SITE-SPECIFIC QUALITY ASSURANCE & QUALITY CONTROL AUDIT

Permit Closure Type – Final

PERMIT CLOSURE REPORT – RANGELAND

Location ID 330502
Location Name UPRC FEDERAL-610N64W/23NWNW

Report Date

29 Nov 2024

Soil Sage has conducted a thorough data audit as part of our Quality Assurance and Quality Control (QA/QC) protocols.

Quality Assurance & Quality Control Audit

Auditor	Soil Sage
Audit Date	06/05/2023
Audit Review Date	11/29/2024

Audit Methodology

The following source materials were consulted during the QA and QC audit process:

- ✓ Site Permit Closures provided by CIVITAS Resources
- ✓ Colorado Oil & Gas Information System – COGIS Database
- ✓ On-site Evaluation and Proprietary Soil Sage Drone Imagery data collection
- ✓ Review of legacy imagery for site location and facility parameters

All pertinent data, imagery, and materials are included at the end of this report.

Site Description

Name	UPRC FEDERAL-610N64W /23NWNW			
Location ID	330502			
Operator / #	HIGHPOINT OPERATING CORPORATION / 10071			
Field	PAWNEE PIONEER 67805			
County, State	WELD, CO			
Lat/Long	40.825681 / -104.521787			
	X	Planned Location		As Drilled
Facility Status	CL	**Location**		NWNW 23 10N64W
Facility Status Date	12/29/2020	**Access Road**		Oil & Gas Access
Facility Entities	X	Tank Battery	X	Pits
	X	Wells	X	Off-Location Flowlines (**Form 44**)
		Domestic Taps	X	On-Location Flowlines (**Form 42**)
Equipment Remaining on Site	X	None		Debris or Non-Oil & Gas
		List of Equipment:		
Environment Incidents & Remediation		None		Spill or Release (**Form 19**)
	X	Remediation (**Form 27/27A**)		
Inspection Corrective Actions (CA)s	**Corrective Actions (CA)s were detected during the QA & QC Audit.** **CA Overall Status:** 8 of 8 Completed **4 CA:** **CA-Approving Inspection Doc # & Date:** 696300240 & 06/05/2019 ○ **Inspector:** Erica Petrie **Form FIRR Doc # & Submittal Date:** 401957156 & 03/14/2019 ○ **Overall Status:** CAC ○ **Originating Field Inspection Report (FIR) Doc #:** 679600271 ○ **CA#:** 122111 **Date Completed:** 02/28/2019 Wellhead sign has been installed to comply with Rule 210.d. **COGCC Decision:** Approved pending re-inspection ○ **CA#:** 122112 **Date Completed:** 02/28/2019 Battery sign located at entrance has been installed to comply with Rule 210.b. **COGCC Decision:** Approved pending re-inspection ○ **CA#:** 122113 **Date Completed:** 02/28/2019 Trash inside heater treater has been removed to comply with Rule 603.f.			

	COGCC Decision: Approved pending re-inspection ○ **CA#:** 122114 **Date Completed:** 02/28/2019 Sign has been installed on tanks to comply with Rule 210.b. and or Rule 210.d. **COGCC Decision:** Approved pending re-inspection All corrective actions have been completed. Site ready for re-inspection.
	4 CA: **CA-Approving Inspection Doc # & Date:** 679600271 & 02/05/2019 ○ **Inspector:** Brittani Santistevan **Form FIRR Doc # & Submittal Date:** 401503899 & 03/07/2018 ○ **Overall Status:** CAC ○ **Originating Field Inspection Report (FIR) Doc #:** 689300097 ○ **CA#:** 96236 **Date Completed:** 09/01/2017 Debris in treater house has been cleaned up. **COGCC Decision:** Approved pending re-inspection ○ **CA#:** 96237 **Date Completed:** 09/22/2017 All stained soil has been cleaned up. **COGCC Decision:** Approved pending re-inspection ○ **CA#:** 96238 **Date Completed:** 12/01/2017 The unused pump jack has been removed **COGCC Decision:** Approved pending re-inspection ○ **CA#:** 96239 **Date Completed:** 10/20/2017 Signage has been updated. **COGCC Decision:** Approved pending re-inspection All corrective actions have been completed. Site ready for re-inspection **Complete COGCC Inspection Search Results:** Link
Sundry Notice (Form 4)	**No Form 4s were detected during the QA & QC Audit.**
On Location Flowlines (Form 42)	**Form 42s were detected during the QA & QC Audit.** See individual scout card data for details.
Off-Location Flowlines (Form 44)	**No Form 44s were detected during the QA & QC Audit.** However, this location is referenced in Form 44 Doc # 402532103 pertaining to the COLORADO ENERGY FEDERAL Flowline ID 464018 that was abandoned in place on 09/17/2020. This Location, 330502, is one of multiple locations connected to the COLORADO ENERGY FEDERAL Flowline. Two Verification Letters of Abandonment provide additional specifics:

	Doc # 402532123 and Doc # 402532124.
Site Investigation and Remediation Workplan (Form 27/27A)	**Remediation Project #:** 15965 **Form 27A Supplemental Doc # & Date:** 402539347 & 12/29/2020 ○ **Purpose:** Closure of Remediation Project, Final Closure Requested ○ **Closure Request Approved:** 12/29/2020 by Rick Allison ○ **Date of Reclamation Completion:** 12/23/2020 ○ **Operator Comments:** Site regraded and seeded in November 2020. ○ **Final Resolution:** Case closed **Form 27 Initial Doc # & Date:** 402479217 & 09/21/2020 ○ **Purpose:** Pit or PW Vessel Closure ○ **Operator Comments:** A partially buried 100 bbl produced water tank and adjacent concrete vault will be removed during P&A activities. Following removal of the water tank and concrete vault, each side wall of both vessels will be screened for VOC concentration using a PID detector and will be observed for potential petroleum hydrocarbon impact such as staining and/or odor. At both vessels, one grab soil sample will be collected from the sidewall exhibiting the highest VOC concentration and/or greatest evidence of potential hydrocarbon impact. Additionally, one grab soil sample will be collected from the floor of each tank grave. If groundwater is encountered a grab groundwater sample will be collected in place of a floor soil sample. Samples will be collected per USEPA methods and strict chain-of-custody standards will be followed. The soil samples will be submitted to an accredited lab for analysis of benzene, toluene, ethylbenzene, and xylene (BTEX), and total petroleum hydrocarbons (TPH)-gasoline range organic (GRO) by USEPA 8260C, TPH-diesel range organics (DRO) by USEPA Method 8015C. The floor soil samples (or sidewall side wall sample if groundwater is encountered) will also be submitted for analysis of pH by USEPA Method 9045D, specific conductance (EC) by USEPA Method 9050A, and sodium adsorption ration (SAR) by USDA Agricultural Handbook 60 method (20B). If groundwater is encountered the sample will be submitted for analysis of BTEX by USEPA 8260C. ○ **Type of Waste Requiring Remediation:** E&P Waste, Produced Water ○ **Impacted Media:** Soil ○ **Impacted Type:** Undetermined ○ **Facility ID:** 330502 ○ **Facility Type:** Location

	○ **Site Investigation Date:** 09/28/2020
Field Inspection Form (Form INSP)	**Form INSP Doc # & Date:** 696104751 & 07/22/2021 ○ **Status Summary:** No Follow Up Inspection Required ○ **Findings:** 7 Comments, 0 Corrective Actions ○ **Inspected Facilities:** Well UPRC FEDERAL #23-1, Abandoned, Centralized Tank Battery serving Locations 330502, 330647 and 330688 ○ **Inspection Status:** PA ○ **Inspection Date & Inspector:** 07/21/2021 by Bret Evins ○ **Comments:** Plugged and Abandoned Well UPRC FEDERAL #23-1 appears to be cut/capped. Form 6 Doc # 402506196 indicates plugging, cut/cap date of 10/05/2020. Approved. Observed abandoned centralized Tank Battery serving three locations (330502, 330647, and 330688) and confirmed all equipment removed. GPS coordinates for Tank Battery: 40.825663 / -104.521619). Overall, during this inspection, NO possible compliance issues were observed. ○ **Attachments:** Inspection Photos Doc # 696104752.
	Form INSP Doc # & Date: 696300240 & 06/05/2019 ○ **Status Summary:** This is a Follow Up Inspection. No Follow Up Inspection Required ○ **Findings:** 11 Comments, 0 Corrective Actions ○ **Inspected Facilities:** Well UPRC FEDERAL #23-1 ○ **Inspection Status:** SI ○ **Inspection Date & Inspector:** 06/05/2019 by Erica Petrie ○ **Comments:** Signs/Marker: Wellhead: Adequate sign updated to reflect current operator. Battery: Adequate sign updated to reflect current operator. Trash inside heater treater along south side and east side has been removed. Tank signage on the west tank has been updated. NO further action is required at this time. ○ **Attachments:** Inspection photos Doc # 696300241
	Form INSP Doc # & Date: 679600271 & 02/05/2019 ○ **Status Summary:** This is a Follow Up Inspection, Follow up Inspection Required, Corrective Actions Response Requested ○ **Findings:** 8 Comments, 4 Corrective Actions

	○ **Inspected Facilities:** Well UPRC FEDERAL #23-1 ○ **Inspection Status:** SI ○ **Inspection Date & Inspector:** 01/29/2019 by Brittani Santistevan ○ **Comments:** Signs/Marker: Battery: Inaccurate information on battery sign located at entrance. CA: Install sign to comply with Rule 210.b. Wellhead: Inaccurate information on wellhead sign. CA: Install sign to comply with Rule 201.b. Good Housekeeping: Trash inside heater treater along south and east side wall. Comply w/Rule 603.f. Tanks/Berms: Other: Sign or label not posted or information on tanks or containers. CA: Install sign to comply with Rule 210.d. ○ **Attachments:** Inspection Photos Doc # 679600275
	Form INSP Doc # & Date: 689300097 & 09/06/2017 ○ **Status Summary:** Follow up Inspection Required, Corrective Action Response Requested ○ **Findings:** 12 Comments, 4 Corrective Action ○ **Inspected Facilities:** Well UPRC FEDERAL #23-1, Pit UPRC FEDERAL #23-1 ○ **Inspection Status:** PR ○ **Inspection Date & Inspector:** 08/30/2017 by Shaun O'Donnell ○ **Corrective Actions:** Signs/Markers: Middle crude oil tank and east crude oil tank need NFPA labels. CA: Install sign to comply with Rule 201.d. Good Housekeeping: Trash in heater treater shed along east and north wall and in pump jack motor shed along west wall. Stained soil in pump jack shed motor exhaust, stained soil around pump jack motor, stained soil around pump jack skid, stained soil north of pump jack, stained soil at wellhead, stained soil in heater treater shed, 5 gallon bucket is leaking from base in heater treater shed, stained soil at industrial oil container east of heater treater shed. CA: Control and contain spill/releases and clean up per Rule 906.a. ○ **Attachments:** Inspection Photo Doc # 689300098.
COGIS Tank Facilities Information (Scout Card)	**No Tank Battery documents were detected during this QA/QC Audit.** However, the Tank Battery is referenced an Inspection Doc # 696104751. It is a Centralized Tank Battery serving 3 Locations: 330502, 330647 and 330688. GPS coordinates: 40.825663 / -104.521619.
COGIS Pit Information (Scout Card)	**Pit Name:** UPRC FEDERAL #23-1 **FACILITY ID:** 119224

	○ **Status & Date:** CL & 12/29/2020 ○ **Lat/Long:** 40.826241 / -104.521828 ○ **Remediation Project #:** 15963 ○ **Form 27A Supplemental Doc # & Date:** 402539176 & 12/29/2020 **Purpose:** Closure of Remediation Project, Final Closure Requested **Closure Request Approved:** 12/29/2020 by Rick Allison **Date of Reclamation Completion:** 11/25/2020 **Operator Comments:** Site regraded and seeded in November 2020. **Final Resolution:** Case Closed ○ **Form 27 Initial Doc # & Date:** 402470718 & 09/21/2020 **Purpose:** Pit or PW Vessel Closure **Operator Comments:** The evaporation pit (Facility ID 119224) will be abandoned and partially buried produced water vault tank will be removed at the UPRC Federal 23-1 site. The sampling of the produced water vault will be conducted via a separate Form 27. The pit will be drained, and any impacted pit bottom material will be removed for disposal at a licensed facility. Following removal of the pit bottom material all 4-sidewalls of the pit and bottom will be screened for VOC concentration using a PID detector and will be observed for potential petroleum hydrocarbon impact such as staining and/or odor. **Type of Waste Requiring Remediation:** Other E&P Waste, Pit Bottoms **Impacted Media:** Soil **Impacted Type:** Undetermined **Facility ID:** 119244 **Facility Type:** Pit **Site Investigation Date:** 09/14/2020
COGIS Well Information (Scout Card)	**Well Name**: UPRC FEDERAL #23-1 **API#**: 05-123-19213 **FACILITY ID**: 251410 ○ **Status & Date**: PA & 10/05/2020 ○ **Lat/Long As Drilled**: 40.826030 / -104.521750 ○ **Form 6 Doc # & Date:** 402506196 & 01/26/2021 ○ **Form 42 Doc # & Date:** 402501002 & 09/30/2020 **Purpose:** Start of Plugging Operations

COGCC Abbreviations: Location & Facility Status Codes, Inspection Types & Statuses and COGCC Help.

Audit Key Findings – Designation Land Use Observations

PREVIOUS LAND USE	CURRENT LAND USE
Reference Imagery for Infrastructure: Maxar 2020	**Remotely Sensed Imagery:** 05/25/2023
Designation: Oil & Gas Facility	**Designation:** Rangeland

The following imagery sources were reviewed during this audit:

EarthExplorer, DRCOG 2002 - 2014, NAIP Imagery 2011, 2013, 2015, 2017, 2019, 2021, ESRI Maxar and Remotely Sensed Imagery Sep 2022

Closure Information

This is the Location of plugged and abandoned Well UPRC FEDERAL #23-1. The well's off-site, centralized Tank Battery (Lat/Long. 40.825663 / -104.521619) is abandoned and shared with Locations 330647 and 330688.

This Location is one of multiple locations connected to the COLORADO ENERGY FEDERAL Flowline (ID 464018) that was abandoned in place on 09/17/2020.

Corrective action annotated at site 330368 applies to this site.

Site Photo

Site Investigation and Photos Date

26 Aug 2024

Cardinal directional photos of the site

North

North

East

South

West

ATTACHMENTS

Reclamation Plan

Site Specific Reclamation Plan
Soil Analytical Spreadsheet
Ward Laboratory Analysis
Forest Service Seed Mix

Maps and Figures

Area Maps

Current Site Overview
Reclaim Area
Fence Removal

SITE-SPECIFIC RECLAMATION PLAN

Permit Closure Type – Final

Failed Reclamation Inspection

Site Description

Name	UPRC FEDERAL-610N64W /23NWNW
Location ID	330502
Operator / #	HIGHPOINT OPERATING CORPORATION / 10071
Field	PAWNEE PIONEER 67805
County, State	WELD, CO

Report Date

30 Jan 2025 - Revision
29 Nov 2024

Site Evaluation

Investigator: Soil Sage

Investigation Date: 26 Aug 2024

Previous Investigation Date: 30 May 2023

Reference Soil Information: The Pawnee area contains six primary soil types and three secondary soil types.

Primary Map Units

- MU 5 – Ascalon Sandy Loam
  - This soil is formed from wind-reworked alluvium and/or calcareous sandy eolian deposits. Landform is interfluves, with the Sandy Plains Ecological Site. Soils are well drained with a moderate water holding capacity, and slope 5 to 9 percent.
- MU 44 – Olney Fine Sandy Loam
  - This soil is formed from calcareous loamy alluvium. Landform is plains, with the Loamy Plains Ecological Site. Soils are well drained with a moderate water holding capacity, and slope 0 to 6 percent.

Soil chemical properties within the rooting zone to 50 inches is described in the Soil Properties – USDA Soil Properties section of this report.

Current Land Use in Reference Area: Range land

Observations
Overall, for the Pawnee cluster the site is on federal land with cattle grazing rights. Intermixed with wildlife grazing. The road system is currently being used.

Weed pressure has occurred along the roads and at each site.

Site Soils

During the field investigation, Soil Sage collected soil samples from 0-8 inches within the reclamation area. These soils were analyzed to establish current soil physicochemical properties for reclamation planning. See spreadsheet attachment Table 1 for site specific soil characterizations, that include the previous soil analysis and the associated reference soils. Reference USDA Soils and Ecological Site Description for historical properties.

Site Specific Soil Characterization Data

Sample Date – 26 Aug 2024
Previous Sampling Dates - 30 May 2023

Soil Analytical Summary

The soil sampling design was based upon the land use type and the number of soil types, referred to as soil Map Units.

Summary of the average analytical soil results for the Site.

Physical and Chemical Properties for the topsoil and subsoil

Depth inches	Texture	pH	EC	OM %	SAR
Topsoil 8	Sandy Clay Loam	7.2	2.08	2	1.4
Previous Site Topsoil 12 (avg)	Sandy Clay Loam	7.8	0.88	2.2	0.95
Reference 2 Topsoil 12 (avg)	Sandy Clay Loam	7.2	0.38	2.4	0.01

Plant Available Chemical Properties for topsoil and subsoil

Depth inches	Nitrogen (N) ppm	Phosphorus (P) ppm	Potassium (K) ppm	N Lbs/A
Topsoil 8	67	32	541	162
Previous Site Topsoil 12 (avg)	21	16	434	37
Reference 2 Topsoil 12 (avg)	4	14	134	7

Plant Nutrients Salts topsoil and subsoil

Depth inches	Sodium (Na) ppm	Chloride (Cl) ppm	Sulfates (S) ppm
Topsoil 8	96	46	26
Previous Site Topsoil 12 (avg)	48	5.2	17
Reference 2 Topsoil 12 (avg)	6	5.9	6

This site has elevated values for Electric Conductivity (EC) and Sodium Absorption Ratio (SAR*), which is indicated by the elevated concentration of Sodium. SAR values that approach and exceed 1, indicate the presence of naturally occurring salts or the accumulation of salts based on other factors.

In addition, the analysis performed at the laboratory identified the presence of two additional salts – Chloride and Sulfate. These salts at elevated concentrations, typically above 100 ppm, can impede plant growth depending on environmental conditions, previous land use activities and other soil properties.

*Sodium Adsorption Ratio - SAR is a measure of the ratio of sodium (Na+) relative to calcium (Ca2+) and magnesium (Mg2+) in the water extract (solution phase) from a saturated soil paste.

Vegetation

Site vegetation observations took place in Aug within the reclamation extent. Weeds are the primary vegetation during the site visit.

Weeds

Weed Summary

Common Name	Weed List Type
Kochia (current and previous)	Common
Cheatgrass (current and previous)	List C
Puncturevine	List C
Buffalo-Bur	Common

Weed Inventory Criteria

- Each site is accessed for noxious weeds and common weeds
- Data are aggregated using point locations coupled with percent cover assessments and area measurements as needed
- Governance - Colorado Department of Agriculture - Colorado Noxious Weeds List, effective October 2020
- List A - Designated for eradication, List B - Designated to stop the continued spread, List C - Facilitate more integrated effective weed management, Watch List - Determined to pose a potential threat to agriculture and natural productivity.
- Common - designates weeds that do not fall within the Colorado Department of Agriculture lists
- Other - designates other identified weeds at the site

Site Characteristics

Soil/Erosion

Exposed soils have moderate susceptibility to water erosion and are in the high susceptible group for wind erosion due to ecosystem dynamics and vegetative cover.

Summary Acreage Table

Description	Acres
Total Disturbance Extent	**2.4**
○ Reclaim Extent	2.4
○ Road*	1.17

Total Disturbance Extent is the same as reclaim extent.

*****Road – road remains active consult USFS.

Site Recommendation and Re-Evaluation

Replacement Soil Requirements

Texture: Clay Loam
Organic Matter: 3%
pH: 7.7 - 7.9
Nitrate N: less than 11 ppm
Sodium: less than 90 ppm
Chloride Cl: less than 10 ppm
Sulfate S: less than 18 ppm

Soil tests must be submitted to Luke Kelly (lkelly@civiresources.com) and Sam Streeter (sam@soilsage.com) for approval prior to use on the project. Certified Weed Free Straw must be used, and evidence must be supplied to Luke Kelly and Sam Streeter. Soil Sage will be performing inspections during reclamation activities and after work is complete to ensure success. Schedule of reclamation activities (approximate) must be submitted before reclamation starts and any changes to the schedule must be communicated via email to Luke Kelly and Sam Streeter.

Seed Mix - NRCS

Vegetation Seed Mix

Forest Service has provided a seed mix to Civitas,
Seed mix included in the attachment section.

Soil Amendments

New soil specifications are outlined above.
Application of soil amendments for this prairie ecosystem will be limited to UREA (46-0-0) 50 lbs./acre for plant establishment.

Reclamation Activities and Notes

Site

- Continuous bare ground on pad
- Removal of soil up to 12 inches due to salt concentration exceed reference soils.
- Replace soils, decompact, disc, seed, and straw crimp. Use USFS seed mix that is adjusted to work with the entire site
- Remove fence

Road

- Remains active contact USFS

Reclaim Area Protocol

Step	Description	Complete Date
1 – Soil Samples	Collection of soil samples from the site	26 Aug 2024
2 – Remove Exclusion Fence	Removal of fences as per reclamation plan	Week of April 1, 2025
3 – Soil Removal to Mapped Extent	Removal of non-compliant soil to 12 inches within the reclaim extent.	Week of April 1, 2025
4 – Soil Removal Inspection	In-person inspection and confirmation with soil sampling	Week of April 1, 2025
5 – Imported Soil Sample Test Results Review*	Verification of imported soil with current lab test results	Week of April 7, 2025
6 – Soil Import	Import soil as specified in the plan	Week of April 14, 2025
7 – Seeding	Planting appropriate seed mix for reclamation 20 PLS/sq ft	Week of April 28, 2025
8 – Straw Spread and Crimp	Spreading and crimping straw to stabilize soil apply 2 tons/acre	Week of May 5, 2025
9 – Monitor	Continuous monitoring post reclamation	2025 - 2027
10 – Weed Management	Monthly monitoring is recommended with appropriate herbicide control	Jun 9 – Oct 6 2025

*Soil Import Properties – reference Soil Replacement Requirements

Site Photos – Soil 2 – 330502

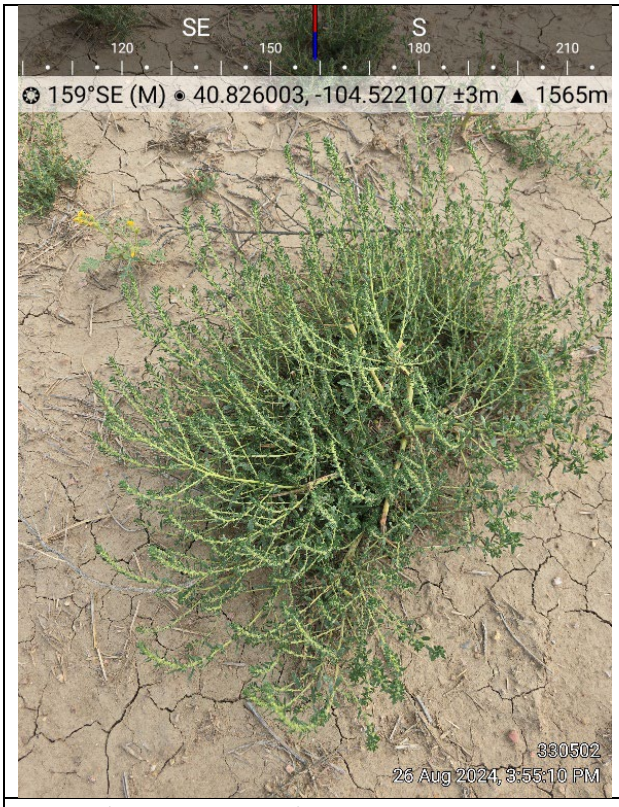
Lat/Long: 40.826003 / -104.522142
Nearest Facility #: 330502
Date: 26 Aug 2024
Photo locations correspond with the overview map and soil table.

	
North	East

 SE S SW 120 150 180 210 176°S (M) 40.82602, -104.522129 ±3m ▲ 1567m 330502 26 Aug 2024, 3:54:50 PM	 SW W NW 240 270 300 330 275°W (M) 40.82602, -104.522119 ±3m ▲ 1566m 330502 26 Aug 2024, 3:54:56 PM
South	West

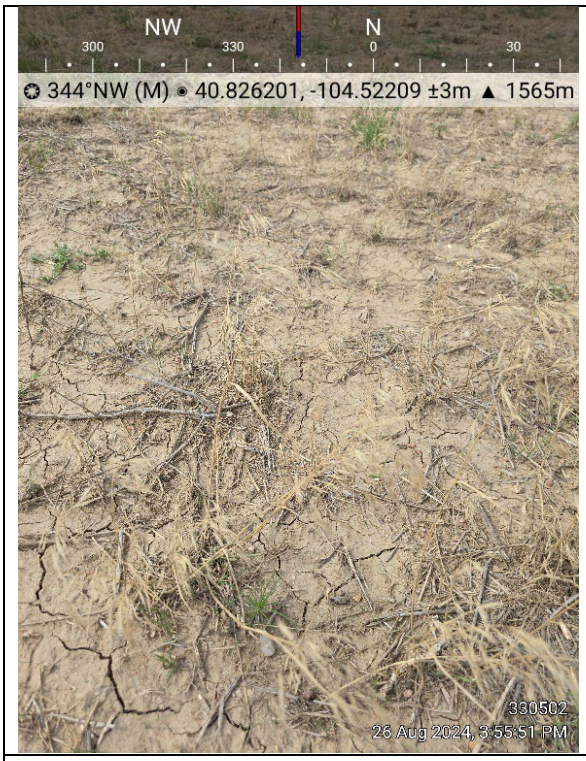
Site Photos – Vegetation – 330502

Lat/Long: 40.826003 / -104.522107
Nearest Facility #: 330502
Date Range: 26 Aug 2024
Photo locations correspond with the overview map and vegetation table.



Kochia (*Bassia scoparia*)

Buffalo-bur (*Solanum rostratum*)

	
Cheatgrass (*Bromus tectrorum*) List C and Kochia (*Bassia scoparia*)	Puncturevine (*Tribulus terrestris*) List C

Site Photos – Soil 2 – 330502

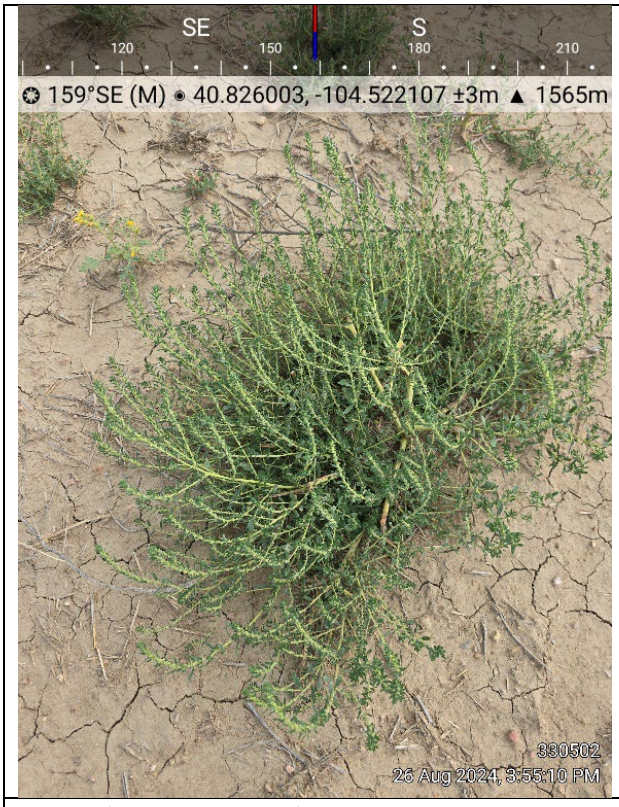
Lat/Long: 40.826003 / -104.522142
Nearest Facility #: 330502
Date: 26 Aug 2024
Photo locations correspond with the overview map and soil table.

	
North	East

 SE S SW 120 150 180 210 176°S (M) 40.82602, -104.522129 ±3m ▲ 1567m 330502 26 Aug 2024, 3:54:50 PM	 SW W NW 240 270 300 330 275°W (M) 40.82602, -104.522119 ±3m ▲ 1566m 330502 26 Aug 2024, 3:54:56 PM
South	West

Site Photos – Vegetation – 330502

Lat/Long: 40.826003 / -104.522107
Nearest Facility #: 330502
Date Range: 26 Aug 2024
Photo locations correspond with the overview map and vegetation table.



Kochia (*Bassia scoparia*)

Buffalo-bur (*Solanum rostratum*)

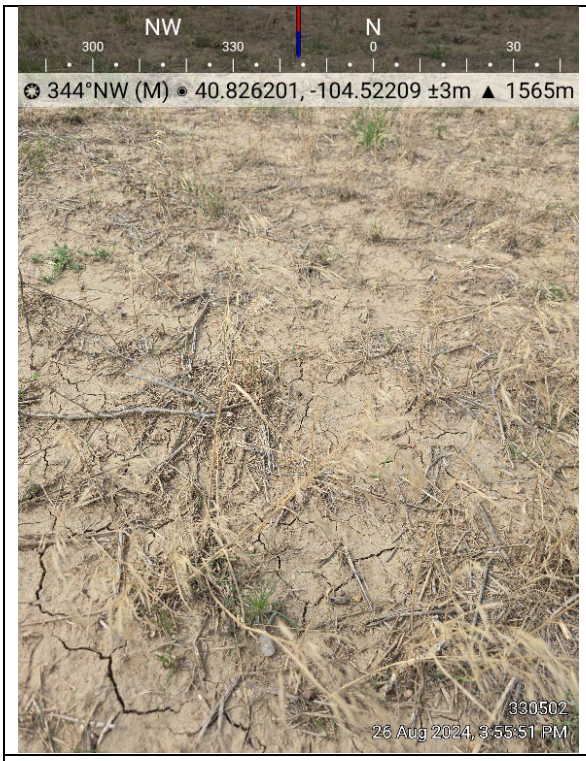
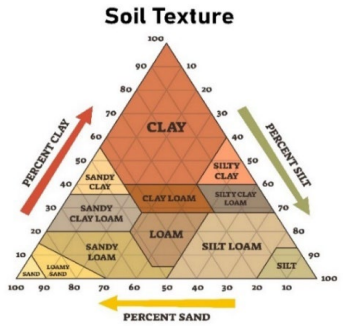
	
Cheatgrass (*Bromus tectrorum*) List C and Kochia (*Bassia scoparia*)	Puncturevine (*Tribulus terrestris*) List C

TABLE 1: Soil Report

Client	Civitas		
Operator	Bonanza Creek	**Date**	26-Aug-24
Location ID - Name	Pawnee	**Ward**	20240903
Type	Location Topsoil replacement		

SOIL REPORT

	Soil Profile			**Physical Properties** Partical Size			
Location	Top Depth (in)	Bottom Depth (in)	Soil Thickness (in)	**Sand %**	**Silt %**	**Clay %**	**Texture Hydro**
CIV-330368-SOIL 1	0	8	8	34	22	44	Clay
CIV-330502-SOIL 2	0	8	8	46	24	30	Sandy Clay Loam
CIV-330688-SOIL 3	0	8	8	54	18	28	Sandy Clay Loam
CIV-330782-SOIL 4	0	8	8	44	20	36	Clay Loam
CIV-330783-SOIL 5	0	8	8	44	18	38	Clay Loam
CIV-330784-SOIL 6	0	8	8	54	16	30	Sandy Clay Loam
CIV-431982-SOIL 7	0	8	8	44	18	38	Clay Loam



	Soil Profile			**Chemical Properties**						
Location	Top Depth (in)	Bottom Depth (in)	Soil Thickness (in)	**pH Sat Paste**	**ECe mmhos/cm**	**CEC meq/100g**	**Excess Lime**	**Organic Matter (LOI) %**	**SAR**	**Calcium Carbonate %**
CIV-330368-SOIL 1	0	8	8	7.6	1.58	52.6	HIGH	2.9	10.1	2.1
CIV-330502-SOIL 2	0	8	8	7.2	2.08	39.9	HIGH	2	1.4	1.5
CIV-330688-SOIL 3	0	8	8	7.3	1.96	44.2	HIGH	2	1.4	2.9
CIV-330782-SOIL 4	0	8	8	6.9	1.43	23.2	LOW	1.8	0.8	0.1
CIV-330783-SOIL 5	0	8	8	7.4	1.22	50.8	HIGH	2.6	1.1	6.6
CIV-330784-SOIL 6	0	8	8	7.5	1.16	47.4	HIGH	1.8	1.3	3.6
CIV-431982-SOIL 7	0	8	8	7.4	1.23	39.2	HIGH	3.1	0.6	0.8
ECMC Table 915-1				6-8.3	<4				<6	

	Soil Profile			**Extraction Method** KCL	M3 Phosphorus	NH4OAc Potassium	
Location	Top Depth (in)	Bottom Depth (in)	Soil Thickness (in)	**Nitrate-N ppm**	**P ppm**	**K ppm**	**Nitrate - N Lbs/A**
CIV-330368-SOIL 1	0	8	8	24.2	28	798	58
CIV-330502-SOIL 2	0	8	8	67.4	32	541	162
CIV-330688-SOIL 3	0	8	8	35.4	87	329	85
CIV-330782-SOIL 4	0	8	8	46.6	26	363	112
CIV-330783-SOIL 5	0	8	8	46.8	30	541	112
CIV-330784-SOIL 6	0	8	8	38.2	13	580	92
CIV-431982-SOIL 7	0	8	8	44.2	20	712	106

	Soil Profile			Plant Available										
Location	Top Depth (in)	Bottom Depth (in)	Soil Thickness (in)	NH4OAc Calcium Ca ppm	NH4OAc Magnesium Mg ppm	NH4OAc Sodium Na ppm	Hot Water Boron B ppm	Ca-NO3 Chloride Cl ppm	M3 Sulfate S ppm	AB-DTPA Copper Cu ppm	Iron Fe ppm	Manganese Mn ppm	Zinc Zn ppm
CIV-330368-SOIL 1	0	8	8	8408	411	1174	5.83	76	14.3	0.43	1.1	1.7	0.35
CIV-330502-SOIL 2	0	8	8	7035	351	96	0.57	45.8	25.8	0.33	2	2	0.26
CIV-330688-SOIL 3	0	8	8	7453	668	125	1.01	36.6	108	0.62	5.9	2.5	2.17
CIV-330782-SOIL 4	0	8	8	3757	394	54	0.35	16.6	15.2	0.45	2.7	2.8	0.33
CIV-330783-SOIL 5	0	8	8	9125	404	91	0.89	18.7	16.6	0.31	1.2	1.8	0.95
CIV-330784-SOIL 6	0	8	8	8517	348	91	0.4	15.4	11.3	0.21	1.1	1	2.15
CIV-431982-SOIL 7	0	8	8	6744	413	54	0.48	24.2	14.1	0.32	1.3	1.3	0.31
ECMC Table 915-1							2						

SOIL REPORT

Terms Defined

pH	A measure of the acidity or basicity (alkalinity) of a soil. pH is defined as the negative logarithm (base 10) of the activity of hydronium ion in a solution
ECe	The Electrical Conductivity of a saturated soil Extract that measures salinity
Alkalinity	Alkalinity indicates a solution's power to react with acid and buffer its pH - the power to keep its pH from changing. The higher the Alkanility, the higher the buffering capacity against pH change.
CEC - Cation Exchange Capacity	The measure of how many cations can be retained on soil particle surfaces.
CEC Ranges	
Range 11-50	High Clay, more lime to correct a given pH, greater capacity to hold nutrients, physical effects of high clay content, high water-holding capacity
Range 1-10	High Sand, Nitrogen and potassium leaching, less lime to correct a given pH, physical effects of high sand content, low water-holding capacity

Optimal pH range for plant growth

6.0 -7.0

Reference Key

Low

Medium

High

Optimal

Neutral

No Reference

Analytical Error

Typical Soil Concentrations sufficient for plant growth

Element	Symbol	mg/kg ppm	percent	Relative number of atoms	Notes
Nitrogen	N	15,000	1.5	1,000,000	
Potassium	K	10,000	1	250,000	
Calcium	Ca	5,000	0.5	125,000	Root Formation
Magnesium	Mg	2,000	0.2	80,000	Chlorophyll Formation
Phosphorus	P	2,000	0.2	60,000	
Sulfur	S	1,000	0.1	30,000	Proteins & NPK Uptake
Chlorine	Cl	100	--	3,000	
Iron	Fe	100	--	2,000	Chlorophyll catalyst
Boron	B	20	--	2,000	Absorption Calcium
Manganese	Mn	50	--	1,000	
Zinc	Zn	20	--	300	
Copper	Cu	6	--	100	Photosynthesis & Respiration - correlated with %OM
Molybdenum	Mo	0.1	--	1	Fixation of Organic Nitrogen
Nickel	Ni	0.1	--	1	

Source: E.Epstein, 1965

Account No. : 19356

Soil Analysis Report

DANIELS, JUDY
SOIL SAGE LLC
8323 DEPEW WAY
ARVADA CO 80003

Invoice No. : 1430856
Date Received : 08/29/2024
Date Reported : 09/03/2024

Results For : CIV
Location : PAWNEE

Lab No. : 90063	Depth : 0 - 8
ID : CIV-330502-SOIL 2	

1:1 Soil pH	7.8
Soluble Salts 1:1, mmho/cm	0.52
Excess Lime Rating	HIGH
Organic Matter LOI, %	2.0
Nitrate-N KCl, ppm N	67.4
Nitrate-N, lbs N / Acre	162
Phosphorus M3, ppm P	32
Potassium NH_4OAc, ppm K	541
Sulfate M-3, ppm S	25.8
Zinc DTPA, ppm Zn	0.26
Iron DTPA, ppm Fe	2.0
Manganese DTPA, ppm Mn	2.0
Copper DTPA, ppm Cu	0.33
Calcium NH_4OAc, ppm Ca	7035
Magnesium NH_4OAc, ppm Mg	351
Sodium NH_4OAc, ppm Na	96
Chloride $Ca\text{-}NO_3$, ppm Cl	45.8
Boron Hot Water, ppm B	0.57
Calcium Carbonate, %	1.5

Sum of Cations, me/100g	% Saturation				
	H	K	Ca	Mg	Na
39.9	0	3	88	7	1

Saturated Soil Paste Analysis (SAR)

Saturation, %	40
Sat Paste pH	7.2
Sat Paste ECe, mmho/cm	2.08
HCO_3, ppm	125
Cl, ppm	83
Ca, ppm	250
Mg, ppm	28
Na, ppm	86
S, ppm	33.4

Reviewed By : Nick Ward 9/6/2024 **Copy : 1**

Bus: 308-234-2418
Fax: 308-234-1940
web site
www.wardlab.com
4007 Cherry Ave., P.O. Box 788
Kearney, Nebraska 68848-0788

Account No. : 19356

Soil Analysis Report

DANIELS, JUDY
SOIL SAGE LLC
8323 DEPEW WAY
ARVADA CO 80003

Invoice No. : 1430856
Date Received : 08/29/2024
Date Reported : 09/03/2024

Results For : CIV
Location : PAWNEE

Sodium Adsorption Ratio 1.4

Soil Texture	Sand, %	Silt, %	Clay, %
Sandy Clay Loam	46	24	30

Bus: 308-234-2418
Fax: 308-234-1940
web site
www.wardlab.com
4007 Cherry Ave., P.O. Box 788
Kearney, Nebraska 68848-0788

Scientific Binomial	Common Name	Season	Seeds/lb	Percent of mix	Total Pounds PLS Per Acre	Variety
Pascopyrum smithii	western wheatgrass	Cool	110,000	0.3	11.88	
Bouteloua curtipendula	side-oats grama	Warm	191,000	0.15	3.42	Butte or Trailway
Buchloë dactyloides	buffalograss	Warm	56,000	0.15	11.67	Cody or Tatanka
Chondrosum gracile	blue grama	Warm	825,000	0.15	0.79	Alma or Hachita
Nassella viridula	green needlegrass	Warm	181,000	0.05	1.20	
Sporobolus cryptandrus	sand dropseed	Warm	5,398,000	0.05	0.04	
Hesperostipa comata	needle-and-thread	Cool	115,000	0.1	3.79	Canbar or High Plains
Cleome serrulata	Rocky Mtn beeplant	NA	65,900	0.03	2.0	
Sphaeralcea coccinea	scarlet globemallow	NA	500,000	0.02	0.17	
			TOTAL	1	**34.95**	

PLS = Pure, Live Seed

CIV - 330502 - UPRC Federal 610N64W/23NWNW
Map Extent - Reclaim Extent

Imagery: RS Orthomosaic & DSM
Imagery Date: 26 Aug 2024
Map Date: 02 Dec 2024
Datum: NAD_1983_UTM_Zone_13N
POC: Soil Sage

- Oil and Gas Locations Soil Sample
- Point
- Disturbance Boundary
- Soil Removal & Replace

0 0.01 0.02 0.04 Miles

N

Scale: 1:1,082

Service Credits -

CIV - 330502 - UPRC Federal 610N64W/23NWNW
Map Extent - Reclaim Extent

Imagery: RS Orthomosaic & DSM
Imagery Date: 26 Aug 2024
Map Date: 02 Dec 2024
Datum: NAD_1983_UTM_Zone_13N
POC: Soil Sage

- Oil and Gas Locations
- Disturbance Boundary
- Seed Boundary

0 0.01 0.01 0.03 Miles

N

Scale: 1:902

Service Credits -

Service Credits - Maxar, Microsoft

CIV - 330502 - UPRC Federal 23-1
Map Extent - Remove Fence

Imagery: RS Orthomosaic
Imagery Date: 26 Aug 2024
Map Date: 10 Sep 2024
Datum: WGS 1984 UTM Zone 13N
POC: Soil Sage

Legend

- Wells
- Remove Fence

0 25 50 Meters

Scale: 1:1,000

Pad Location:
40.825681
-104.521787

N