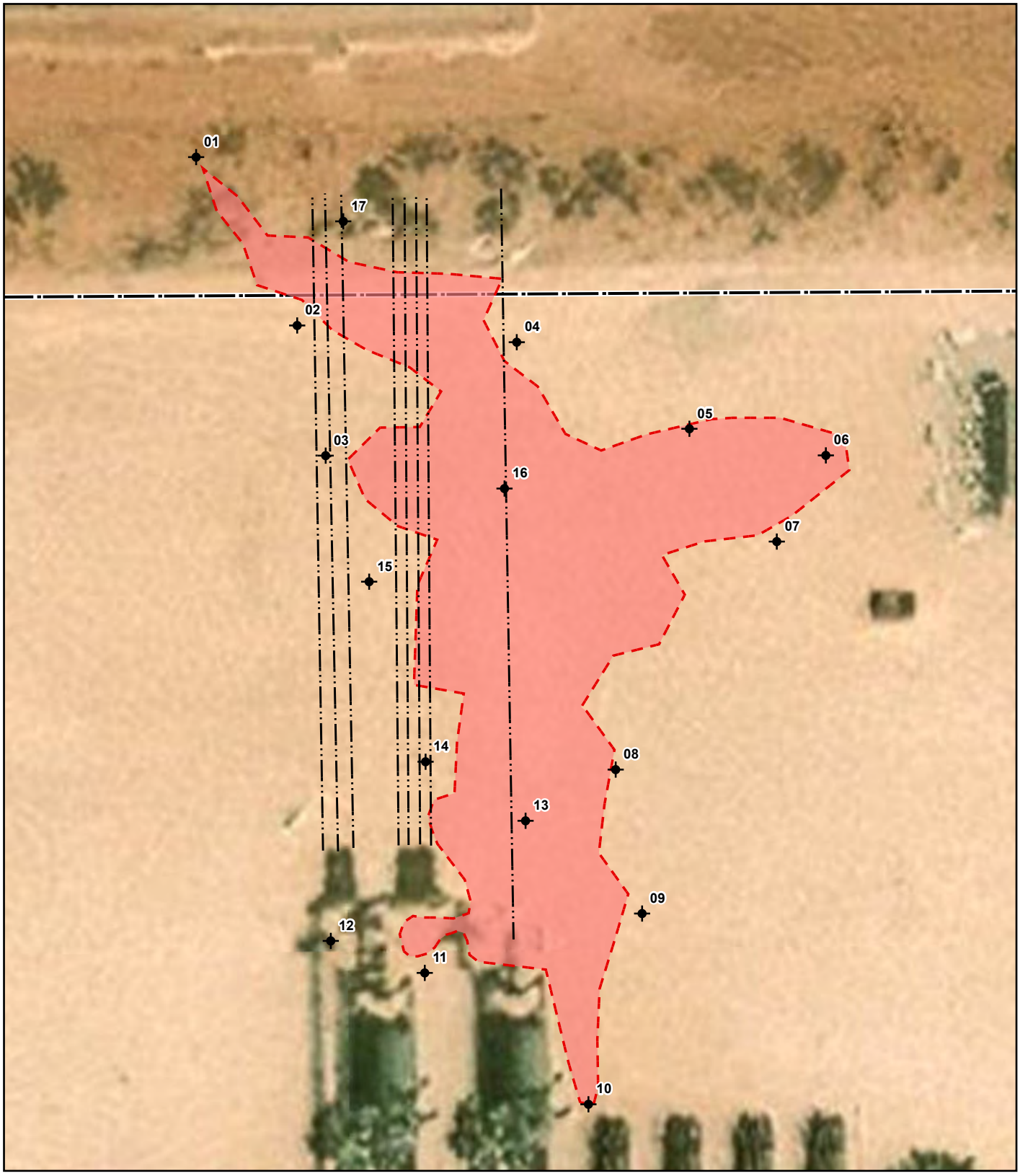
Chad Hensley, B.Sc., GCNR
SENIOR PROJECT MANAGER, REPORT REVIEW

December 15, 2024
Date

Attachments

Attachment 1. Characterization Sampling Schematic
Attachment 2. Initial Characterization Laboratory Results
Attachment 3. Daily Field Reports with Photographs
Attachment 4. Laboratory Data Reports with Chain of Custody Forms
Attachment 5. Closure Criteria Research

ATTACHMENT 1



Borehole (Prefixed by "BH24-")
Release Area (~10,838 sq.ft.)
Pipeline (Underground)
Approximate Lease Boundary

VERTEX

0 5 10 20 ft
NAD 1983 UTM Zone 13N
Date: Dec 13/24

Map Center:
Lat: 32.092135°N,
Long:103.918843°W

N

Characterization Sampling Schematic
Brushy Draw 30-31 Fed Battery

FIGURE: 1

XTO ENERGY

Geospatial data presented in this figure may be derived from external sources and Vertex does not assume any liability for inaccuracies. This figure is intended for reference use only and is not certified for legal, survey, or engineering purposes.

Note: Georeferenced image from Esri, 2024. Approximate lease boundary from imagery by Vertex Professional Services Ltd. (VPS), 2024. Site features from GPS by VPS, 2024.

VERSATILITY. EXPERTISE.

Document Path: C:\Projects\USA\Devon\24E-04918 - Brushy Draw 30-31 Fed Battery\Project\24E-04918.aprx

ATTACHMENT 2

Client Name: XTO Energy, Inc.
Site Name: Brushy Draw 30-31 Federal Battery
NMOCD Tracking #:nAPP2431846528
Project #: 24E-04918
Lab Report #: H247231

Table 2. Initial Characterization Sample Laboratory Results

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene (mg/kg)	BTEX (Total) (mg/kg)	Gasoline Range Organics (GRO) (mg/kg)	Diesel Range Organics (DRO) (mg/kg)	Motor Oil Range Organics (MRO) (mg/kg)	(GRO + DRO) (mg/kg)	Total Petroleum Hydrocarbons (TPH) (mg/kg)	Chloride Concentration (mg/kg)
			Depth to Groundwater <50							
BH24-01	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	96
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
BH24-02	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	192
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
BH24-03	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	16
BH24-04	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	144
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	64
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	112
BH24-05	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	**4640**
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	304
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	128
BH24-06	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	112
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	80
	4R	November 22, 2024	ND	ND	ND	140	36.8	**140**	**176.8**	64
BH24-07	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	80
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	16
BH24-08	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
BH24-09	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	192
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	16
BH24-10	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	48
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	48
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
BH24-11	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	96
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	16
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
BH24-12	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	80
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	16

Client Name: XTO Energy, Inc.
Site Name: Brushy Draw 30-31 Federal Battery
NMOCD Tracking #:nAPP2431846528
Project #: 24E-04918
Lab Report #: H247231

Table 2. Initial Characterization Sample Laboratory Results

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene (mg/kg)	BTEX (Total) (mg/kg)	Gasoline Range Organics (GRO) (mg/kg)	Diesel Range Organics (DRO) (mg/kg)	Motor Oil Range Organics (MRO) (mg/kg)	(GRO + DRO) (mg/kg)	Total Petroleum Hydrocarbons (TPH) (mg/kg)	Chloride Concentration (mg/kg)
			Depth to Groundwater <50							
BH24-13	0	November 22, 2024	ND	ND	ND	1670	411	**1670**	**2081**	**1230**
	2	November 22, 2024	ND	ND	12.6	784	140	**796.6**	**936.6**	**2280**
	4R	November 22, 2024	ND	ND	26.6	500	73.8	**526.6**	**600.4**	**1920**
BH24-14	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	208
	2	November 22, 2024	ND	ND	ND	17.5	ND	17.5	17.5	144
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	16
BH24-15	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	80
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	48
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	16
BH24-16	0	November 22, 2024	ND	ND	221	3880	497	**4101**	**4598**	**2520**
	2	November 22, 2024	ND	ND	ND	123	11.1	**123**	**134.1**	**6800**
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
BH24-17	0	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	96
	2	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	32
	4	November 22, 2024	ND	ND	ND	ND	ND	ND	ND	16

"ND" Not Detected at the Reporting Limit
R indicates Refusal
"-" indicates not analyzed/assessed
Bold and grey shaded indicates exceedance outside of NMOCD Remediation Closure Criteria

ATTACHMENT 3

Daily Site Visit Report

Client:	XTO Energy Inc. (US)	Inspection Date:	11/21/2024
Site Location Name:	Brushy Draw 30-31 Fed Battery	Report Run Date:	12/2/2024 2:33 PM
Client Contact Name:	Amy Ruth	API #:	
Client Contact Phone #:	432-661-0571		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	11/21/2024 10:11 AM
Departed Site	11/21/2024 3:07 PM

Daily Site Visit Report

Site Sketch

Site Sketch

Daily Site Visit Report

Field Notes

14:55 Delineate spill area

Next Steps & Recommendations

1 Send samples to lab for analysis

Daily Site Visit Report

Site Photos

Viewing Direction: East	**Viewing Direction**: East
	
BH24-01 @ 4’	BH24-02 @ 4’
Viewing Direction: South	**Viewing Direction**: East
	
BH24-03 @ 4’	BH24-04 @ 4’

Daily Site Visit Report

Viewing Direction: East

BH24-05 @ 4’

Viewing Direction: West

BH24-06 @ 4’

Viewing Direction: North

BH24-07

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Riley Plogger

Signature: 

Daily Site Visit Report

Client:	XTO Energy Inc. (US)	Inspection Date:	11/22/2024
Site Location Name:	Brushy Draw 30-31 Fed Battery	Report Run Date:	12/2/2024 2:33 PM
Client Contact Name:	Amy Ruth	API #:	
Client Contact Phone #:	432-661-0571		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	11/22/2024 9:55 AM
Departed Site	11/22/2024 2:45 PM

Daily Site Visit Report

Site Sketch

Site Sketch

Daily Site Visit Report

Field Notes

14:07 Finish delineating spill area

Next Steps & Recommendations

1 Send samples off to lab for analysis

Daily Site Visit Report

Site Photos

Viewing Direction: West	**Viewing Direction**: West
	
BH24-08 @ 4’	BH24-09 @ 4’
Viewing Direction: South	**Viewing Direction**: North
	
BH24-10 @ 4’	BH24-11 @ 4’

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: North
	
BH24-12 @ 4’	BH24-13 @ 4’
Viewing Direction: North	**Viewing Direction**: North
	
BH24-14 @ 4’	BH24-15 @ 4’

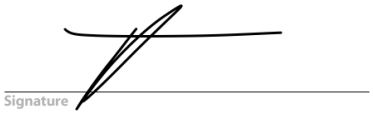
Daily Site Visit Report

Viewing Direction: North	**Viewing Direction**: North
	
BH24-16 @ 4’	BH24-17 @ 4’

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Riley Plogger

Signature: 

ATTACHMENT 4

CARDINAL Laboratories

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

December 03, 2024

CHAD HENSLEY

VERTEX RESOURCE

3101 BOYD DRIVE

CARLSBAD, NM 88220

RE: BRUSHY DRAW 30-31

Enclosed are the results of analyses for samples received by the laboratory on 11/25/24 16:22.

Cardinal Laboratories is accredited through Texas NELAP under certificate number TX-C24-00112. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -01 @ 0' (H247231-01)

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	11/28/2024	ND	2.27	113	2.00	6.17	
Toluene*	<0.050	0.050	11/28/2024	ND	2.18	109	2.00	9.55	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.29	114	2.00	12.8	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.80	113	6.00	13.4	
Total BTEX	<0.300	0.300	11/28/2024	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	**96.0**	16.0	11/27/2024	ND	416	104	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *105 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *112 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -01 @ 2' (H247231-02)

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	11/28/2024	ND	2.27	113	2.00	6.17	
Toluene*	<0.050	0.050	11/28/2024	ND	2.18	109	2.00	9.55	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.29	114	2.00	12.8	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.80	113	6.00	13.4	
Total BTEX	<0.300	0.300	11/28/2024	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	**32.0**	16.0	11/27/2024	ND	416	104	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *108 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *113 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -01 @ 4' (H247231-03)

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	11/28/2024	ND	2.27	113	2.00	6.17	
Toluene*	<0.050	0.050	11/28/2024	ND	2.18	109	2.00	9.55	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.29	114	2.00	12.8	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.80	113	6.00	13.4	
Total BTEX	<0.300	0.300	11/28/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *110 %* *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	11/27/2024	ND	416	104	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *111 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *118 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -02 @ 0' (H247231-04)

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	11/28/2024	ND	2.27	113	2.00	6.17	
Toluene*	<0.050	0.050	11/28/2024	ND	2.18	109	2.00	9.55	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.29	114	2.00	12.8	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.80	113	6.00	13.4	
Total BTEX	<0.300	0.300	11/28/2024	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**192**	16.0	11/27/2024	ND	416	104	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *112 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *120 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -02 @ 2' (H247231-05)

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	11/28/2024	ND	2.27	113	2.00	6.17	
Toluene*	<0.050	0.050	11/28/2024	ND	2.18	109	2.00	9.55	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.29	114	2.00	12.8	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.80	113	6.00	13.4	
Total BTEX	<0.300	0.300	11/28/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *124 %* *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	11/27/2024	ND	416	104	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *109 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *115 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -02 @ 4' (H247231-06)

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	11/28/2024	ND	2.27	113	2.00	6.17	
Toluene*	<0.050	0.050	11/28/2024	ND	2.18	109	2.00	9.55	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.29	114	2.00	12.8	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.80	113	6.00	13.4	
Total BTEX	<0.300	0.300	11/28/2024	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	11/27/2024	ND	416	104	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *115 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *121 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -03 @ 0' (H247231-07)

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	11/28/2024	ND	2.27	113	2.00	6.17	
Toluene*	<0.050	0.050	11/28/2024	ND	2.18	109	2.00	9.55	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.29	114	2.00	12.8	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.80	113	6.00	13.4	
Total BTEX	<0.300	0.300	11/28/2024	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	**32.0**	16.0	11/27/2024	ND	416	104	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *111 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *119 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -03 @ 2' (H247231-08)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *110 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *116 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -03 @ 4' (H247231-09)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *109 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *114 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -04 @ 0' (H247231-10)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**144**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *102 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *108 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -04 @ 2' (H247231-11)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**64.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *98.9 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *104 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -04 @ 4' (H247231-12)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *109 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**112**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *109 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *114 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -05 @ 0' (H247231-13)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4640**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *109 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *116 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -05 @ 2' (H247231-14)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**304**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *109 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *114 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -05 @ 4' (H247231-15)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**128**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	206	103	200	1.25	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	217	108	200	2.69	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *110 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *116 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -06 @ 0' (H247231-16)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**112**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *98.1 %* *48.2-134*

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

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -06 @ 2' (H247231-17)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *111 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**80.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *99.2 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *104 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -06 @ 4' (H247231-18)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *110 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**64.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	**140**	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	**36.8**	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *97.3 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *112 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -07 @ 0' (H247231-19)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *116 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**80.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *89.3 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *93.8 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -07 @ 2' (H247231-20)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *118 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *98.2 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *102 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -07 @ 4' (H247231-21)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *121 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *99.5 %* *48.2-134*

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

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -08 @ 0' (H247231-22)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *111 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *74.9 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *75.0 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -08 @ 2' (H247231-23)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *82.6 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *82.2 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -08 @ 4' (H247231-24)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *76.2 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *75.4 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -09 @ 0' (H247231-25)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**192**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *75.8 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *76.0 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -09 @ 2' (H247231-26)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *121 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *80.6 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *80.7 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -09 @ 4' (H247231-27)

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	11/28/2024	ND	1.98	99.1	2.00	5.12	
Toluene*	<0.050	0.050	11/28/2024	ND	1.94	96.8	2.00	8.20	
Ethylbenzene*	<0.050	0.050	11/28/2024	ND	2.09	104	2.00	8.72	
Total Xylenes*	<0.150	0.150	11/28/2024	ND	6.41	107	6.00	9.40	
Total BTEX	<0.300	0.300	11/28/2024	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *78.3 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *78.4 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -10 @ 0' (H247231-28)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *96.9 %* *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	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *62.9 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *62.6 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -10 @ 2' (H247231-29)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *96.8 %* *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	**48.0**	16.0	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *78.3 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *77.6 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -10 @ 4' (H247231-30)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *97.3 %* *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	**32.0**	16.0	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *78.5 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *78.4 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -11 @ 0' (H247231-31)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *97.4 %* *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	**96.0**	16.0	12/03/2024	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *73.1 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *71.3 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -11 @ 2' (H247231-32)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.2 %* *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	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *76.7 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *74.8 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -11 @ 4' (H247231-33)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	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	**32.0**	16.0	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *75.2 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *73.9 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -12 @ 0' (H247231-34)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *97.6 %* *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	**80.0**	16.0	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *72.8 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *71.4 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -12 @ 2' (H247231-35)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.7 %* *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	**32.0**	16.0	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	223	112	200	4.21	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	202	101	200	6.18	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *75.4 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *74.5 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -12 @ 4' (H247231-36)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.6 %* *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	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *81.5 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *88.1 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -13 @ 0' (H247231-37)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *96.0 %* *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	**1230**	16.0	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	**1670**	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	**411**	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *66.1 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *85.9 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -13 @ 2' (H247231-38)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *102 %* *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	**2280**	16.0	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**12.6**	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	**784**	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	**140**	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *82.4 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *95.7 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -13 @ 4' (H247231-39)

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	12/03/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	12/03/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	12/03/2024	ND	2.00	99.8	2.00	4.34	GC-NC
Total Xylenes*	<0.150	0.150	12/03/2024	ND	5.96	99.3	6.00	4.12	GC-NC
Total BTEX	<0.300	0.300	12/03/2024	ND					GC-NC

Surrogate: 4-Bromofluorobenzene (PID *122 %* *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	**1920**	16.0	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**26.6**	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	**500**	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	**73.8**	10.0	11/27/2024	ND					

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

Surrogate: 1-Chlorooctadecane *105 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -14 @ 0' (H247231-40)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	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	**208**	16.0	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *76.7 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *84.2 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -14 @ 2' (H247231-41)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	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	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	**17.5**	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *75.8 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *82.5 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -14 @ 4' (H247231-42)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	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	**16.0**	16.0	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *78.0 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *85.3 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -15 @ 0' (H247231-43)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.8 %* *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	**80.0**	16.0	12/03/2024	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *71.8 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *76.7 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -15 @ 2' (H247231-44)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *97.2 %* *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	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *78.2 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *83.0 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -15 @ 4' (H247231-45)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	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	**16.0**	16.0	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *75.4 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *81.5 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -16 @ 0' (H247231-46)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	GC-NC
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	GC-NC
Total BTEX	<0.300	0.300	11/29/2024	ND					GC-NC

Surrogate: 4-Bromofluorobenzene (PID *144 %* *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	**2520**	16.0	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**221**	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	**3880**	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	**497**	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *123 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *106 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -16 @ 2' (H247231-47)

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	11/29/2024	ND	2.09	105	2.00	5.49	
Toluene*	<0.050	0.050	11/29/2024	ND	1.99	99.3	2.00	5.24	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.00	99.8	2.00	4.34	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	5.96	99.3	6.00	4.12	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.8 %* *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	**6800**	16.0	12/03/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	**123**	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	**11.1**	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *77.6 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *83.8 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -16 @ 4' (H247231-48)

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	11/29/2024	ND	2.11	105	2.00	5.57	
Toluene*	<0.050	0.050	11/29/2024	ND	2.15	108	2.00	6.58	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.08	104	2.00	7.07	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	6.53	109	6.00	6.96	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *85.3 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *93.4 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -17 @ 0' (H247231-49)

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	11/29/2024	ND	2.11	105	2.00	5.57	
Toluene*	<0.050	0.050	11/29/2024	ND	2.15	108	2.00	6.58	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.08	104	2.00	7.07	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	6.53	109	6.00	6.96	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *108 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**96.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *81.4 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *89.2 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -17 @ 2' (H247231-50)

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	11/29/2024	ND	2.11	105	2.00	5.57	
Toluene*	<0.050	0.050	11/29/2024	ND	2.15	108	2.00	6.58	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.08	104	2.00	7.07	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	6.53	109	6.00	6.96	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *108 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *83.7 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *92.0 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

VERTEX RESOURCE
CHAD HENSLEY
3101 BOYD DRIVE
CARLSBAD NM, 88220
Fax To: NA

Received:	11/25/2024	Sampling Date:	11/22/2024
Reported:	12/03/2024	Sampling Type:	Soil
Project Name:	BRUSHY DRAW 30-31	Sampling Condition:	Cool & Intact
Project Number:	24E-04918	Sample Received By:	Alyssa Parras
Project Location:	XTO		

Sample ID: BH24 -17 @ 4' (H247231-51)

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	11/29/2024	ND	2.11	105	2.00	5.57	
Toluene*	<0.050	0.050	11/29/2024	ND	2.15	108	2.00	6.58	
Ethylbenzene*	<0.050	0.050	11/29/2024	ND	2.08	104	2.00	7.07	
Total Xylenes*	<0.150	0.150	11/29/2024	ND	6.53	109	6.00	6.96	
Total BTEX	<0.300	0.300	11/29/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *71.5-134*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	12/02/2024	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	11/27/2024	ND	209	104	200	5.52	
DRO >C10-C28*	<10.0	10.0	11/27/2024	ND	214	107	200	6.15	
EXT DRO >C28-C36	<10.0	10.0	11/27/2024	ND					

Surrogate: 1-Chlorooctane *82.0 %* *48.2-134*

Surrogate: 1-Chlorooctadecane *89.3 %* *49.1-148*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

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-05	The surrogate recovery is outside of lab established statistical control limits but still within method limits. Data is not adversely affected.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
GC-NC	8260 confirmation analysis was performed; initial GC results were not supported by GC/MS analysis and are reported as ND.
BS-3	Blank spike recovery outside of lab established statistical limits, but still within method limits. Data is not adversely affected.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Vertex resource	**BILL TO**		ANALYSIS REQUEST
Project Manager: Chad Hensley	P.O. #:		
Address: 3101 Boyd dr	Company: XTO		
City: Carlsbad State: NM Zip: 88220	Attn:		
Phone #: Fax #:	Address: 3104 E Greene ST		
Project #: 24E-04918 Project Owner: Amy Ruth	City: Carlsbad		
Project Name: Brushy draw 30-31	State: NM Zip: 88220		
Project Location: Brushy draw 30-31	Phone #: 575-887-7329		
Sampler Name: Riley Plogger	Fax #:		

TOP LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER, WASTEWATER, SOIL, OIL, SLUDGE, OTHER	PRESERV.: ACID/BASE, ICE, COOL, OTHER	SAMPLING: DATE	SAMPLING: TIME	Chloride	TPH (GRO, DRO, MRO)	BTEX
H247231										
1	BH24-01 @ 0'	G	1	X		11.22.24	10:35	X	X	X
2	01 @ 2'						10:40			
3	01 @ 4'						10:45			
4	02 @ 0'						10:47			
5	02 @ 2'						10:52			
6	02 @ 4'						10:56			
7	03 @ 0'						11:03			
8	03 @ 2'						11:07			
9	03 @ 4'						11:11			
10	04 @ 0'						11:16			

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: R. [signature]	Date: 11.25.24 Time: 4:22	Received By: [signature]	Verbal Result: ☐ Yes ☐ No Add'l Phone #:	All Results are emailed. Please provide Email address: RPlogger@vertexresource.com CHensley@vertexresource.com
Relinquished By:	Date: Time: 1622	Received By:	REMARKS: Cost code # 202769137 Incident # NAT2431846528	
Delivered By: (Circle One) Sampler - UPS - Bus - Other	Observed Temp. °C 15 Corrected Temp. °C 0.9	Sample Condition: Cool: Yes / Intact: Yes	CHECKED BY: (Initials) AR	Turnaround Time: Standard ✓ Rush Thermometer ID #140 Correction Factor -0.6
				Bacteria (only) Sample Condition: Cool: Yes / Intact: Yes Observed Temp. °C Corrected Temp. °C

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

2 OF 6

CARDINAL Laboratories
101 East Mariand, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: vertex		**BILL TO**
Project Manager: C. Hensley		P.O. #:
Address: 3101 Boyd dr		Company: XTO
City: carlsbad	State: Zip:	Attn:
Phone #:	Fax #:	Address: 3104 E Greene
Project #: 24E-04918	Project Owner: Amy Ruth	City: Carlsbad
Project Name: Brushy draw 30-31		State: NM Zip: 88220
Project Location:		Phone #:
Sampler Name: R. Plogger		Fax #:

ANALYSIS REQUEST: Chloride; TPH (GRO, DRO, MRO); BTEX

Lab I.D. (FOR LAB USE ONLY) H247231	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	Matrix (GROUNDWATER / WASTEWATER / SOIL / OIL / SLUDGE / OTHER)	Preserv. (ACID/BASE / ICE/COOL / OTHER)	Sampling Date	Sampling Time	Chloride	TPH (GRO, DRO, MRO)	BTEX
11	BH24-04 @ 2'	G	1	SOIL	ICE/COOL ✓	1/22/24	11:20	X	X	X
12	04 4'	↓	↓	↓	↓	↓	11:28	↓	↓	↓
13	05 0'	↓	↓	↓	↓	↓	11:33	↓	↓	↓
14	05 2'	↓	↓	↓	↓	↓	11:37	↓	↓	↓
15	05 4'	↓	↓	↓	↓	↓	11:43	↓	↓	↓
16	06 0'	↓	↓	↓	↓	↓	11:49	↓	↓	↓
17	06 2'	↓	↓	↓	↓	↓	11:54	↓	↓	↓
18	06 4'	↓	↓	↓	↓	↓	11:59	↓	↓	↓
19	07 0'	↓	↓	↓	↓	↓	12:10	↓	↓	↓
20	07 2'	↓	↓	↓	↓	↓	12:15	↓	↓	↓

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: [signature]	Date: 1.25.24 Time: 4:24	Received By: [signature]	Verbal Result: ☐ Yes ☐ No Add'l Phone #: All Results are emailed. Please provide Email address:
Relinquished By:	Date: Time: 1622	Received By:	REMARKS: cost code # 2027691371 Incident # NAPP2431846528
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Observed Temp. °C 1.6 Corrected Temp. °C 0.9	Sample Condition Cool ✓Yes ☐ No Intact ✓Yes ☐ No	CHECKED BY: (Initials) AP
Turnaround Time: Standard ✓ Rush ☐	Thermometer ID: [illegible] Correction Factor: -0.6	Bacteria (only) Sample Condition Cool ☐ Yes ☐ No Intact ☐ Yes ☐ No	Observed Temp. °C Corrected Temp. °C

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

3 of 6

CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: vertex	**BILL TO**
Project Manager: C. Hensley	P.O. #:
Address:	Company: XTO
City: State: Zip:	Attn:
Phone #: Fax #:	Address: 3104 Greene ST
Project #: 24E-04918 Project Owner: Amy Ruth	City: Carlsbad
Project Name: Brushy draw 30-31	State: NM Zip: 88220
Project Location:	Phone #:
Sampler Name: R. Ploygur	Fax #:

ANALYSIS REQUEST

FOR LAB USE ONLY

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	MATRIX (GROUNDWATER / WASTEWATER / SOIL / OIL / SLUDGE / OTHER)	PRESERV. (ACID/BASE / ICE/COOL / OTHER)	DATE	TIME	Chloride	TPH (Gro, Dro, MRO)	BTEX
H24 7231										
21	BH24 - 07 @ 4'	G	1	SOIL	ICE/COOL ✓	11-22-24	12:20	X	X	X
22	08 0'						12:27			
23	08 2'						12:32			
24	08 4'						12:36			
25	09 0'						12:54			
26	09 2'						12:59			
27	09 4'						1:06			
28	10 0'						1:13			
29	10 2'						1:17			
30	10 4'						1:21			

Relinquished By: R. [signature]	Date: 11.25.24 Time: 4:23	Received By: [signature]	Verbal Result: ☐ Yes ☐ No Add'l Phone #: All Results are emailed. Please provide Email address:
Relinquished By:	Date: Time: 1022	Received By:	REMARKS: cost code # 2027691371 Incident # NAPP2431846528
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Observed Temp. °C 1.5c Corrected Temp. °C 0.9c	Sample Condition Cool Intact ☐ Yes ☑ Yes ☐ No ☐ No	CHECKED BY: (Initials) AP
Turnaround Time: Standard ✓ Rush ☐	Thermometer ID: #140 Correction Factor -0.6c	Bacteria (only) Sample Condition Cool Intact ☐ Yes ☐ Yes ☐ No ☐ No	Observed Temp. °C Corrected Temp. °C

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

CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: vertex	BILL TO	P.O. #:	ANALYSIS REQUEST
Project Manager: C. Hensley		Company: XTO	
Address:		Attn:	
City: State: Zip:		Address: 3104 Greene ST	
Phone #: Fax #:		City: Carlsbad	
Project #: 24E-04918 Project Owner:		State: NM Zip: 88220	
Project Name: Brushy draw 30-31		Phone #:	
Project Location:		Fax #:	
Sampler Name: R. Plogger			

FOR LAB USE ONLY Lab I.D.	Sample I.D.	# CONTAINERS	MATRIX: GROUNDWATER, WASTEWATER, SOIL, OIL, SLUDGE, OTHER	PRESERV: ACID/BASE, ICE, OTHER	SAMPLING: DATE	TIME	Chloride	TPH (GRO, DRO, MRO)	BTEX
H247231									
31	BH24 - 11 2 0'	1	SOIL	ICE	11.22.24	1:29	X	X	X
32	11 2'					1:34			
33	11 4					1:39			
34	12 0'					1:47			
35	12 2'					1:52			
36	12 4'					1:54			
37	13 0'					2:04			
38	13 2'					2:15			
39	13 4					2:21			
40	14 0'					2:24			

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 11.25.24	Received By:	Verbal Result: ☐ Yes ☐ No	Add'l Phone #:
	Time: 4:23		All Results are emailed. Please provide Email address:	
Relinquished By:	Date:	Received By:	REMARKS: Cost code # 2027691371 Incident # NAPP2431846528	
	Time: 1022			
Delivered By: (Circle One) Sampler - UPS - Bus - Other	Observed Temp. °C 1.5 Corrected Temp. °C 0.0	Sample Condition: Cool: Yes No, Intact: Yes No	CHECKED BY: (Initials) AR	Turnaround Time: Standard ✓ Rush AR, Thermometer ID #140, Correction Factor +0.6	Bacteria (only) Sample Condition: Cool: Yes No, Intact: Yes No, Observed Temp. °C, Corrected Temp. °C

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

5 of 6

CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Vertex	**BILL TO**		ANALYSIS REQUEST
Project Manager: C. Hensley	P.O. #:		
Address:	Company: XTO		
City: State: Zip:	Attn:		
Phone #: Fax #:	Address: 3104 Greene		
Project #: 24E-04918 Project Owner:	City: Carlsbad		
Project Name: Brushy Draw 30-31	State: NM Zip: 88220		
Project Location:	Phone #:		
Sampler Name: R. Plogger	Fax #:		

FOR LAB USE ONLY				MATRIX			PRESERV.		SAMPLING				
Lab I.D.	Sample I.D.			GROUNDWATER	WASTEWATER	SOIL	ACID/BASE	OTHER	DATE	TIME	Chloride	TPH (GRO, DRO, MRO)	BTEX
H24723				0	1								
41	BH24-14	2	2'			X			11.22.24	2:35	X	X	X
42		14	4'							2:39			
43		15	0'							2:47			
44		15	2'							2:53			
45		15	4'							2:56			
46		16	0'							3:05			
47		16	2'							3:11			
48		16	4'							3:17			
49		17	0'							3:41			
50		17	2'							3:49			

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 11.25.24	Received By:	Verbal Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 4:23		All Results are emailed. Please provide Email address:
Relinquished By:	Date:	Received By:	REMARKS: cost code # 2027691371
	Time: 4:23		Incident # NAPP2431846528
Delivered By: (Circle One)	Observed Temp. °C 1.5	Sample Condition: Cool: Yes Intact: Yes	CHECKED BY: (Initials)
Sampler - UPS - Bus - Other:	Corrected Temp. °C 0.9	No No	

Turnaround Time:	Standard ✓ RUSH	Bacteria (only) Sample Condition: Cool: Intact:	Observed Temp. °C
Thermometer ID: #140		Yes Yes	
Correction Factor: -0.6		No No	Corrected Temp. °C

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

6 OF 6

CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

		BILL TO	
Company Name:		P.O. #:	
Project Manager:		Company: XTO	
Address:		Attn:	
City:	State: Zip:	Address: 3104 Greene St	
Phone #:	Fax #:	City: Carlsbad	
Project #: 24E-04918	Project Owner:	State: NM Zip: 88220	
Project Name: Brushy Draw 30-31		Phone #:	
Project Location:		Fax #:	
Sampler Name:			

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE:	ICE / COOL ✓	OTHER:	SAMPLING: DATE	TIME	Chloride	TPH (GRO, DRO, MRO)	BTEX
H247231 S1	BH24-17 @ 4'	X	1			X					X		11-22-24	4:02	X	X	X

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: [signature]	Date: 11.25.24 Time: 4:23	Received By: [signature]	Verbal Result: ☐ Yes ☐ No Add'l Phone #: All Results are emailed. Please provide Email address:
Relinquished By:	Date: Time: 1022	Received By:	REMARKS: Cost code # 2027691371 Incident # NAPP2431846528
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Observed Temp. °C 1.5 Corrected Temp. °C 0.9	Sample Condition Cool ☐ Yes ☐ No Intact ☐ Yes ☐ No	CHECKED BY: (Initials) [initials]	Turnaround Time: Standard ☑ Rush ☐ Thermometer ID #113 Correction Factor -0.6°C -0.6 Bacteria (only) Sample Condition Cool ☐ Yes ☐ No Intact ☐ Yes ☐ No Observed Temp. °C Corrected Temp. °C

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

ATTACHMENT 5

Closure Criteria Determination				
Site Name: Brushy Draw 30-31 Fed Battery				
Release Coordinates: 32.091960,-103.918838		X: 602022	Y: 3551140	
Site Specific Conditions		Value	Unit	Reference
1	Depth to Groundwater (nearest reference)	100-500 ft		1
	Distance between release and nearest DTGW reference	1 - 5 mi		
	Date of nearest DTGW reference measurement	January 17, 2015		
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	500 - 1000 ft		2
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	1 - 5 mi		3
4	Within 300 feet from an occupied residence, school, hospital, institution or church	5mi <		4
5	i) Within 500 feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, **or**	1 - 5 mi		5
	ii) Within 1000 feet of any fresh water well or spring	1 - 5 mi		5
6	Within incorporated municipal boundaries or within a defined municipal fresh water field covered under a municipal ordinance adopted pursuant to Section 3-27-3 NMSA 1978 as amended, unless the municipality specifically approves	No	(Y/N)	6
7	Within 300 feet of a wetland	1 - 5 mi		7
8	Within the area overlying a subsurface mine	No	(Y/N)	8
	Distance between release and nearest registered mine	5mi <		
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low	9
	Distance between release and nearest unstable area	1 - 5 mi		
10	Within a 100-year Floodplain	>500	year	10
	Distance between release and nearest FEMA Zone A (100-year Floodplain)	500 - 1000 ft		
11	Soil Type	Fine sand, sandy clay loam		11
12	Ecological Classification	Loamy sand		12
13	Geology	Eolian and peidmont deposits		13
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	<50'	<50' 51-100' >100'	

OSE POD 0.5 Miles

12/11/2024, 8:13:17 AM

GIS WATERS PODs

- Active
- Plugged
-

OSE District Boundary

Water Right Regulations

Artesian Planning Area

NHD Flowlines

Stream River

1:18,056

0 0.17 0.35 0.7 mi

0 0.28 0.55 1.1 km

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

Online web user

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

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)	(R=POD has been replaced, O=orphaned, C=the file is closed)			(quarters are smallest to largest)						(NAD83 UTM in meters)				(In feet)	(In feet)	(In feet
POD Number	**Code**	**Sub basin**	**County**	**Q64**	**Q16**	**Q4**	**Sec**	**Tws**	**Range**	**X**	**Y**	**Map**	**Distance**	**Well Depth**	**Depth Water**	**Water Column**
C 03782 POD1		CUB	ED	SE	SW	SW	28	25S	30E	604525.7	3551444.2		2522	805	277	528
C 01360		CUB	ED	SE	SW	SW	05	26S	30E	602996.6	3548152.0		3142	770	173	597
C 04705 POD1		CUB	ED	NE	NW	NE	35	25S	29E	598866.5	3551191.8		3155			
C 01361		CUB	ED	SW	SE	SW	05	26S	30E	603240.4	3548157.5		3221	775	184	591
C 03581 POD1		CUB	ED	SE	SE	SE	05	26S	30E	604298.2	3548291.8		3646	800	320	480
C 03483		C	ED	SE	SE	SE	05	26S	30E	604296.3	3548251.4		3676	700	200	500
C 04558 POD1		CUB	ED	SW	SE	SW	23	25S	29E	598353.7	3553039.4		4130			
C 04529 POD1		CUB	ED	NW	SW	NW	18	25S	30E	601076.9	3555733.7		4689			
C 04755 POD2		CUB	ED	SE	NW	SW	12	26S	29E	599857.0	3546955.1		4711	25		
C 04720 POD1		CUB	ED	SE	NW	SW	12	26S	29E	599807.3	3546968.8		4722			
C 04755 POD1		CUB	ED	SE	NW	SW	12	26S	29E	599787.4	3546971.4		4729	40		
C 04720 POD4		CUB	ED	SE	NW	SW	12	26S	29E	599812.4	3546955.0		4732			
C 04720 POD2		CUB	ED	SE	NW	SW	12	26S	29E	599835.7	3546932.1		4741			
C 04720 POD3		CUB	ED	SE	NW	SW	12	26S	29E	599835.7	3546932.1		4741			
C 04720 POD5		CUB	ED	SE	NW	SW	12	26S	29E	599840.0	3546920.4		4750	20		
C 04720 POD6		CUB	ED	SE	NW	SW	12	26S	29E	599857.7	3546880.9		4777	31		
C 04755 POD3		CUB	ED	SE	NW	SW	12	26S	29E	599747.8	3546862.3		4844	103		
														Average Depth to Water: **230 fe**		
														Minimum Depth: **173 feet**		
														Maximum Depth: **320 feet**		

Record Count: 17

UTM Filters (in meters):
Easting: 602022
Northing: 3551140
Radius: 005000

*** UTM location was derived from PLSS - see Help**

12/11/24 6:21 AM MST Water Column/Average Depth to Water

Point of Diversion Summary

quarters are 1=NW 2=NE 3=SW 4=SE
quarters are smallest to largest

NAD83 UTM in meters

Well Tag	POD Nbr	Q64	Q16	Q4	Sec	Tws	Rng	X	Y	Map
	C 03782 POD1	SE	SW	SW	28	25S	30E	604525.7	3551444.2	

* UTM location was derived from PLSS - see Help

Driller License:	331	**Driller Company:**	SBQ2, LLC DBA STEWART BROTHERS DRILLING CO.		
Driller Name:	STEWART, JOEL H.				
Drill Start Date:	2015-01-16	**Drill Finish Date:**	2015-01-17	**Plug Date:**	
Log File Date:	2015-02-19	**PCW Rcv Date:**		**Source:**	Artesian
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	8.63	**Depth Well:**	805	**Depth Water:**	277

Water Bearing Stratifications:

Top	Bottom	Description
260	320	Sandstone/Gravel/Conglomerate
320	380	Sandstone/Gravel/Conglomerate
380	410	Sandstone/Gravel/Conglomerate
410	530	Shale/Mudstone/Siltstone
530	590	Shale/Mudstone/Siltstone
590	600	Shale/Mudstone/Siltstone
600	630	Shale/Mudstone/Siltstone
630	650	Shale/Mudstone/Siltstone
650	700	Shale/Mudstone/Siltstone
700	710	Shale/Mudstone/Siltstone
710	760	Shale/Mudstone/Siltstone
760	770	Shale/Mudstone/Siltstone

Top	Bottom	Description
770	780	Shale/Mudstone/Siltstone
780	790	Shale/Mudstone/Siltstone
790	805	Shale/Mudstone/Siltstone

Casing Perforations:

Top	Bottom
270	805

Water Right Summary

get image list

WR File Number:	C 03782	**Subbasin:**	CUB	**Cross Reference:**
Primary Purpose:	EXP EXPLORATION			
Primary Status:	PMT Permit			
Total Acres:		**Subfile:**		**Header:**
Total Diversion:	0.000	**Cause/Case:**		
Owner:	ATKINS ENGR ASSOC INC			
Contact:	CHRIS CORTEZ			
Owner:	BOPCO, L.P.			
Contact:	BRIAN PREGGER			

Documents on File

(acre-feet per annum)

Transaction Images	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/To	Acres	Diversion	Consumptive
get images	555125	EXPL	2014-11-14	PMT	LOG	C 03782	T	0.000	0.000	

Current Points of Diversion

POD Number	Well Tag	Source	Q64	Q16	Q4	Sec	Tws	Rng	X	Y	Map	Other Location Desc
C 03782 POD1		Artesian	SE	SW	SW	28	25S	30E	604525.7	3551444.2		2/3 MILE SW OF HEDGEHOG ROAD

*** UTM location was derived from PLSS - see Help**

12/11/24 6:59 AM MST **Water Rights Summary**

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER): POD-1 Renumbered C-3832-POD 2	OSE FILE NUMBER(S): C 3782 (Exploratory) Renumbered C-3832
WELL OWNER NAME(S): BOPCO, L.P.	PHONE (OPTIONAL): (817) 390-8662
WELL OWNER MAILING ADDRESS: 201 N Main St Suite 2900	CITY: Fort Worth STATE: TX ZIP: 76102

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	05	40.1	N
LONGITUDE	103	53	32.2	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

SW1/4SE1/4SW1/4SW1/4 of Section 28, Township 25 South, Range 30 East, in the NE corner of a well pad.

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
331	Joel H. Stewart	SBQ Drilling, LLC

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
01-16-15	01-17-15	805	±805	

COMPLETED WELL IS: (•) ARTESIAN ( ) DRY HOLE ( ) SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 277

DRILLING FLUID: ( ) AIR (•) MUD ADDITIVES – SPECIFY:

DRILLING METHOD: (•) ROTARY ( ) HAMMER ( ) CABLE TOOL ( ) OTHER – SPECIFY:

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	270	14.75	ASTM A53B	Welded	8.625	0.322	
270	805	14.75	304 Stainless Steel	Welded	8.625	0.25	16
0	15	19	ASTM A53B	---	16	0.25	

STATE ENGINEER OFFICE 2015 FEB 16 PM 2:35

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	120	14.75	Sand Mix Ready Mix	90.36	grav. tremie meas.
120	170	14.75	Hydrated Bentonite Chips	35.90	grav. tremie meas.
170	805	14.75	6/9 Silica Sand	455.95	Tremie Pipe

FOR OSE INTERNAL USE: Renumbered from C-3782-POD1 WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER
C-3832	POD 2	555125

LOCATION 25.30.28.3343 PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	30	30	Cemented Sand, light tan, sub-angular	○ Y ○ N	
30	40	10	Sandy Silt, light brown, sub-angular	○ Y ○ N	
40	60	20	Sandy clay, reddish brown	○ Y ○ N	
60	80	20	Silty Sand, light brown, sub-angular	○ Y ○ N	
80	250	170	Fine to Medium Sand, light tan, sub-angular to rounded	○ Y ○ N	
250	260	10	Clayey Sand, brown, sub-angular	○ Y ○ N	
260	320	60	Fine Sand, light tan, sub-angular	◉ Y ○ N	
320	380	60	Silty Sand, brownish gray, sub-angular	◉ Y ○ N	
380	410	30	Fine Sand, dark gray, sub-angular	◉ Y ○ N	
410	530	120	Clayey Fine Sand, dark gray, sub-angular	◉ Y ○ N	
530	590	60	Sandy Clay, dark gray, sub-angular	◉ Y ○ N	
590	600	10	Clayey Fine Sand, dark gray, sub-angular	◉ Y ○ N	
600	630	30	Sandy Clay, dark gray, sub-angular	◉ Y ○ N	
630	650	20	Clayey Sand, dark gray, sub-angular	◉ Y ○ N	
650	700	50	Sandy Clay, dark gray, sub-angular	◉ Y ○ N	
700	710	10	Clayey Sand, brown and gray, sub-angular	◉ Y ○ N	
710	760	50	Sandy Clay, dark gray, sub-angular	◉ Y ○ N	
760	770	10	Clay, 75% gray, 25% red	◉ Y ○ N	
770	780	10	Clay, 50% gray, 50% red	◉ Y ○ N	
780	790	10	Clay, 25% gray, 75% red	◉ Y ○ N	
790	805	15	Sandy Clay, Grayish red, 10% white sand.	◉ Y ○ N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ○ PUMP ○ AIR LIFT ○ BAILER ◉ OTHER – SPECIFY: TBD by pump test

TOTAL ESTIMATED WELL YIELD (gpm): TBD

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

Pump test will be performed at a later time.
Hydrated Bentonite Chips and Sand Mix Ready Mix were placed by gravity and tagged with tremie pipe.

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2015 FEB 19 PM 2 35

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Silverio Galindo, Gabriel Armijo, Pedro Pizano

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Joel H. Stewart — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

2-13-15 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	C-3632	POD NUMBER	POD 2	TRN NUMBER	555125
LOCATION	25.30.28.3343				PAGE 2 OF 2

Locator Tool Report

General Information:

Application ID:27 Date: 05-28-2015 Time: 12:01:24

WR File Number: C-03782-POD1
Purpose: POINT OF DIVERSION

Applicant First Name: BOPCO EXPLORATORY WELL DRILLERS RECORD
Applicant Last Name: RENUMBERED C-3832-POD2

GW Basin: CARLSBAD
County: EDDY

Critical Management Area Name(s): NONE
Special Condition Area Name(s): NONE
Land Grant Name: NON GRANT

PLSS Description (New Mexico Principal Meridian):

SW 1/4 of SE 1/4 of SW 1/4 of SW 1/4 of Section 28, Township 25S, Range 30E.

Coordinate System Details:

Geographic Coordinates:

Latitude:	32 Degrees	5 Minutes	40.1 Seconds	N
Longitude:	103 Degrees	53 Minutes	32.2 Seconds	W

Universal Transverse Mercator Zone: 13N

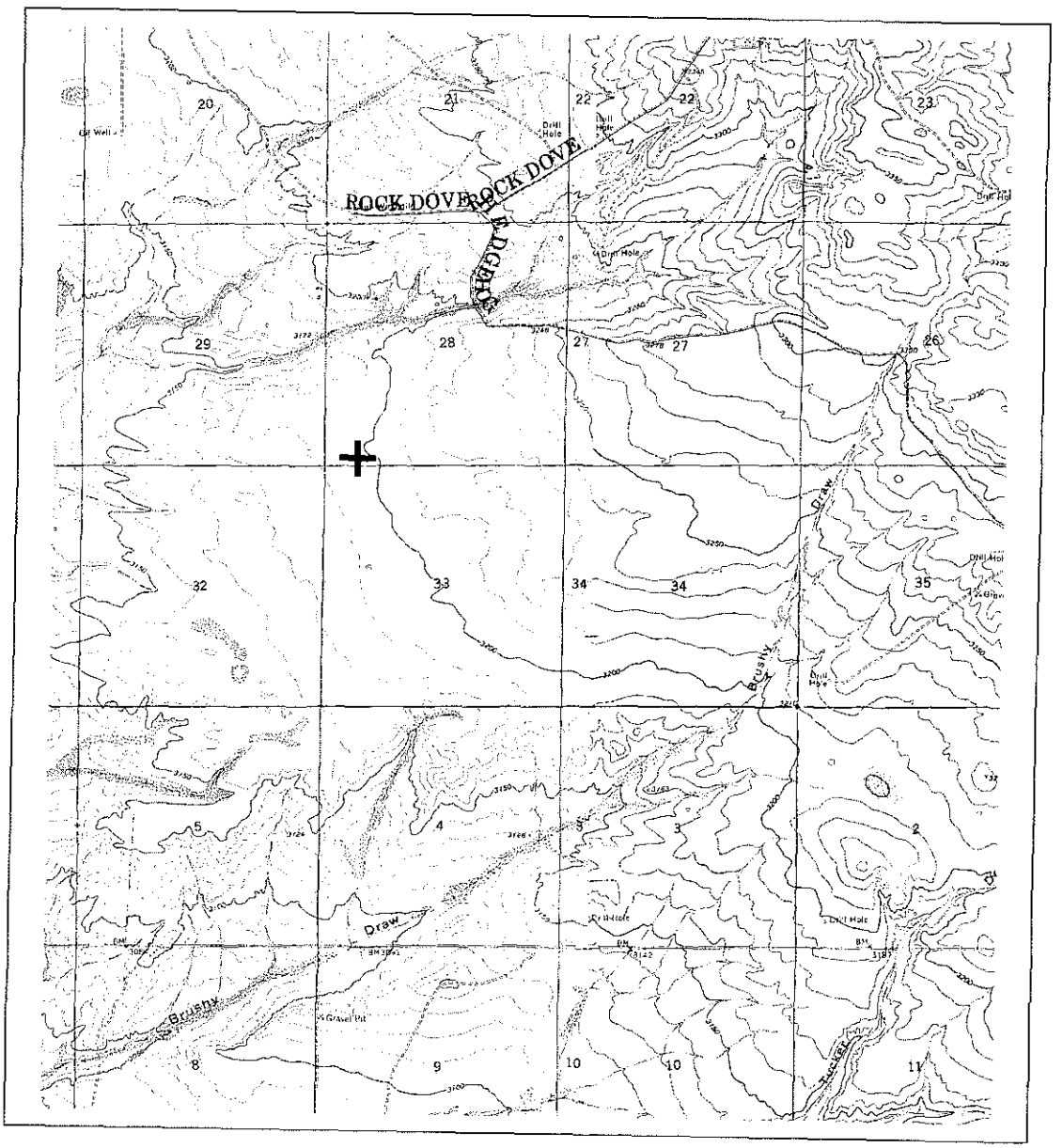
NAD 1983(92) (Meters)	N: 3,551,444	E: 604,526
NAD 1983(92) (Survey Feet)	N: 11,651,697	E: 1,983,348
NAD 1927 (Meters)	N: 3,551,243	E: 604,573
NAD 1927 (Survey Feet)	N: 11,651,036	E: 1,983,505

State Plane Coordinate System Zone: New Mexico East

NAD 1983(92) (Meters)	N: 121,428	E: 206,630
NAD 1983(92) (Survey Feet)	N: 398,385	E: 677,920
NAD 1927 (Meters)	N: 121,410	E: 194,077
NAD 1927 (Survey Feet)	N: 398,327	E: 636,734

NEW MEXICO OFFICE OF STATE ENGINEER

Locator Tool Report



WR File Number: C-03782-POD1 Scale: 1:47,832

Northing/Easting: UTM83(92) (Meter): N: 3,551,444 E: 604,526

Northing/Easting: SPCS83(92) (Feet): N: 398,385 E: 677,920

GW Basin: Carlsbad

Print Date: 05/28/2015

U.S. Fish and Wildlife Service
National Wetlands Inventory

Intermittent 720 feet

December 11, 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.

U.S. Fish and Wildlife Service
National Wetlands Inventory

Pond 16,426 feet

December 11, 2024

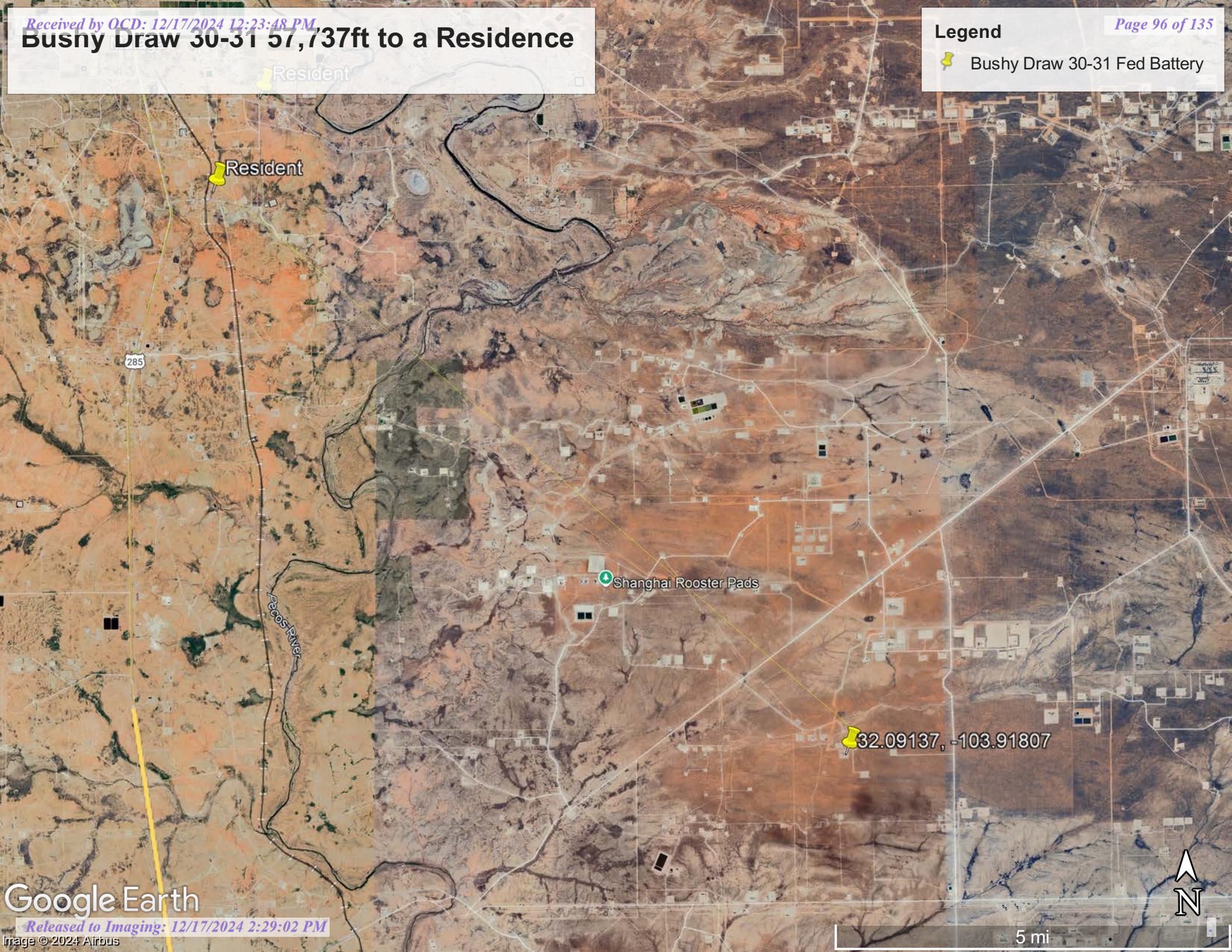
Wetlands

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

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

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

Bushy Draw 30-31 57,737ft to a Residence



Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum) | (R=POD has been replaced and no longer serves this file, C=the file is closed) | (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) | (NAD83 UTM in meters) | (meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q64	q16	q4	Sec	Tws	Range	X	Y	Map	Distance
C 04394	CUB	MON	0.000	XTO ENERGY INC	ED	C 04394 POD1	NA				SW	NE	SE	19	25S	30E	602315.9	3553464.1		2,342.6
C 03782	CUB	EXP	0.000	BOPCO, L.P.	ED	C 03782 POD1				Artesian	SE	SW	SW	28	25S	30E	604525.7	3551444.2		2,522.1
C 01360	CUB	IND	0.000	EL PASO NATURAL GAS	ED	C 01360				Shallow	SE	SW	SW	05	26S	30E	602996.6	3548152.0		3,142.9
C 03448	C	PRO	0.000	DEVON ENERGY CORP.	ED	C 01360				Shallow	SE	SW	SW	05	26S	30E	602996.6	3548152.0		3,142.9
C 03449	C	PRO	0.000	OGX RESOURCES	ED	C 01360				Shallow	SE	SW	SW	05	26S	30E	602996.6	3548152.0		3,142.9
C 04705	CUB	MON	0.000	DEVON ENERGY	ED	C 04705 POD1	NA				NE	NW	NE	35	25S	29E	598866.5	3551191.8		3,155.9
C 01361	CUB	IND	0.000	EL PASO NATURAL GAS	ED	C 01361				Shallow	SW	SE	SW	05	26S	30E	603240.4	3548157.5		3,221.8
C 03581	CUB	EXP	0.000	JANEY LOREE PASCHAL	ED	C 03581 POD1				Shallow	SE	SE	SE	05	26S	30E	604298.2	3548291.8		3,646.0
C 03608	C	PRO	0.000	DEVON ENERGY CORP.	ED	C 03581 POD1				Shallow	SE	SE	SE	05	26S	30E	604298.2	3548291.8		3,646.0
C 04612	C	STK	3.000	JANEY LOREE PASCHALL DBA PASCHAL RANCH LLC	ED	C 04612 C-3581	NA				SE	SE	SE	05	26S	30E	604298.2	3548291.8		3,646.0
C 03483	C	STK	3.000	PASCHAL RANCH LLC	ED	C 03483				Shallow	SE	SE	SE	05	26S	30E	604296.3	3548251.4		3,676.5
C 03501	C	PRO	0.000	DEVON ENERGY CO.	ED	C 03483				Shallow	SE	SE	SE	05	26S	30E	604296.3	3548251.4		3,676.5
C 03502	C	PRO	0.000	DEVON ENERGY CO	ED	C 03483				Shallow	SE	SE	SE	05	26S	30E	604296.3	3548251.4		3,676.5
C 03503	C	PRO	0.000	DEVON ENERGY CO.	ED	C 03483				Shallow	SE	SE	SE	05	26S	30E	604296.3	3548251.4		3,676.5
C 03483	C	STK	3.000	PASCHAL RANCH LLC	ED	C 03483 POD3					SE	SW	SW	04	26S	30E	604557.8	3548291.0		3,814.1
					ED	C 03483 POD2						SW	SW	04	26S	30E	604565.8	3548253.6		3,847.4
C 04851	CUB	MON	0.000	COG OPERATING LLC	ED	C 04851 POD1	NA				NW	NE	NW	24	25S	29E	599946.3	3554519.9		3,966.4
C 02441	C	STK	0.000	BYRON W PASCHAL	ED	C 02441								21	25S	30E	605077.0	3553783.0 *		4,039.6
C 04758	CUB	MON	0.000	XTO ENERGY, INC.	ED	C 04758 POD1	NA				SE	SE	SE	17	25S	30E	604096.5	3554651.8		4,078.8
C 04558	CUB	MON	0.000	XTO ENERGY INC	ED	C 04558 POD1	NA				SW	SE	SW	23	25S	29E	598353.7	3553039.4		4,130.9
C 04730	CUB	MON	0.000	XTO ENERGY, INC	ED	C 04730 POD1	NA				SW	SW	NW	27	25S	30E	606032.8	3552256.2		4,163.2
C 04529	CUB	MON	0.000	XTO ENERGY INC	ED	C 04529 POD1	NA				NW	SW	NW	18	25S	30E	601076.9	3555733.7		4,689.9
C 04755	CUB	MON	0.000	DEVON ENERGY	ED	C 04755 POD2	NA				SE	NW	SW	12	26S	29E	599857.0	3546955.1		4,711.8
C 04720	CUB	EXP	0.000	DEVON ENERGY	ED	C 04720 POD1	NA				SE	NW	SW	12	26S	29E	599807.3	3546968.8		4,722.7
C 04755	CUB	MON	0.000	DEVON ENERGY	ED	C 04755 POD1	NA				SE	NW	SW	12	26S	29E	599787.4	3546971.4		4,729.8
C 04720	CUB	EXP	0.000	DEVON ENERGY	ED	C 04720 POD4	NA				SE	NW	SW	12	26S	29E	599812.4	3546955.0		4,732.5
					ED	C 04720 POD2	NA				SE	NW	SW	12	26S	29E	599835.7	3546932.1		4,742.0
					ED	C 04720 POD3	NA				SE	NW	SW	12	26S	29E	599835.7	3546932.1		4,742.0
					ED	C 04720 POD5	NA				SE	NW	SW	12	26S	29E	599840.0	3546920.4		4,750.4
					ED	C 04720 POD6	NA				SE	NW	SW	12	26S	29E	599857.7	3546880.9		4,777.5
C 04755	CUB	MON	0.000	DEVON ENERGY	ED	C 04755 POD3	NA				SE	NW	SW	12	26S	29E	599747.8	3546862.3		4,844.7

Record Count: 31

Filters Applied:

UTM Filters (in meters):
Easting: 602022
Northing: 3551140

Point of Diversion Summary

quarters are 1=NW 2=NE 3=SW 4=SE
quarters are smallest to largest

NAD83 UTM in meters

Well Tag	POD Nbr	Q64	Q16	Q4	Sec	Tws	Rng	X	Y	Map
	C 01360	SE	SW	SW	05	26S	30E	602996.6	3548152.0	

* UTM location was derived from PLSS - see Help

Driller License:	95	**Driller Company:**	FOLK DRILLING CO.		
Driller Name:					
Drill Start Date:	1952-04-26	**Drill Finish Date:**	1952-05-15	**Plug Date:**	
Log File Date:	1953-11-17	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	12.75	**Depth Well:**	770	**Depth Water:**	173

Water Bearing Stratifications:

Top	Bottom	Description
210	220	Sandstone/Gravel/Conglomerate
580	585	Sandstone/Gravel/Conglomerate
665	710	Sandstone/Gravel/Conglomerate
725	770	Sandstone/Gravel/Conglomerate

Casing Perforations:

Top	Bottom
180	289
538	770

Meter Information

Meter Number:	16557	**Meter Make:**	SIEMENS
Meter Serial Number:	L1254823	**Meter Multiplier:**	100.0000
Number of Dials:	8	**Meter Type:**	Diversion
Unit of Measure:	Gallons	**Reading Frequency:**	Quarterly

Meter Readings (in Acre-Feet)

Read Date	Year	Mtr Reading	Flag	Rdr	Comment	Mtr Amount	Online
2014-07-01	2014	234997.000	A	RPT		0.000	
2014-09-30	2014	354169.000	A	RPT		36.573	
2014-11-20	2014	7281000.000	A	RPT		0.000	
2014-12-31	2014	11430100.000	A	RPT		12.733	
2015-04-01	2015	22535200.000	A	RPT		34.080	
2015-07-01	2015	35821800.000	A	RPT		40.775	
2015-10-05	2015	46631200.000	A	RPT		33.173	
2015-12-31	2015	55653200.000	A	RPT		27.688	
2016-01-31	2016	58047600.000	A	RPT		7.348	
2016-02-29	2016	61081100.000	A	RPT		9.309	
2016-03-31	2016	62593100.000	A	RPT		4.640	
2016-06-30	2016	71642600.000	A	RPT		27.772	
2016-10-03	2016	81998399.000	A	RPT		31.781	
2016-12-31	2016	90558600.000	A	RPT		26.270	
2019-04-04	2019	164290087.000	A	RPT		226.274	
2019-10-02	2019	790380.000	A	RPT	METER CHANGE OUT 07/2019	0.000	
2020-01-02	2020	1733720.000	A	RPT		289.500	
2021-04-07	2021	36814117.000	A	WEB		10765.779	X
2021-07-27	2021	36836238.000	A	WEB		6.789	X
2021-10-04	2021	36844496.000	A	WEB		2.534	X
2021-12-31	2021	36847463.000	A	WEB		0.911	X

YTD Meter Amounts:

Year	Amount
2014	49.306
2015	135.716
2016	107.120

Year	Amount
2019	226.274
2020	289.500
2021	10776.013

Meter Information

Meter Number:	16558	**Meter Make:**	MASTERMETER
Meter Serial Number:	32530403	**Meter Multiplier:**	100.0000
Number of Dials:	6	**Meter Type:**	Diversion
Unit of Measure:	Gallons	**Reading Frequency:**	Monthly (No Reading Expected)

Meter Readings (in Acre-Feet)

Read Date	Year	Mtr Reading	Flag	Rdr	Comment	Mtr Amount	Online
2014-10-01	2014	354169.000	A	RPT		0.000	
2014-11-20	2014	415555.000	A	RPT		18.839	
2014-11-21	2014	72810.000	A	RPT		0.000	
2014-12-31	2014	112178.000	A	RPT		12.082	
2015-02-01	2015	147039.000	A	RPT		10.698	
2015-03-02	2015	188133.000	A	RPT		12.611	
2015-04-01	2015	224102.000	A	RPT		11.038	
2015-04-30	2015	270723.000	A	RPT		14.307	
2015-05-31	2015	315628.000	A	tw		13.781	
2015-07-01	2015	369075.000	A	tw		16.402	
2015-08-01	2015	395528.000	A	tw		8.118	
2015-08-31	2015	455361.000	A	tw		18.362	
2015-10-01	2015	466312.000	A	RPT		3.361	

YTD Meter Amounts:

Year	Amount
2014	30.921
2015	108.678

12/11/24 8:01 AM MST **Point of Diversion Summary**

Water Right Summary

get image list

WR File Number:	C 01360	**Subbasin:**	CUB	**Cross Reference:**
Primary Purpose:	IND INDUSTRIAL			
Primary Status:	DCL Declaration			
Total Acres:	0.000	**Subfile:**		**Header:**
Total Diversion:	0.000	**Cause/Case:**		
Owner:	EL PASO NATURAL GAS			
Contact:	PAULA JOY			

Documents on File

(acre-feet per annum)

Transaction Images	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/To	Acres	Diversion	Consumptive
	460091	COWNF	2010-05-26	CHG	PRC	C 01360	T	0.000	0.000	
	203459	DCL	1953-11-17	DCL	PRC	C 01360	T	0.000	0.000	

Current Points of Diversion

POD Number	Well Tag	Source	Q64	Q16	Q4	Sec	Tws	Rng	X	Y	Map	Other Location Desc
C 01360		Shallow	SE	SW	SW	05	26S	30E	602996.6	3548152.0		

*** UTM location was derived from PLSS - see Help**

Place of Use

Q256	Q64	Q16	Q4	Sec	Tws	Rng	Acres	Diversion	CU	Use	Priority	Status	Other Location Desc
							0.000	0.000		IND		DCL	NO PLACE OF USE GIVEN.

Source

Acres	Diversion	CU	Use	Priority	Source	Description
0.000	0.000		IND		GW	

Water Right Summary

get image list

WR File Number:	C 03448	**Subbasin:**	C	**Cross Reference:**
Primary Purpose:	PRO 72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE			
Primary Status:	PMT Permit			
Total Acres:		**Subfile:**		**Header:**
Total Diversion:	0.000	**Cause/Case:**		
Owner:	DEVON ENERGY CORP.			
Contact:	SCOTT GREGORY			

Documents on File

(acre-feet per annum)

Transaction Images	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/To	Acres	Diversion	Consumptive
get images	461570	72121	2010-06-29	PMT	APR	C 03448	T		3.000	

Current Points of Diversion

POD Number	Well Tag	Source	Q64	Q16	Q4	Sec	Tws	Rng	X	Y	Map	Other Location Desc
C 01360		Shallow	SE	SW	SW	05	26S	30E	602996.6	3548152.0		

*** UTM location was derived from PLSS - see Help**

Water Right Summary

get image list

WR File Number:	C 03449	**Subbasin:**	C	**Cross Reference:**
Primary Purpose:	PRO 72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE			
Primary Status:	PMT Permit			
Total Acres:		**Subfile:**		**Header:**
Total Diversion:	0.000	**Cause/Case:**		
Owner:	OGX RESOURCES			
Contact:	SCOTT GREGORY			

Documents on File

(acre-feet per annum)

Transaction Images	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/To	Acres	Diversion	Consumptive
get images	461594	72121	2010-06-29	EXP	EXP	C 03449	T		3.000	

Current Points of Diversion

POD Number	Well Tag	Source	Q64	Q16	Q4	Sec	Tws	Rng	X	Y	Map	Other Location Desc
C 01360		Shallow	SE	SW	SW	05	26S	30E	602996.6	3548152.0		

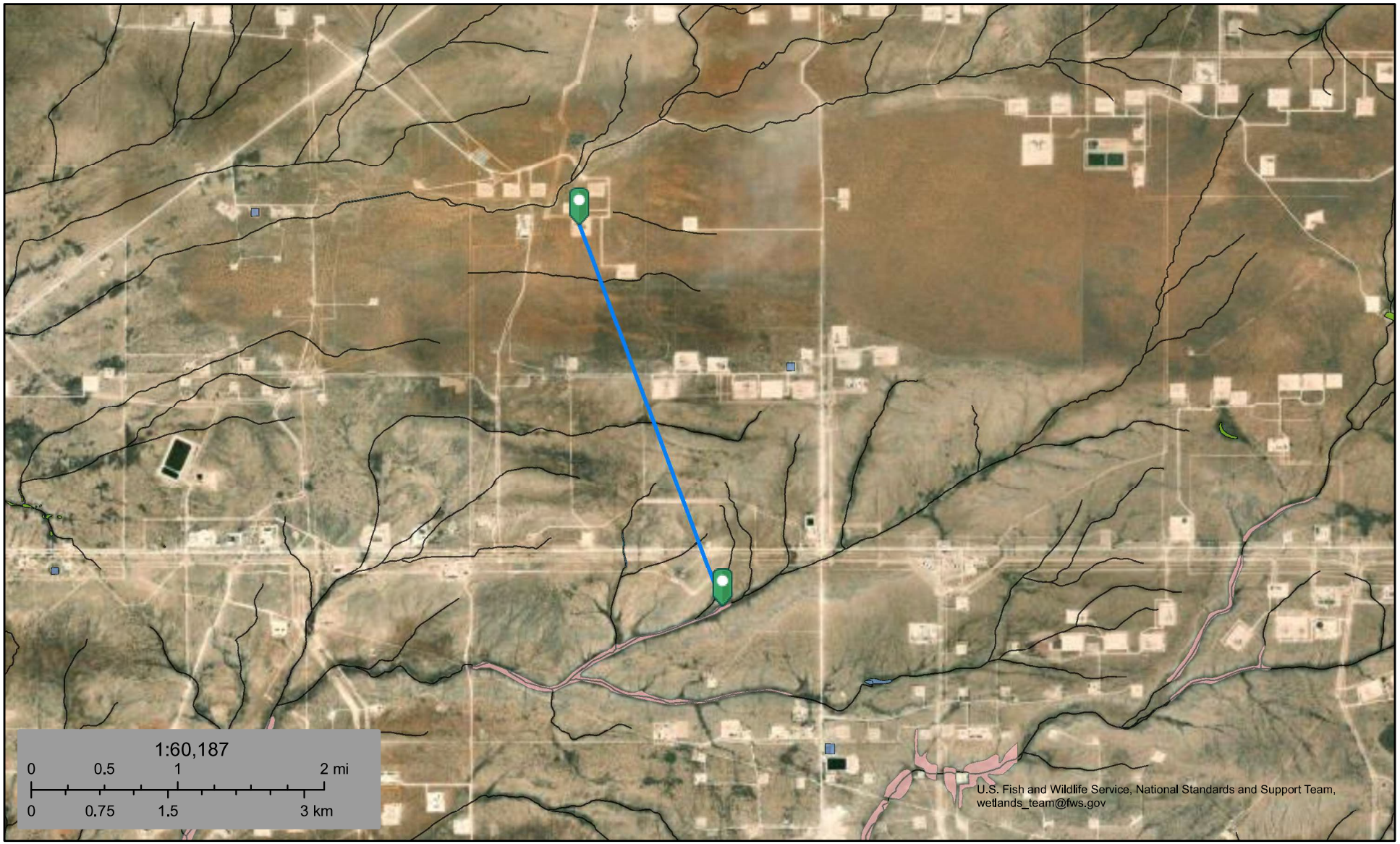
*** UTM location was derived from PLSS - see Help**

12/11/24 8:08 AM MST **Water Rights Summary**

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetland 12,393 feet



December 11, 2024

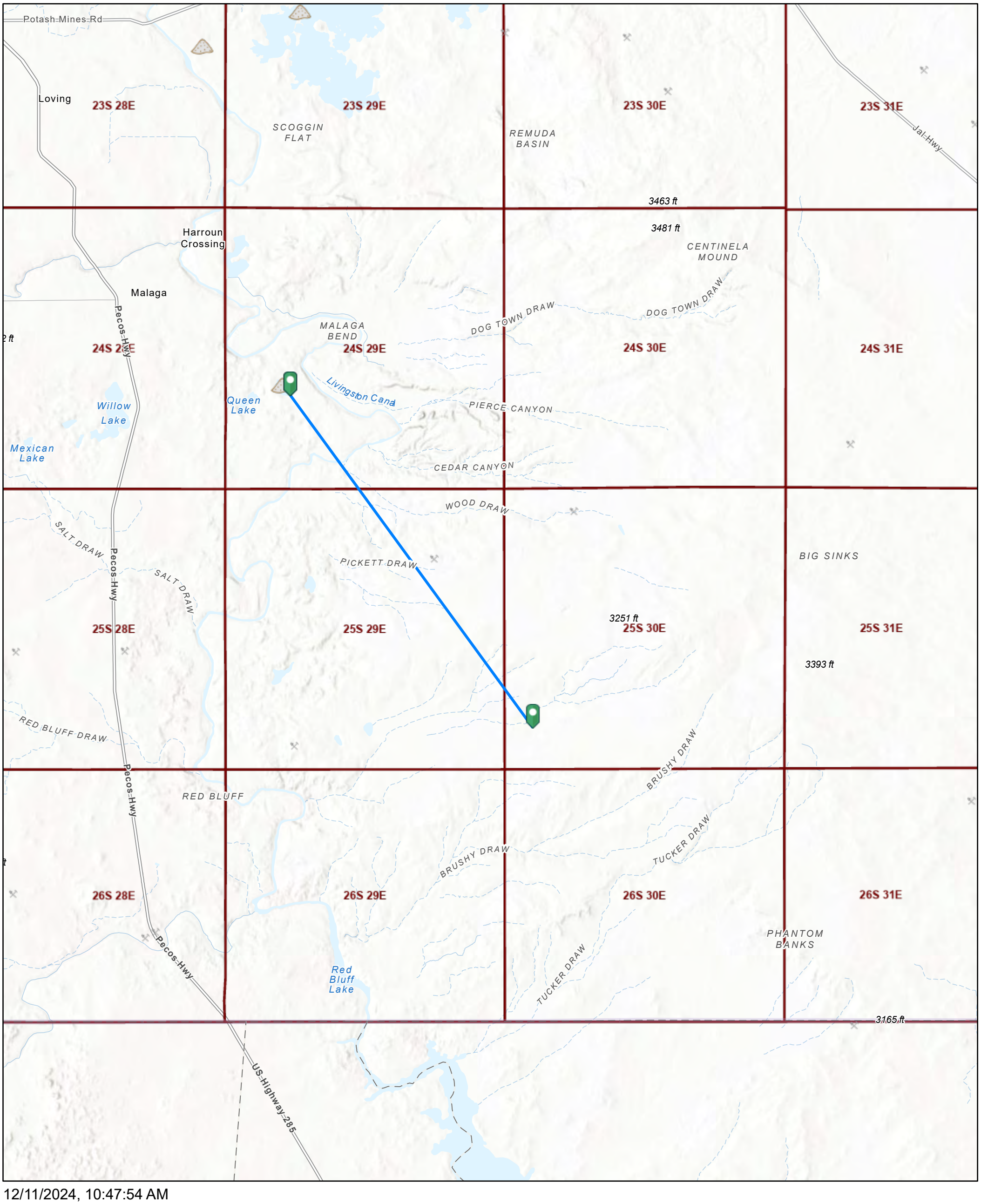
Wetlands

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

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

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

Salt Mine 46,820 feet



12/11/2024, 10:47:54 AM

Registered Mines

- Aggregate, Stone etc.
- Aggregate, Stone etc.
- Salt
- PLSS Townships

1:144,448

0 1.25 2.5 5 mi

0 2.25 4.5 9 km

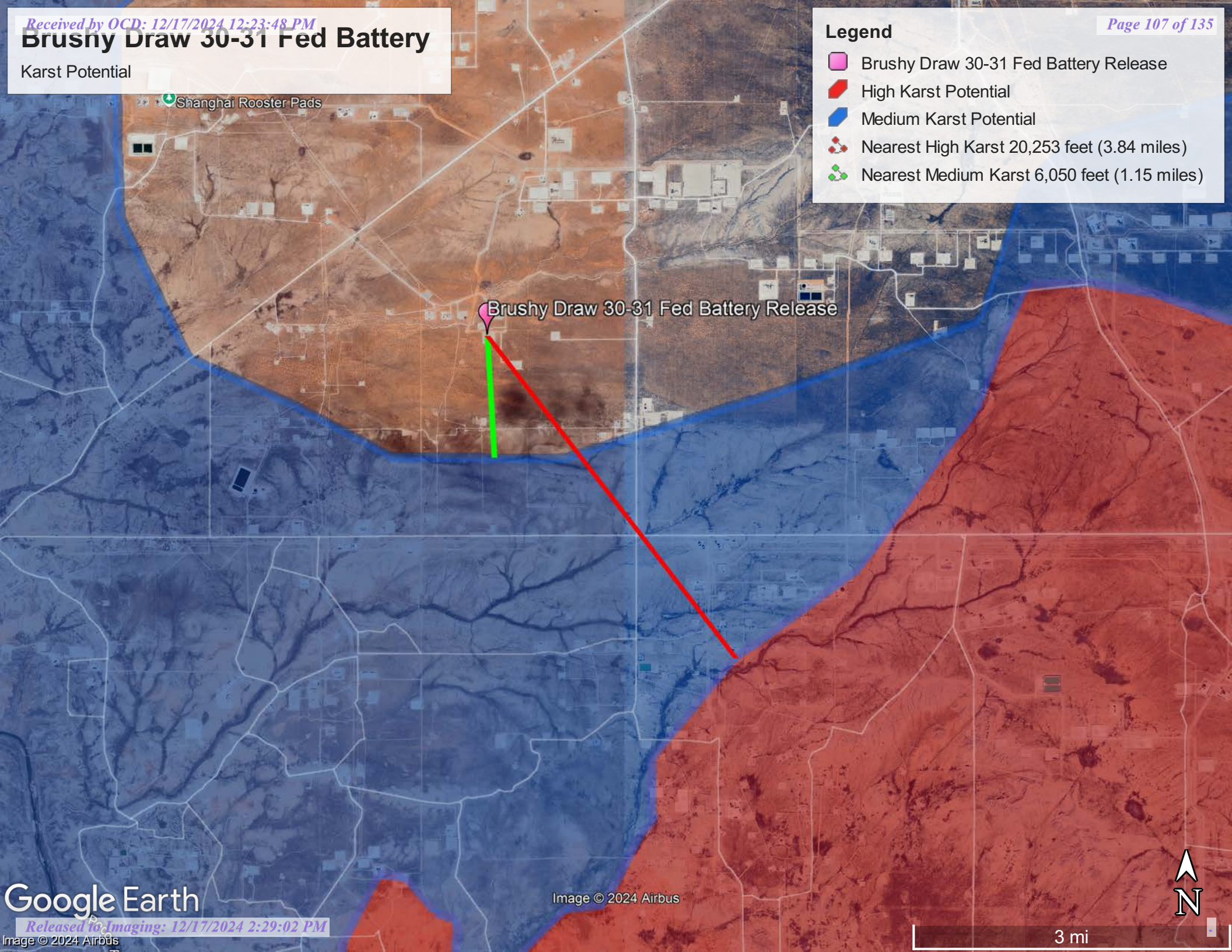
Esri, NASA, NGA, USGS, Texas Parks & Wildlife, CONANP, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS, BLM

EMNRD MMD GIS Coordinator

NM Energy, Minerals and Natural Resources Department (http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=1b5e577974664d689b47790897ca2795)

Brushy Draw 30-31 Fed Battery

Karst Potential



Legend

- Brushy Draw 30-31 Fed Battery Release
- High Karst Potential
- Medium Karst Potential
- Nearest High Karst 20,253 feet (3.84 miles)
- Nearest Medium Karst 6,050 feet (1.15 miles)

National Flood Hazard Layer FIRMette

FEMA

103°55'24"W 32°5'44"N

103°54'46"W 32°5'14"N

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

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

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

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

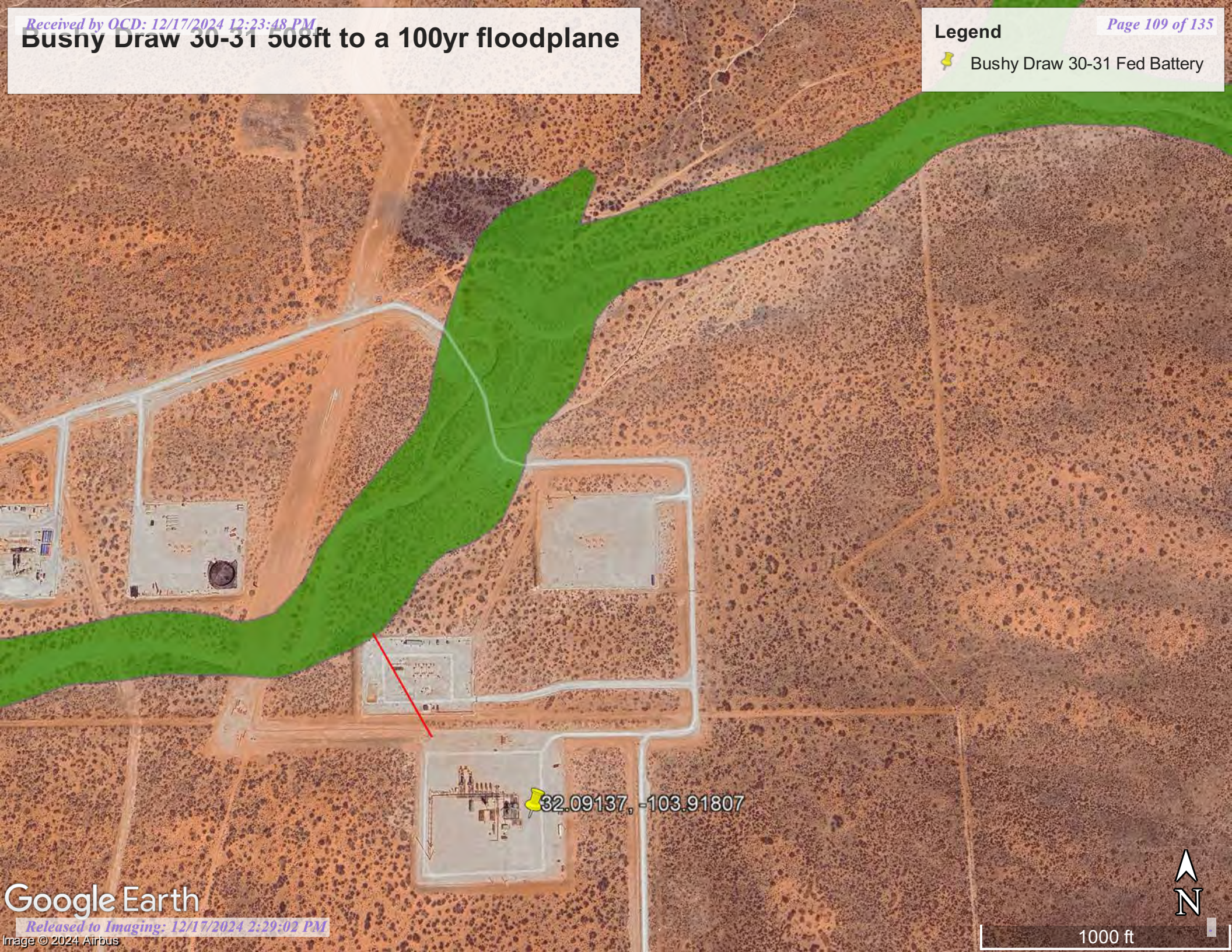
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/18/2024 at 8:49 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by 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.

Bushy Draw 30-31 508ft to a 100yr floodplane

Legend

Bushy Draw 30-31 Fed Battery



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

November 18, 2024

Custom Soil Resource Report
Soil Map (11. Bushy Draw 30-31 Soil Type)

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 (11. Bushy Draw 30-31 Soil Type)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BB	Berino complex, 0 to 3 percent slopes, eroded	3.7	100.0%
Totals for Area of Interest		**3.7**	**100.0%**

Map Unit Descriptions (11. Bushy Draw 30-31 Soil Type)

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Eddy Area, New Mexico

BB—Berino complex, 0 to 3 percent slopes, eroded

Map Unit Setting

National map unit symbol: 1w43
Elevation: 2,000 to 5,700 feet
Mean annual precipitation: 5 to 15 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

Berino and similar soils: 60 percent
Pajarito and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berino

Setting

Landform: Plains, fan piedmonts
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 17 inches: fine sand
H2 - 17 to 58 inches: sandy clay loam
H3 - 58 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 3 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 to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Description of Pajarito

Setting

Landform: Dunes, plains, interdunes
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 9 inches: loamy fine sand
H2 - 9 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
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: 40 percent
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Moderate (about 8.0 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

Minor Components

Pajarito

Percent of map unit: 4 percent
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Wink

Percent of map unit: 4 percent
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Cacique

Percent of map unit: 4 percent
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Kermit

Percent of map unit: 3 percent
Ecological site: R070BD005NM - Deep Sand
Hydric soil rating: No

Soil Information for All Uses

Ecological Sites

Individual soil map unit components can be correlated to a particular ecological site. The Ecological Site Assessment section includes ecological site descriptions, plant growth curves, state and transition models, and selected National Plants database information.

All Ecological Sites — (12. Bushy Draw 30-31 Ecological)

An "ecological site" is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. For example, the hydrology of the site is influenced by development of the soil and plant community. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production.

An ecological site name provides a general description of a particular ecological site. For example, "Loamy Upland" is the name of a rangeland ecological site. An "ecological site ID" is the symbol assigned to a particular ecological site.

The map identifies the dominant ecological site for each map unit, aggregated by dominant condition. Other ecological sites may occur within each map unit. Each map unit typically consists of one or more components (soils and/or miscellaneous areas). Each soil component is associated with an ecological site. Miscellaneous areas, such as rock outcrop, sand dunes, and badlands, have little or no soil material and support little or no vegetation and therefore are not linked to an ecological site. The table below the map lists all of the ecological sites for each map unit component in your area of interest.

Custom Soil Resource Report

Map—Dominant Ecological Site (12. Bushy Draw 30-31 Ecological)

MAP LEGEND

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

Soils

Soil Rating Polygons
- R070BD003NM
- Not rated or not available

Soil Rating Lines
- R070BD003NM
- Not rated or not available

Soil Rating Points
- R070BD003NM
- 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 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.

Table—Ecological Sites by Map Unit Component (12. Bushy Draw 30-31 Ecological)

Map unit symbol	Map unit name	Component name (percent)	Ecological site	Acres in AOI	Percent of AOI
BB	Berino complex, 0 to 3 percent slopes, eroded	Berino (60%)	R070BD003NM — Loamy Sand	3.7	100.0%
		Pajarito (25%)	R070BD003NM — Loamy Sand		
		Cacique (4%)	R070BD004NM — Sandy		
		Pajarito (4%)	R070BD003NM — Loamy Sand		
		Wink (4%)	R070BD003NM — Loamy Sand		
		Kermit (3%)	R070BD005NM — Deep Sand		
Totals for Area of Interest				**3.7**	**100.0%**

USDA Natural Resources Conservation Service

Ecological site R070BD003NM
Loamy Sand

Accessed: 09/02/2024

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.

Associated sites

R070BD004NM	**Sandy** Sandy
R070BD005NM	**Deep Sand** Deep Sand

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site is on uplands, plains, dunes, fan piedmonts and in inter dunal areas. The parent material consists of mixed alluvium and or eolian sands derived from sedimentary rock. Slope range on this site range from 0 to 9 percent with the average of 5 percent.

Low stabilized dunes may occur occasionally on this site. Elevations range from 2,800 to 5,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan piedmont (2) Alluvial fan (3) Dune
Elevation	2,800–5,000 ft
Slope	0–9%
Aspect	Aspect is not a significant factor

Climatic features

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 being late March or early April and the first killing frost being in later 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. Strong winds blow from the southwest from January through June, which accelerates soil drying during a critical period for cool season plant growth.

Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

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 is not influenced from water from wetlands or streams.

Soil features

Soils are moderately deep or very deep. Surface textures are loamy fine sand, fine sandy loam, loamy very fine sand or gravelly sandy loam.

Subsurface is a loamy fine sand, coarse sandy loam, fine sandy loam or loam that averages less than 18 percent clay and less than 15 percent carbonates.

Substratum is a fine sandy loam or gravelly fine sandy loam with less than 15 percent gravel and with less than 40 percent calcium carbonate. Some layers high in lime or with caliche fragments may occur at depths of 20 to 30 inches.

These soils, if unprotected by plant cover and organic residue, become wind blown and low hummocks are formed.

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

Characteristic soils are:
Maljamar
Berino
Parjarito
Palomas
Wink
Pyote

Table 4. Representative soil features

Surface texture	(1) Fine sand (2) Fine sandy loam (3) Loamy fine sand
Family particle size	(1) Sandy
Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderate to moderately rapid

Soil depth	40–72 in
Surface fragment cover <=3"	0–10%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	5–7 in
Calcium carbonate equivalent (0-40in)	3–40%
Electrical conductivity (0-40in)	2–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0–2
Soil reaction (1:1 water) (0-40in)	6.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	4–12%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

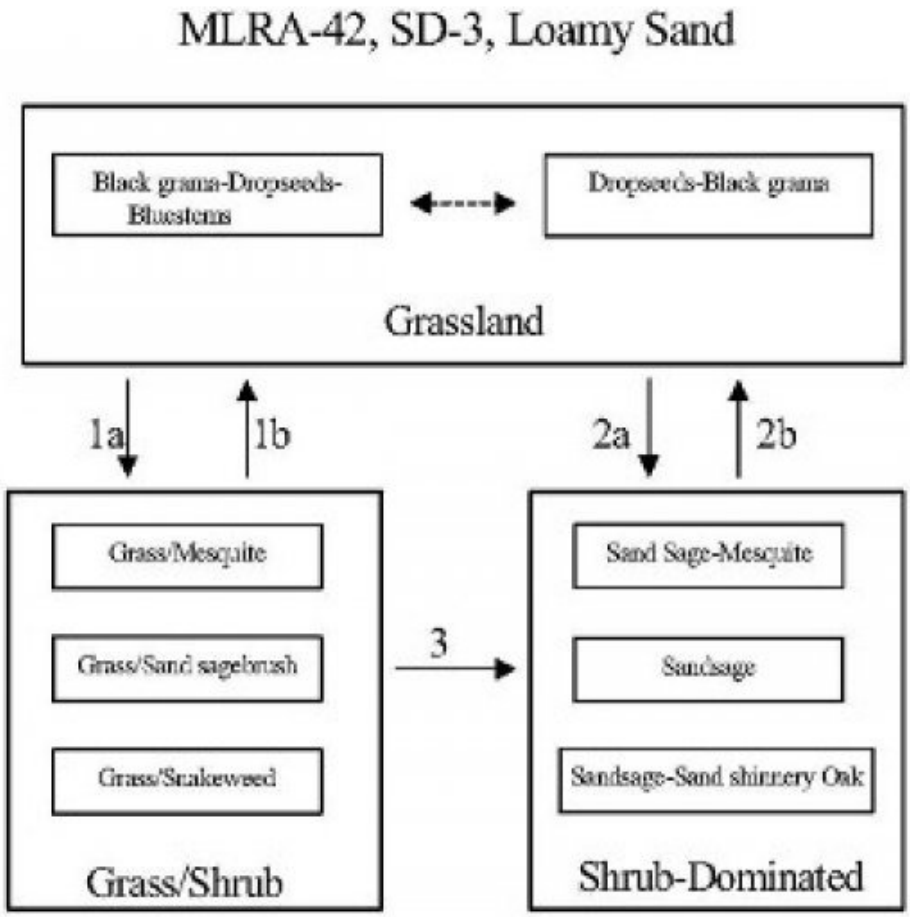
Overview

The Loamy Sand site intergrades with the Deep Sand and Sandy sites (SD-3). These sites can be differentiated by surface soil texture and depth to a textural change. Loamy Sand and Deep Sand sites have coarse textured (sands and loamy sand) surface soils while Sandy sites have moderately coarse textured (sandy loam and fine sandy loam) surfaces. Although Loamy Sand and Deep Sand sites have similar surface textures, the depth to a textural change is different—Loamy Sand sub-surface textures typically increase in clay at approximately 20 to 30 inches, and Deep Sand sites not until around 40 inches.

The historic plant community of Loamy Sand sites is dominated by black grama (*Bouteloua eriopoda*), dropseeds (*Sporobolus flexuosus*, *S. contractus*, *S. cryptandrus*), and bluestems (*Schizachyrium scoparium* and *Andropogon hallii*), with scattered shinnery oak (*Quercus havardii*) and sand sage (*Artemisia filifolia*). Perennial and annual forb abundance and distribution are dependent on precipitation. Litter and to a lesser extent, bare ground, are a significant proportion of ground cover while grasses compose the remainder. Decreases in black grama indicate a transition to either a grass/shrub or shrub-dominated state. The grass/shrub state is composed of grasses/honey mesquite (*Prosopis glandulosa*), grasses/broom snakeweed (*Gutierrezia sarothrae*), or grasses/sand sage. The shrub-dominated state occurs after a severe loss of grass cover and a prevalence of sand sage with secondary shinnery oak and mesquite. Heavy grazing intensity and/or drought are influential drivers in decreasing black grama and bluestems and subsequently increasing shrub cover, erosion, and bare patches. Historical fire suppression also encourages shrub pervasiveness and a competitive advantage over grass species (McPherson 1995). Brush and grazing management, however, may reverse grass/shrub and shrub-dominated states toward the grassland-dominated historic plant community.

State and transition model

Plant Communities and Transitional Pathways (diagram):



1a. Drought, over grazing, fire suppression.
1b. Brush control, prescribed grazing

2.a Severe loss of grass cover, fire suppression, erosion.
2b. Brush control, seeding, prescribed grazing.

3. Continued loss of grass cover, erosion.

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

Grassland: The historic plant community is a uniformly distributed grassland dominated by black grama, dropseeds, and bluestems. Sand sage and shinnery oak are evenly dispersed throughout the grassland due to the coarse soil

surface texture. Perennial and annual forbs are common but their abundance and distribution are reflective of precipitation. Bluestems initially, followed by black grama, decrease with drought and heavy grazing intensity. Historical fire frequency is unknown but likely occurred enough to remove small shrubs to the competitive advantage of grass species. Fire suppression, drought conditions, and excessive grazing drive most grass species out of competition with shrub species. Diagnosis: Grassland dominated by black grama, dropseeds, and bluestems. Shrubs, such as sand sage, shinnery oak, and mesquite are dispersed throughout the grassland. Forbs are present and populations fluctuate with precipitation variability.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	442	833	1224
Forb	110	208	306
Shrub/Vine	98	184	270
Total	**650**	**1225**	**1800**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	28%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	50%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	22%

Figure 5. Plant community growth curve (percent production by month). NM2803, R042XC003NM-Loamy Sand-HCPC. SD-3 Loamy Sand - Warm season plant community .

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	3	5	10	10	25	30	12	5	0	0

State 2
Grass/Shrub

Community 2.1
Grass/Shrub

Grass/Shrub State: The grass/shrub state is dominated by communities of grasses/mesquite, grasses/snakeweed, or grasses/sand sage. Decreases in black grama and bluestem species lead to an increase in bare patches and mesquite which further competes with grass species. An increase of dropseeds and threeawns occurs. Grass distribution becomes more patchy with an absence or severe decrease in black grama and bluestems. Mesquite provides nitrogen and soil organic matter to co-dominant grasses (Ansley and Jacoby 1998, Ansley et al. 1998). Mesquite mortality when exposed to fire is low due to aggressive resprouting abilities. Herbicide application combined with subsequent prescribed fire may be more effective in mesquite reduction (Britton and Wright 1971). Diagnosis: This state is dominated by an increased abundance of communities including grass/mesquite, grass/snakeweed, or grass/sand sage. Dropseeds and threeawns have a patchy distribution. Transition to Grass/Shrub State (1a): The historic plant community begins to shift toward the grass/shrub state as drivers such as drought, fire suppression, interspecific competition, and excessive grazing contribute to alterations in soil properties and herbaceous cover. Cover loss and surface soil erosion are initial indicators of transition followed by a decrease in black grama with a subsequent increase of dropseeds, threeawns, mesquite, and snakeweed. Snakeweed has been documented to outcompete black grama especially under conditions of fire suppression and drought (McDaniel et al. 1984). Key indicators of approach to transition: • Loss of black grama cover • Surface soil erosion • Bare patch expansion • Increased dropseed/threeawn and mesquite, snakeweed, or sand sage abundances Transition to Historic Plant Community (1b): Brush and grazing management may restore the grassland component and reverse shrub or grass/shrub dominated states back toward the historic plant community.

State 3
Shrub Dominated

Community 3.1
Shrub Dominated

Shrub-Dominated State: The shrub-dominated state results from a severe loss of grass cover. This state's primary species is sand sage. Shinnery oak and mesquite also occur; however, grass cover is limited to intershrub distribution. Sand sage stabilizes light sandy soils from wind erosion, which enhances protected grass/forb cover (Davis and Bonham 1979). However, shinnery oak also responds to the sandy soils with dense stands due to an

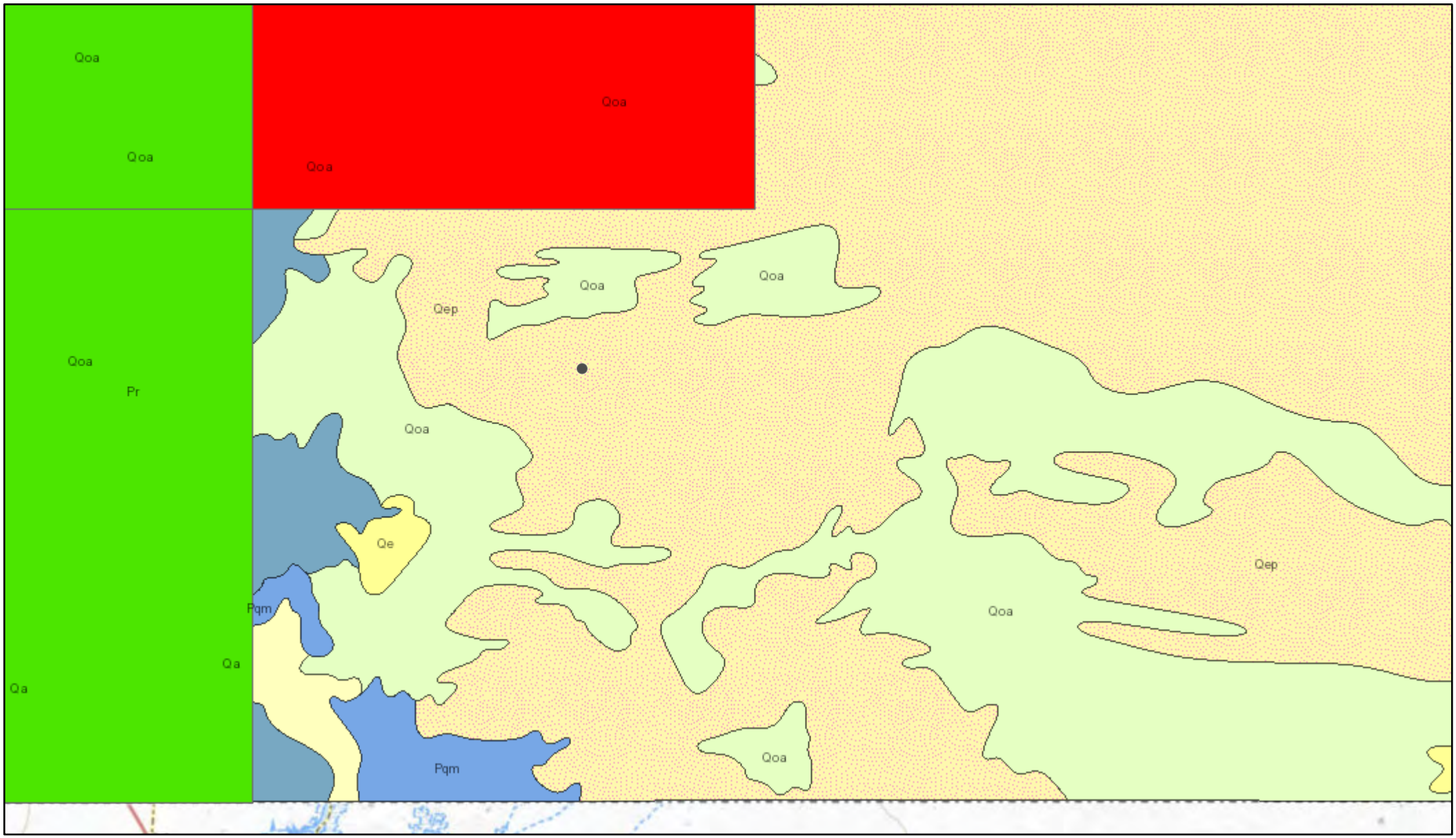
aggressive rhizome system. Shinnery oak's extensive root system promotes competitive exclusion of grasses and forbs. Sand sage, shinnery oak, and mesquite can be controlled with herbicide (Herbel et al. 1979, Pettit 1986). Transition to Shrub-Dominated (2a): Severe loss of grass species with increased erosion and fire suppression will result in a transition to a shrub-dominated state with sand sage, Shin oak, and honey mesquite directly from the grassland-dominated state. Key indicators of approach to transition: • Severe loss of grass species cover • Surface soil erosion • Bare patch expansion • Increased sand sage, shinnery oak, and mesquite abundance Transition to Historic Plant Community (2b): Brush and grazing management may restore the grassland component and reverse shrub or grass/shrub dominated states back toward the historic plant community. In addition, seeding with native grass species will augment the transition to a grassland-dominated state. Transition to Shrub-Dominated (3): If the grass/shrub site continues to lose grass cover with soil erosion, the site will transition to a shrub-dominated state with sand sage, shinnery oak, and honey mesquite. Key indicators of approach to transition: • Continual loss of dropseeds/threeawns cover • Surface soil erosion • Bare patch expansion • Increased sand sage, shinnery oak, and mesquite/dropseed/threeawn and mesquite/snakeweed abundance

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	**Warm Season**			61–123	
	little bluestem	SCSC	*Schizachyrium scoparium*	61–123	–
2	**Warm Season**			37–61	
	sand bluestem	ANHA	*Andropogon hallii*	37–61	–
3	**Warm Season**			37–61	
	cane bluestem	BOBA3	*Bothriochloa barbinodis*	37–61	–
	silver bluestem	BOSA	*Bothriochloa saccharoides*	37–61	–
4	**Warm Season**			123–184	
	black grama	BOER4	*Bouteloua eriopoda*	123–184	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	123–184	–
5	**Warm Season**			123–184	
	thin paspalum	PASE5	*Paspalum setaceum*	123–184	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	123–184	–
	fringed signalgrass	URCI	*Urochloa ciliatissima*	123–184	–
6	**Warm Season**			123–184	
	spike dropseed	SPCO4	*Sporobolus contractus*	123–184	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	123–184	–
	mesa dropseed	SPFL2	*Sporobolus flexuosus*	123–184	–
7	**Warm Season**			61–123	
	hooded windmill grass	CHCU2	*Chloris cucullata*	61–123	–
	Arizona cottontop	DICA8	*Digitaria californica*	61–123	–
9	**Other Perennial Grasses**			37–61	
	Grass, perennial	2GP	*Grass, perennial*	37–61	–
Shrub/Vine					
8	**Warm Season**			37–61	
	New Mexico feathergrass	HENE5	*Hesperostipa neomexicana*	37–61	–
	giant dropseed	SPGI	*Sporobolus giganteus*	37–61	–
10	**Shrub**			61–123	

13. Bushy Draw 30-31 Geology



11/18/2024, 2:41:54 PM

Lithologic Units

- Playa—Alluvium and evaporite deposits (Holocene)
- Water—Perenial standing water
- Qa—Alluvium (Holocene to upper Pleistocene)

1:144,448

0 1 2 4 mi

0 1.5 3 6 km

Esri, NASA, NGA, USGS, NMBGMR, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global

ArcGIS Web AppBuilder

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

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

QUESTIONS

Action 412943

QUESTIONS

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 412943
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2431846528**
Incident Name	**NAPP2431846528 BRUSHY DRAW 30-31 FED BATTERY @ 0**
Incident Type	**Release Other**
Incident Status	**Remediation Plan Received**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	Brushy Draw 30-31 FED Battery
Date Release Discovered	11/10/2024
Surface Owner	Federal

Incident Details	
Please answer all the questions in this group.	
Incident Type	Release Other
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: Corrosion | Other (Specify) | Crude Oil | Released: 27 BBL | Recovered: 2 BBL | Lost: 25 BBL.
Produced Water Released (bbls) Details	Cause: Corrosion | Other (Specify) | Produced Water | Released: 108 BBL | Recovered: 2 BBL | Lost: 106 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)	Release was from the bulk line

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

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

QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 412943
	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: Colton Brown Title: Environmental Advisor Email: colton.s.brown@exxonmobil.com Date: 12/17/2024

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

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

QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 412943
	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)	Less than or equal 25 (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 500 and 1000 (ft.)
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 1 and 5 (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	Low
A 100-year floodplain	Between 500 and 1000 (ft.)
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)	6800
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	4598
GRO+DRO (EPA SW-846 Method 8015M)	4101
BTEX (EPA SW-846 Method 8021B or 8260B)	0
Benzene (EPA SW-846 Method 8021B or 8260B)	0
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
On what estimated date will the remediation commence	01/15/2025
On what date will (or did) the final sampling or liner inspection occur	01/15/2025
On what date will (or was) the remediation complete(d)	04/15/2025
What is the estimated surface area (in square feet) that will be reclaimed	570
What is the estimated volume (in cubic yards) that will be reclaimed	85
What is the estimated surface area (in square feet) that will be remediated	10268
What is the estimated volume (in cubic yards) that will be remediated	1560
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.	

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

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

QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 412943
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Remediation Plan (continued)	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:	
(Select all answers below that apply.)	
(Ex Situ) Excavation and **off-site** disposal (i.e. dig and haul, hydrovac, etc.)	Yes
Which OCD approved facility will be used for **off-site** disposal	LEA LAND LANDFILL [fEEM0112342028]
OR which OCD approved well (API) will be used for **off-site** disposal	*Not answered.*
OR is the **off-site** disposal site, to be used, out-of-state	*Not answered.*
OR is the **off-site** disposal site, to be used, an NMED facility	*Not answered.*
(Ex Situ) Excavation and **on-site** remediation (i.e. On-Site Land Farms)	*Not answered.*
(In Situ) Soil Vapor Extraction	*Not answered.*
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	*Not answered.*
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	*Not answered.*
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	*Not answered.*
Ground Water Abatement pursuant to 19.15.30 NMAC	*Not answered.*
OTHER (Non-listed remedial process)	*Not answered.*
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed 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: Colton Brown Title: Environmental Advisor Email: colton.s.brown@exxonmobil.com Date: 12/17/2024
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

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

QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 412943
	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

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

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

QUESTIONS (continued)

Operator:	OGRID:
XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	5380
	Action Number: 412943
	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

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

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

CONDITIONS

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 412943
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

CONDITIONS

Created By	Condition	Condition Date
bhall	Remediation plan conditionally approved.	12/17/2024
bhall	The entire 10,838 square footage of the release area as depicted on figure 1 must be remediated via excavation and confirmation/final samples must be collected pursuant to 19.15.29 NMAC. Soil samples must meet the most stringent closure criteria. Remediation may need to extended past the proposed extents.	12/17/2024
bhall	Submit a complete and accurate report through the OCD Permitting website by 3/21/2025.	12/17/2024