

SITE-SPECIFIC QUALITY ASSURANCE & QUALITY CONTROL AUDIT



Permit Closure Type – Final

PERMIT CLOSURE REPORT – RANGELAND

Location ID 330782

Location Name COLORADO ENERGY FEDERAL-610N64W/14SWSW

Report Date

19 June 2023

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	05/30/2023
Review Audit 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	COLORADO ENERGY FEDERAL-610N64W/14SWSW		
Location ID	330782		
Operator / #	HIGHPOINT OPERATING CORPORATION / 10071		
Field	PAWNEE PIONEER 67805		
County, State	WELD, CO		
Lat/Long	40.828971 / -104.521057		
	X	Planned Location	As Drilled
Facility Status	CL	Location	SWSW 14 10N64W
Facility Status Date	07/10/2020	Access Road	Oil & Gas Access
Facility Entities	X	Tank Battery	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	X Spill or Release (Form 19)
		Remediation (Form 27/27A)	
Inspection Corrective Actions (CA)s	<p>Corrective Actions (CA)s were detected during the QA & QC Audit. CA Overall Status: 2 of 2 Completed 1 CA: CA-Approving Inspection Doc # & Date: 696300230 & 06/05/2019</p> <ul style="list-style-type: none"> ○ Inspector: Erica Petrie <p>Form FIRR Doc # & Submittal Date: 401957153 & 03/14/2019</p> <ul style="list-style-type: none"> ○ Overall Status: CAC ○ Originating Field Inspection Report (FIR) Doc #: 679600272 ○ CA#: 122115 Date Completed: 02/28/2019 Sign has been installed and complies with rule 210.e. COGCC Decision: Approved pending re-inspection <p>All corrective actions have been completed. Site ready for re-inspection.</p>		
	<p>1 CA: Spill or Release 451027</p> <ul style="list-style-type: none"> ○ Corrective Actions: Ward will install murphy switch on well to kill engine if flowline pressure becomes too high. ○ Correction Actions Resolving Form 19 Doc #: 401316205 		

	<p>Attachments: Soil Analytical Results Doc # 401318684</p> <p>Complete COGCC Inspection Search Results: Link</p>
Sundry Notice (Form 4)	Form 4s were detected during the QA & QC Audit. See individual scout card data for details.
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)	<p>No Form 44s were detected during the QA & QC Audit.</p> <p>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, 330782, 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.</p>
COGIS Spill or Release (Form 19)	<p>Spill or Release</p> <p>FACILITY ID: 451027</p> <ul style="list-style-type: none"> ○ Status & Date: CL & 06/26/2017 ○ Lat/Long: 40.829311 / -104.521214 ○ Operator: WARD PETROLEUM CORPORATION <p>Form 19 Resolving Doc # & Date: 401316205 & 06/26/2017</p> <ul style="list-style-type: none"> ○ Date Closed: 06/26/2017 ○ Request for Closure: 06/09/2017 <p>Form 19 Initial Doc # & Date: 401304676 & 06/09/2017</p> <ul style="list-style-type: none"> ○ Date of Discovery: 06/07/2017 ○ Spill Type: Recent Spill ○ Reference Location Facility ID & Type: Flowline for Well COLORADO ENERGY FEDERAL #14-2 ○ Operator: WARD PETROLEUM CORPORATION ○ Operator Comments: While working on a nearby tank battery, making repairs, backfilling tank berms to prevent settling and grading some of the roads the flowline leak occurred. The spill was noticed and the well shut down which stopped the release. The release was contained, and the next morning cleanup began since equipment was on site. The affected area was the lease road, no vegetation was affected. The soil was scooped up and hauled off for disposal. ○ Corrective Action: Install murphy switch on well to kill engine if flowline pressure becomes too high. See Corrective Action report

	section above for details.
Field Inspection Form (Form INSP)	<p>Form INSP Doc # & Date: 696104747 & 07/22/2021</p> <ul style="list-style-type: none"> ○ Status Summary: No Follow Up Inspection Required ○ Findings: 5 Comments, 0 Corrective Actions ○ Inspected Facilities: Well COLORADO ENERGY FEDERAL #14-2, Abandoned, Centralized Tank Battery serving Locations 330782, 330783, and 330784. ○ Inspection Status: PA ○ Inspection Date & Inspector: 07/21/2021 by Bret Evins ○ Comments: Plugged and Abandoned Well COLORADO ENERGY FEDERAL #14-2 appears to be cut/capped. Form 6 Doc # 402437951 indicates plugging, cut/cap date of 07/10/2020. Approved. Observed abandoned centralized Tank Battery serving three locations (330782, 330783, and 330784) and confirmed all equipment removed. GPS coordinates for Tank Battery: 40.839987 / -104.518626). Overall, during this inspection, NO possible compliance issues were observed. ○ Attachments: Inspection Photos Doc # 696104748. Photos show Well COLORADO ENERGY FEDERAL #14-3 as well as the Centralized Tank Battery for 3 Locations (330782, 330783, and 330784).
	<p>Form INSP Doc # & Date: 696300230 & 06/05/2019</p> <ul style="list-style-type: none"> ○ Status Summary: This is a Follow Up Inspection, No Follow up Inspection Required ○ Findings: 8 Comments, 0 Corrective Actions ○ Inspected Facilities: Well COLORADO ENERGY FEDERAL #14-2 ○ Inspection Status: PR ○ Inspection Date & Inspector: 06/04/2019 by Erica Petrie ○ Comments: Adequate wellhead signage has been updated to reflect current operator. No further action is required. ○ Attachments: Inspection Photos Doc # 696300231
	<p>Form INSP Doc # & Date: 679600272 & 02/05/2019</p> <ul style="list-style-type: none"> ○ Status Summary: No Follow up Inspection Required ○ Findings: 5 Comments, 1 Corrective Action ○ Inspected Facilities: Well COLORADO ENERGY FEDERAL #14-2

	<ul style="list-style-type: none"> ○ Inspection Status: SI ○ Inspection Date & Inspector: 06/04/2019 by Brittani Santistevan ○ Corrective Actions: Signs/Marker: Wellhead sign not updated to reflect current operator. CA: Install sign to comply with Rule 210.e. ○ Comments: Adequate wellhead signage has been updated to reflect current operator. No further action is required. ○ Attachments: Inspection Photos: 679600276
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 # 696104747 It is a Centralized Tank Battery serving 3 Locations: 330782 , 330783 , and 330784 . GPS coordinates: 40.839987 / -104.518626.
COGIS Well Information (Scout Card)	<p>Well Name: COLORADO ENERGY FEDERAL #14-2</p> <p>API#: 05-123-19616</p> <p>FACILITY ID: 251812</p> <ul style="list-style-type: none"> ○ Status & Date: PA & 07/10/2020 ○ Lat/Long As Drilled: 40.829350 / -104.521050 ○ Form 6 Doc # & Date: 402437951 & 01/26/2021 ○ Form 42 Doc # & Date: 402428812 & 06/23/2020 Purpose: Start of Plugging Operations ○ Form 4 Doc # & Date: 402322046 & 03/19/2020 Purpose: Well due for MIT on 02/29/2020. Failed pressure test on 02/21/2020. Operator will plug this well within 6 months.

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: Landsat/Copernicus 2013	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 COLORADO ENERGY FEDERAL #14-2. The well's off-site, centralized Tank Battery (Lat/Long. 40.839987 / -104.518626) is abandoned and shared with Locations 330783 and 330784. 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-SPECIFIC RECLAMATION PLAN



Permit Closure Type – Final

Failed Reclamation Inspection

Site Description

Name	COLORADO ENERGY FEDERAL-610N64W/14SWSW
Location ID	330782
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

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

Primary Map Unit

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

Secondary Map Unit

- 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

Sampling Date: 26 Aug 2024

Sampling Date: 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	Clay Loam	6.9	1.43	1.8	0.8
Previous Site Topsoil 12 (avg)	Sandy Clay Loam	7.2	0.71	2.0	0.35
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	47	26	363	112
Previous Site Topsoil 12 (avg)	14	29	256	26
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	54	17	15
Previous Site Topsoil 12 (avg)	23	7	9
Reference 2 Topsoil 12 (avg)	6	5.9	6

This site does not have elevated values for Electric Conductivity (EC) and Sodium Absorption Ratio (SAR*), concentrations of Sodium are within normal range. SAR values that approach and exceed 1, indicate the presence of naturally occurring salts or the accumulation of salts based on other factors and can impede plant growth depending on environmental conditions.

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	Common
Puncturevine	List C
Lambs quarter (previous)	Common
Ragweed (previous)	Common
Bindweed (previous)	List C
Buffalo Bur	Common
Amaranth	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	1.3
○ Reclaim Extent	1.33
○ Road*	included

Total Disturbance Extent

*Road section starts at 330502- reference overview map for full road extent.

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 road and pad
- Weed impact primarily broadleaf weeds
- Recommendations
 - Remove, replace, decompact, disc, seed, and crimp straw. Use USFS seed mix that is adjusted to work with the entire site

Road

- Reclaim to 330502

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 – 1.32 acres	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

*Soil Import Properties – reference Soil Replacement Requirements

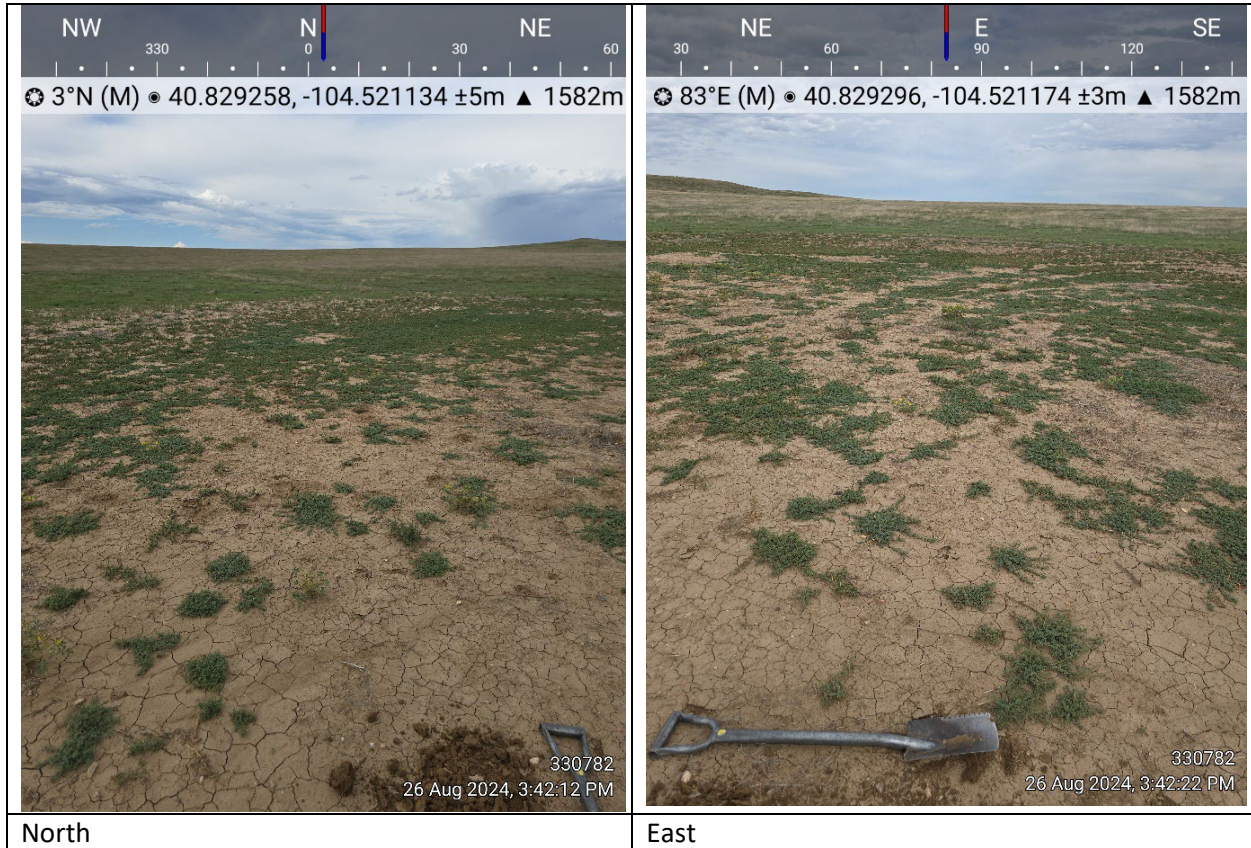
Site Photos – Soil 4 – 330782

Lat/Long: 40.829258 / -104.521174

Nearest Facility #: 330782

Date: 26 Aug 2024

Photo locations correspond with the overview map and soil table.





South



West



North and Ground

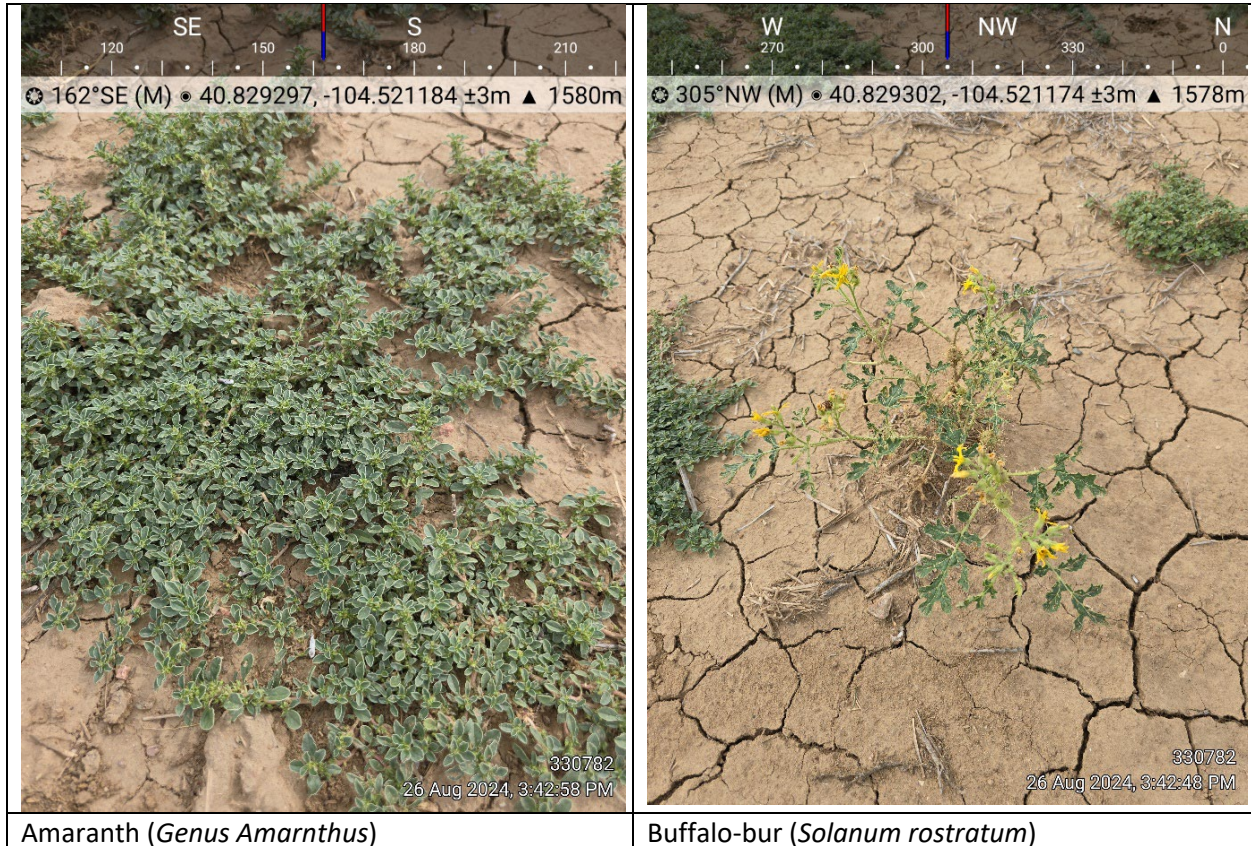
Site Photos – Vegetation 330782

Lat/Long: 40.829297 / -104.521184

Nearest Facility #: 330782

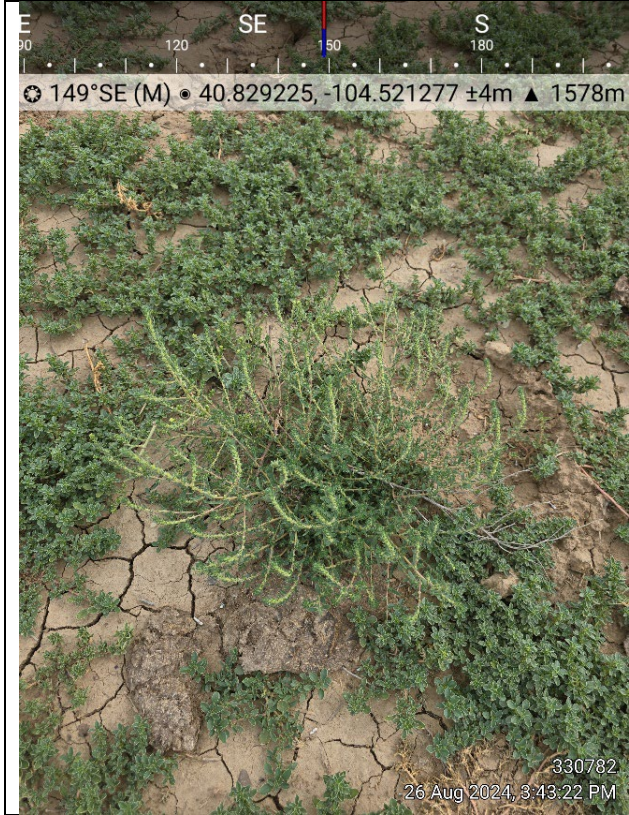
Date Range: 26 Aug 2024

Photo locations correspond with the overview map and vegetation table.



Amaranth (*Genus Amaranthus*)

Buffalo-bur (*Solanum rostratum*)



Kochia (*Bassia scoparia*)



Puncturevine (*Tribulus terrestris*) List C

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

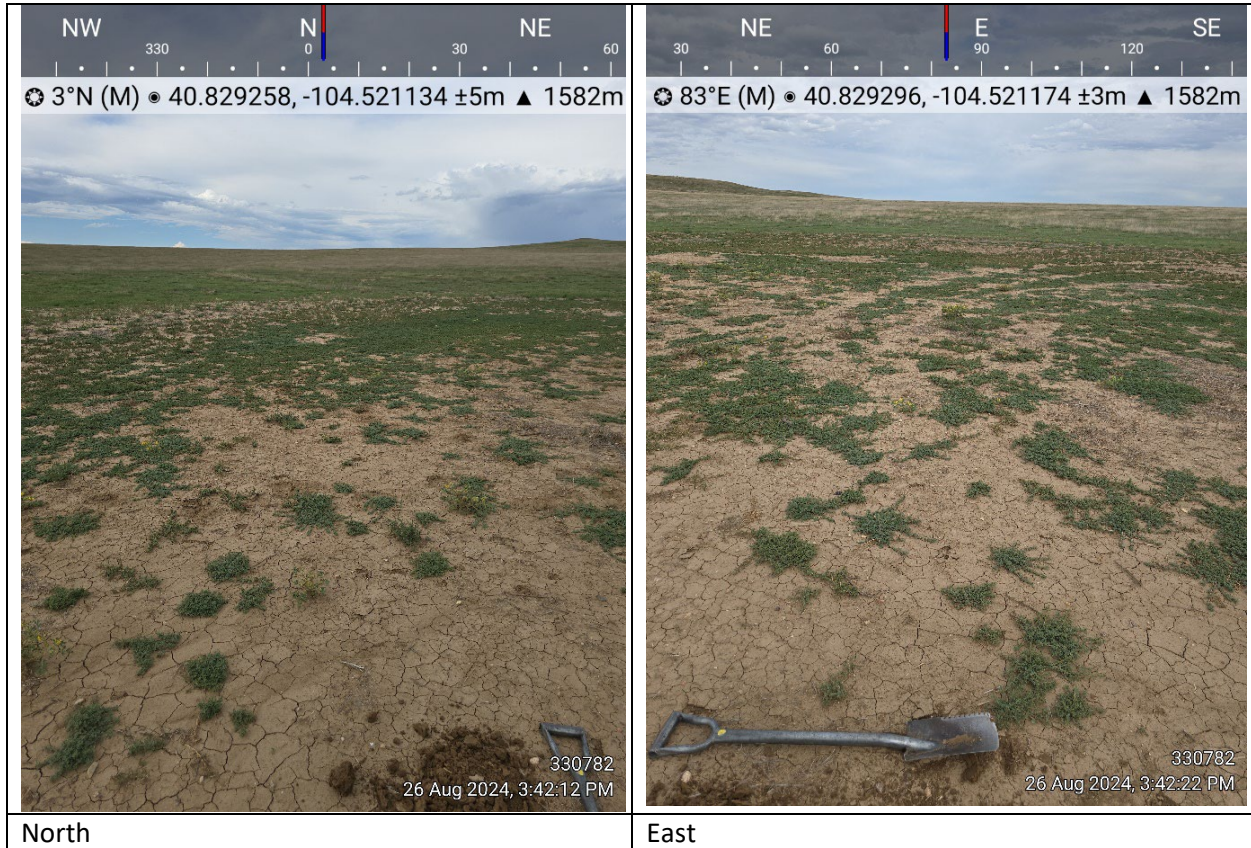
Site Photos – Soil 4 – 330782

Lat/Long: 40.829258 / -104.521174

Nearest Facility #: 330782

Date: 26 Aug 2024

Photo locations correspond with the overview map and soil table.





South



West



North and Ground

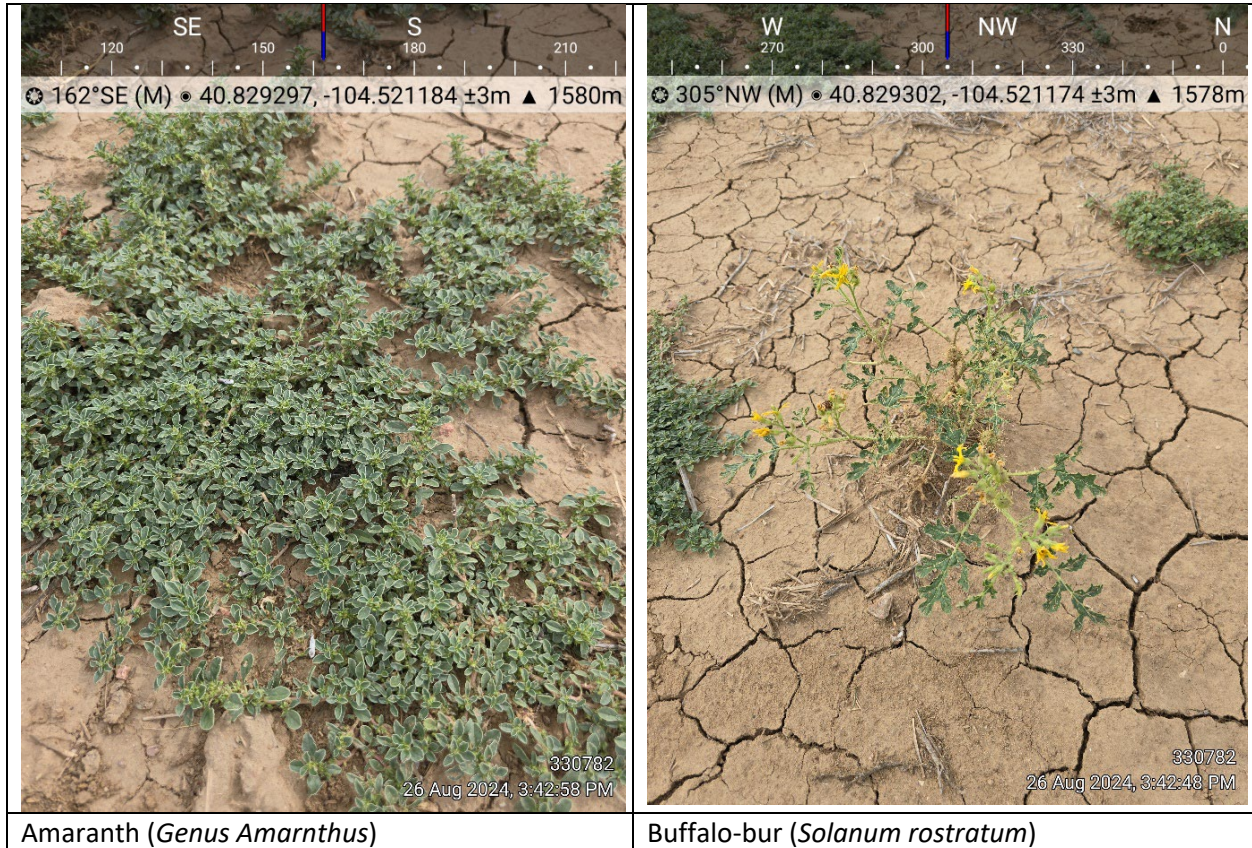
Site Photos – Vegetation 330782

Lat/Long: 40.829297 / -104.521184

Nearest Facility #: 330782

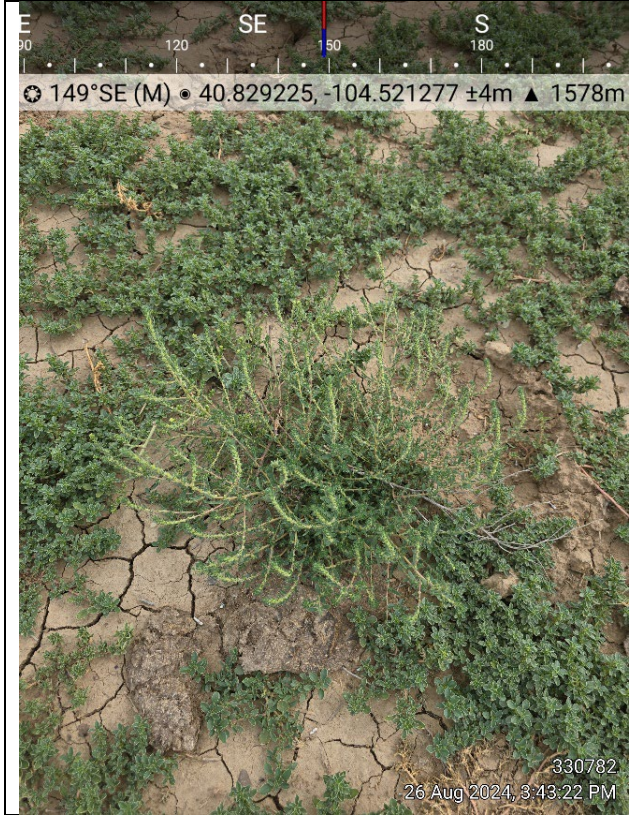
Date Range: 26 Aug 2024

Photo locations correspond with the overview map and vegetation table.



Amaranth (*Genus Amaranthus*)

Buffalo-bur (*Solanum rostratum*)



Kochia (*Bassia scoparia*)



Puncturevine (*Tribulus terrestris*) List C

TABLE 1: Soil Report

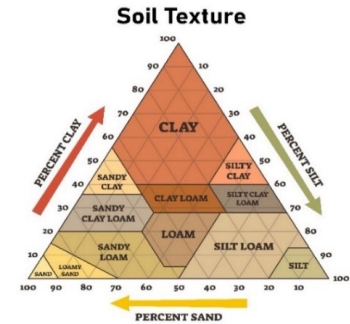
Client	Civitas	Date	26-Aug-24
Operator	Bonanza Creek	Ward	20240903
Location ID - Name	Pawnee		
Type	Location Topsoil replacement		



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SOIL REPORT

Location	Soil Profile			Physical Properties			Texture Hydro
	Top Depth (in)	Bottom Depth (in)	Soil Thickness (in)	Partical Size			
				Sand %	Silt %	Clay %	
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



Location	Soil Profile			Chemical Properties					Calcium Carbonate	
	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	

Extraction Method

Location	Soil Profile			Extraction Method			Nitrate - N Lbs/A
	Top Depth (in)	Bottom Depth (in)	Soil Thickness (in)	KCL Nitrate-N ppm	M3 Phosphorus P ppm	NH4OAc Potassium K ppm	
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



Location	Soil Profile			Plant Available			Hot Water	Ca-NO3	M3 Sulfate	AB-DTPA	Iron	Manganese	Zinc
	Top Depth (in)	Bottom Depth (in)	Soil Thickness (in)	NH4OAc Calcium	NH4OAc Magnesium	NH4OAc Sodium							
				Ca ppm	Mg ppm	Na 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

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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	percent	Relative number
		ppm		of atoms
Nitrogen	N	15,000	1.5	1,000,000
Potassium	K	10,000	1	250,000
Calcium	Ca	5,000	0.5	125,000
Magnesium	Mg	2,000	0.2	80,000
Phosphorus	P	2,000	0.2	60,000
Sulfur	S	1,000	0.1	30,000
Chlorine	Cl	100	--	3,000
Iron	Fe	100	--	2,000
Boron	B	20	--	2,000
Manganese	Mn	50	--	1,000
Zinc	Zn	20	--	300
Copper	Cu	6	--	100
Molybdenum	Mo	0.1	--	1
Nickel	Ni	0.1	--	1

- Notes
- Root Formation
- Chlorophyll Formation
- Proteins & NPK Uptake
- Chlorophyll catalyst
- Absorption Calcium
- Photosynthesis & Respiration - correlated with %OM
- Fixation of Organic Nitrogen

Source: E.Epstein, 1965

Ag Testing - Consulting

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. : 90065 Depth : 0 - 8
 ID : CIV-330782-SOIL 4

1:1 Soil pH	7.5
Soluble Salts 1:1, mmho/cm	0.36
Excess Lime Rating	LOW
Organic Matter LOI, %	1.8
Nitrate-N KCl, ppm N	46.6
Nitrate-N, lbs N / Acre	112
Phosphorus M3, ppm P	26
Potassium NH ₄ OAc, ppm K	363
Sulfate M-3, ppm S	15.2
Zinc DTPA, ppm Zn	0.33
Iron DTPA, ppm Fe	2.7
Manganese DTPA, ppm Mn	2.8
Copper DTPA, ppm Cu	0.45
Calcium NH ₄ OAc, ppm Ca	3757
Magnesium NH ₄ OAc, ppm Mg	394
Sodium NH ₄ OAc, ppm Na	54
Chloride Ca-NO ₃ , ppm Cl	16.6
Boron Hot Water, ppm B	0.35
Calcium Carbonate, %	0.1

Sum of Cations, me/100g	% Saturation				
	H	K	Ca	Mg	Na
23.2	0	4	81	14	1

Saturated Soil Paste Analysis (SAR)

Saturation, %	42
Sat Paste pH	6.9
Sat Paste ECe, mmho/cm	1.43
HCO ₃ , ppm	114
Cl, ppm	30
Ca, ppm	175
Mg, ppm	24
Na, ppm	43
S, ppm	29.3

Reviewed By : Nick Ward

9/6/2024

Copy : 1

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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			0.8
Soil Texture	Sand, %	Silt, %	Clay, %
Clay Loam	44	20	36

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

PLS = Pure, Live Seed

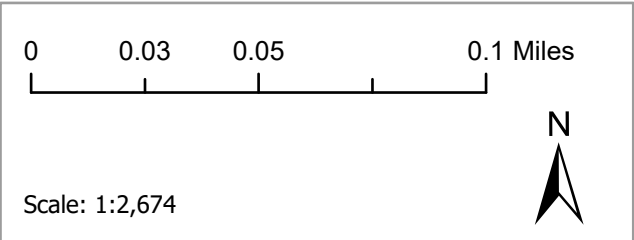


**CIV - 330782 - Colorado Energy Federal
610N64W/14SW**

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



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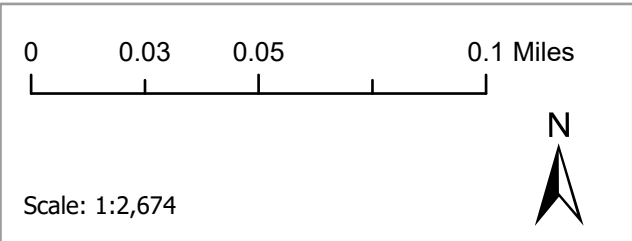




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610N64W/14SW**
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