

SITE-SPECIFIC QUALITY ASSURANCE & QUALITY CONTROL AUDIT



Permit Closure Type – Final

PERMIT CLOSURE REPORT – RANGELAND

Location ID: 330937

Location Name: ECHEVERRIA-62N67W/2SENW

Report Date

7 Mar 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	19 Jan 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	ECHEVERRIA-62N67W/2SENW		
Location ID	330937		
Operator / #	CRESTONE PEAK RESOURCES OPERATING LLC / 10633		
Field	WATTENBERG / 90750		
County, State	Weld, CO		
Lat/Long	40.168277 / -104.859572		
	<input checked="" type="checkbox"/> Planned Location		As Drilled
Facility Status	CL	Location	SENW 2 2N67W
Facility Status Date	04/29/2019	Access Road	Oil & Gas Access
Facility Entities	<input checked="" type="checkbox"/> Tank Battery (Off-Site)		Pits
	<input checked="" type="checkbox"/> Wells		Off-Location Flowlines (Form 44)
	Domestic Taps	<input checked="" type="checkbox"/>	On-Location Flowlines (Form 42)
Equipment Remaining on Site	<input checked="" type="checkbox"/> None		Debris or Non-Oil & Gas
	List of Equipment:		
Environment Incidents & Remediation	<input checked="" type="checkbox"/> None		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.</p> <p>CA Overall Status: 1 of 1 Completed</p> <p>CA-Approving Inspection Doc # & Date: 691400426 & 05/24/2018</p> <ul style="list-style-type: none"> Inspector: Tom Beardslee <p>Form FIRR Doc # & Submittal Date: 401631108 & 11/02/2018</p> <ul style="list-style-type: none"> Overall Status: CA Completed Originating Field Inspection Report (FIR) Doc #: 691400223 CA#: 116101 Date Completed: 05/08/2018 No Calibration log present. Measure gas per Rule 329. <p>ECMC Decision: Approved</p>		
	Complete ECMC Inspection Search Results: Link		
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	No Form 44s were detected during the QA & QC Audit.		

(Form 44)	
Field Inspection Form (Form INSP)	<p>Form INSP Doc # & Date: 691400426 & 05/24/2018</p> <ul style="list-style-type: none"> ○ Status Summary: This is a Follow Up Inspection ○ Inspected Facilities: ECHEVERRIA 22-2 Well ○ Inspection Status: PR ○ Inspection Date & Inspector: 05/24/2018 by Tom Beardslee ○ Comments: All corrective actions are complete. ○ Attachments: Inspection Photos Doc # 691400427 <p>Form INSP Doc # & Date: 691400223 & 05/03/2018</p> <ul style="list-style-type: none"> ○ Status Summary: No Follow Up Inspection Required ○ Inspected Facilities: ECHEVERRIA 22-2 Well ○ Inspection Status: PR ○ Inspection Date & Inspector: 04/26/2018 by Tom Beardslee ○ Comments: No Calibration log present. Plastic containment adequate. Bradenhead not plumbed to surface. ○ Attachments: Inspection Photos Doc # 691400224
COGIS Tank Facilities Information (Scout Card)	<p>No Tank Battery documents were detected during this QA/QC Audit. However, the Tank Battery is located at Location ID 328046 and is referenced in Field Inspection Doc # 668302233. This is a shared Tank Battery with three other wells.</p>
COGIS Well Information (Scout Card)	<p>Well Name: ECHEVERRIA #22-2</p> <p>API#: 05-123-19902</p> <p>FACILITY ID: 256679</p> <ul style="list-style-type: none"> ○ Status & Date: PA & 04/29/2019 ○ Lat/Long As Drilled: 40.168849 / -104.858906 ○ Form 6 Doc # & Date: 402057300 & 08/21/2019 ○ Form 42 Doc # & Date: 402002307 & 04/10/2019 <p>Purpose: START OF PLUGGING OPERATIONS - 48-hour notice required. Date: 04/12/2019</p> <ul style="list-style-type: none"> ○ Form 4 Doc # & Date: 401597169 & 04/05/2018 <p>Purpose: DIGITAL WELL LOG UPLOAD</p>

ECMC Abbreviations: [Location & Facility Status Codes](#), [Inspection Types & Statuses](#) and [ECMC Help](#).

Audit Key Findings – Designation Land Use Observations

PREVIOUS LAND USE	CURRENT LAND USE
Reference Imagery for Infrastructure: USGS 2002	Remotely Sensed Imagery: 27 Sep 2023; 15 Sep 2022
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

[330937](#) ECHEVERRIA-62N67W/2SENE is in Weld County, Colorado near the intersection of County Rd 21 1/2 and County Rd 24 1/2. There is one plugged and abandoned well (Echeverria #22-2 API # [05-123-19902](#)). There is an Off-Location Flowline between this well and the Off-Site Tank Battery facility at Location ID [328046](#) ECHEVERRIA-62N67W/2SWNW.

There was a Corrective Action at this location on April 26th, 2018, because there was no calibration log present, measure gas per Rule 329. This was resolved on May 8th, 2018, and an ECMC inspection approved the CA on May 24th, 2018.

Echeverria #22-2 well (API # [05-123-19902](#)) was plugged and abandoned on April 12th, 2019. The access road was reclaimed at this time. The related production facility, at Location ID [328046](#) was closed and reclaimed around the same time.

Soil Sage drone imagery confirms that no equipment was left on site at this location after reclamation activities occurred.

Summary Acreage Table

Description	Acres
Historic Disturbance Extent	0.30
Access Road	0.07
Flowline	Not Included
Tank Battery	Off-Site (Loc ID 328046)
Well Pad	0.27

Drone Information

Make	DJI
Model	M300/Mavic 3 Multispectral
Image Processing Software	Pix4dfields – RGB/Multispectral Imagery & Pix4dmatic – RGB Imagery
Pilot Name	Sam Streeter
Pilot FAA Certificate Number	4100157
Date of FAA Certificate Issuance	23 Dec 2023

Vegetation Ecological Analysis

Vegetation Point	Bare Ground	Grass	Forbs	Shrubs	Litter	Weeds	Field Notes
Recovery	3	75	0	0	15	7	Horse weed, Kochia, stink grass, purple and African love grass, sunflower in area
Reference	15	15	0	0	10	60	Sunflower, sow thistle in area

Vegetation

The vegetation assessment conducted on this site reveals a 75% recovery rate, surpassing the established minimum threshold of 12% based on the reference area (reference vegetation cover time 80%).

Weed Summary Reference

Common Name	Weed List Type	Percent Cover (%)
Sow thistle	Common	30
Sunflowers	Common	40

Weed Summary Recovery

Common Name	Weed List Type	Percent Cover (%)
Kochia	Common	5
Horse weed	Common	1
Sunflowers	Common	>1

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 - Designed to stop the continued spread, List C - Facilitate more integrated effective weed management, Watch List - Determined to pose a potential threat to ag 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

Weed Pressure

Currently, the level of weed pressure observed within the recovery area is significantly lower than that of the reference areas.

Hydrology

Hydrology – Stream Orders 1 – 5 are present - dominant streams are orders are 1, 2 and 3. Order 3-5 are present in locations that have the potential for soil erosion represented by gullying and riling that follow the elevation gradient from high to low within. These could be major runoff areas for gullying and soil erosion with heavy precipitation events. Soil texture in the area is primarily loamy sand.

Ponding - potential ponding can occur where water follows the elevation gradients in low lying areas primarily in the eastern portion of the recovery site near the road where the gradient changes.

Soil/Erosion

Exposed soil has low susceptibility to water erosion and is within the high susceptible group for wind erosion due to ecosystem dynamics and vegetative cover.

Site Recommendation and Re-Evaluation

This site statically does meet the revegetation target rate. The weed pressure within the reclaim area is minimal compared to the reference extent.

Cardinal Photos

Site Investigation and Photos Date

27 Sep 2023

Cardinal directional photos of the site.





In View – Well, Access Road, Flowline

EAST – 40.168884 / -104.859445



In View – Well, Access Road, Flowline

SOUTH – 40.169428 / -104.858925



In View – Well, Access Road, Flowline

WEST – 40.168902 / -104.858386



In View – Well, Tank Battery, Access Road, Flowline

NORTHWEST – 40.168711 / -104.858215



In View – Well, Tank Battery, Access Road, Flowline

SOUTHEAST – 40.170786 / -104.863534



In View – Tank Battery, Flowline

NORTH – 40.169911 / -104.863036



In View – Tank Battery, Flowline

EAST – 40.170601 / -104.863776



In View – Tank Battery, Flowline

SOUTH – 40.171025 / -104.863020



In View – Tank Battery, Flowline

WEST – 40.170555 / -104.862272

Handheld Photos – Recovery Vegetation

Lat/Long

40.168860 / -104.858915

Handheld photos taken from well pad looking at Echeverria #22-2 wellhead.





Looking East



Looking South



Looking West



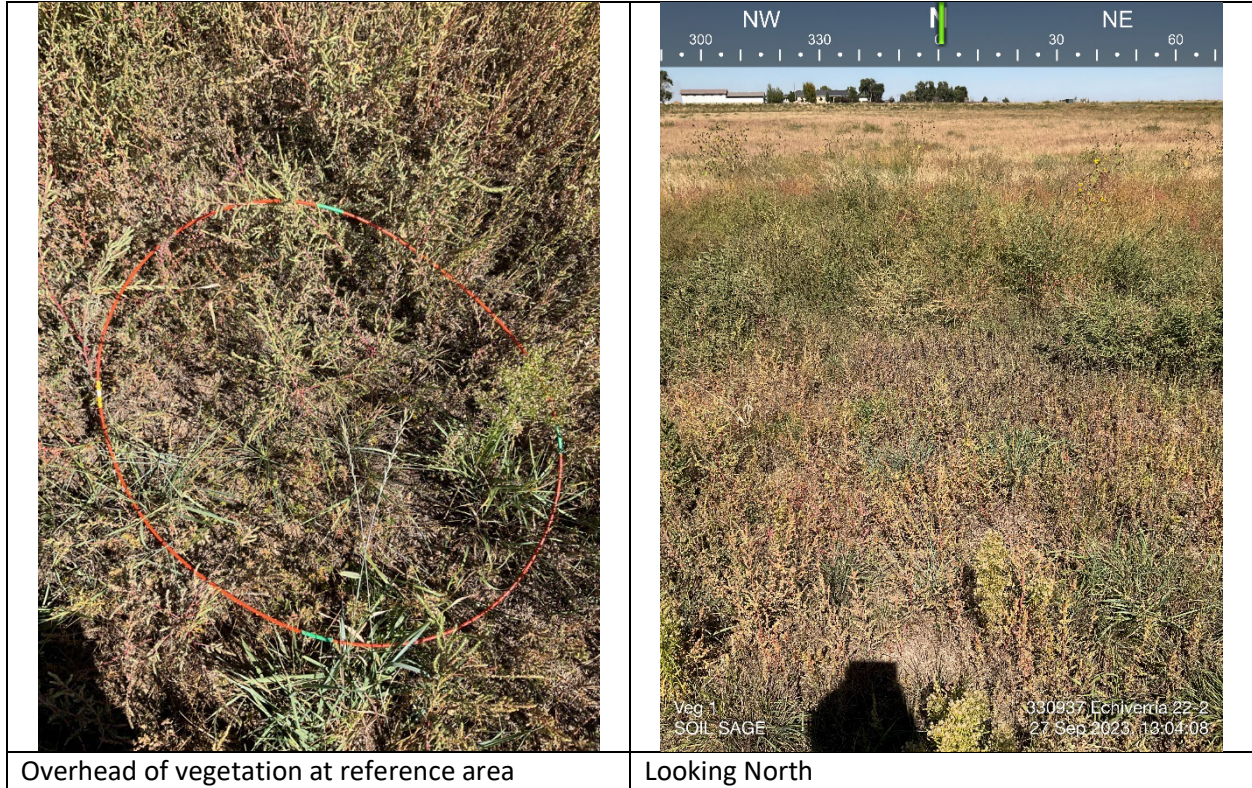
Western Wheatgrass – *Pascopyrum smithii* and
Kochia – *Kochia scoparia* – Common Weed

Handheld Photos – Reference Vegetation

Lat/Long

40.168879 / -104.859130

Handheld photos taken to the west of the wellhead.





ATTACHMENTS

Maps and Figures

Area Maps

Post-Plugging Overview

Pre-Plugging Overview (2002)

Elevation & Contours

Hydrology

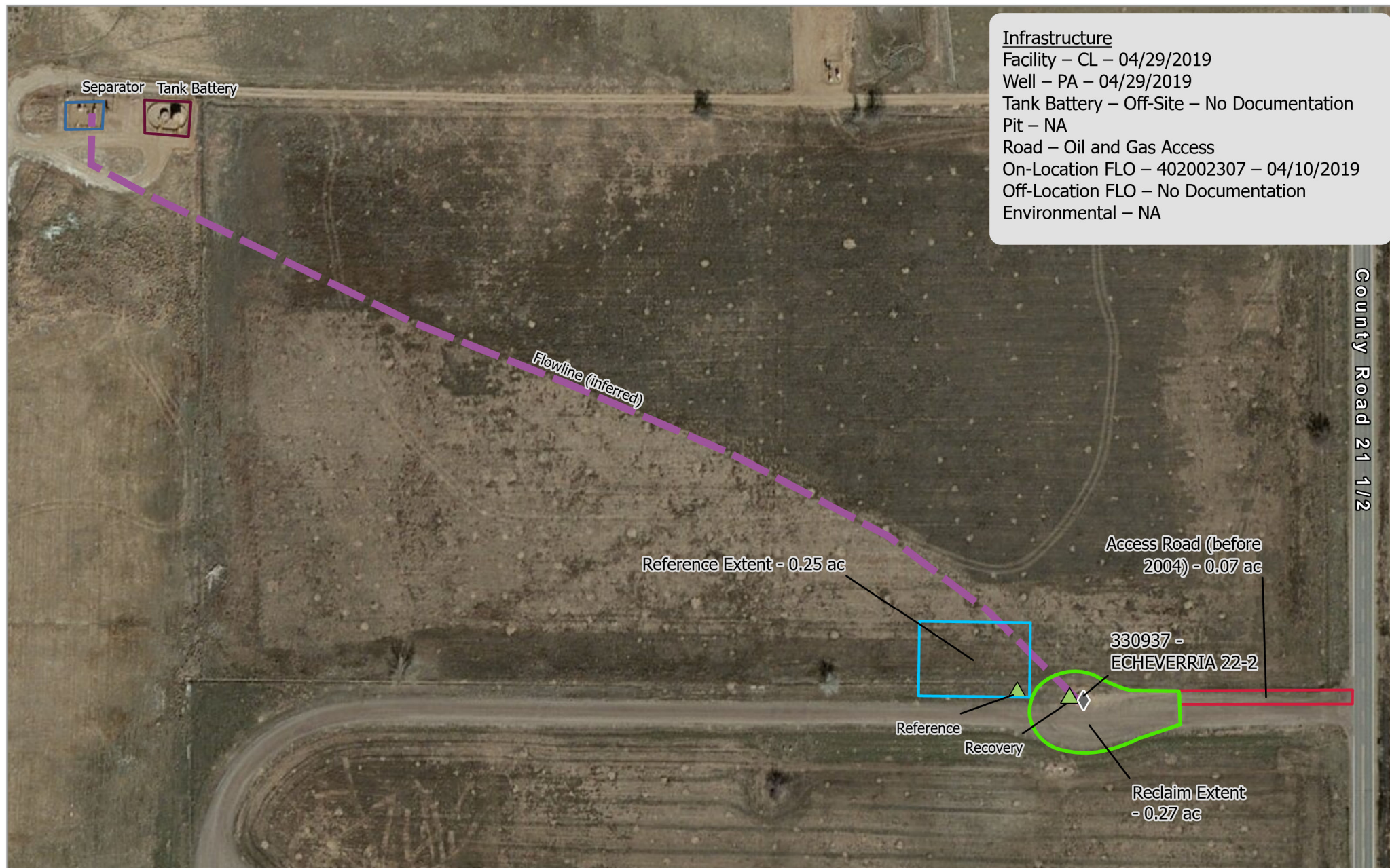
NDVI – Vegetation Reference taller grasses and forbs

NDRE – Vegetation Reference ground cover

Background Information

Natural Resources Conservation Service (NRCS) Map Unit Description

Reference Soil Document



Infrastructure
 Facility – CL – 04/29/2019
 Well – PA – 04/29/2019
 Tank Battery – Off-Site – No Documentation
 Pit – NA
 Road – Oil and Gas Access
 On-Location FLO – 402002307 – 04/10/2019
 Off-Location FLO – No Documentation
 Environmental – NA

CIV - 330937 - ECHEVERRIA 22-2 **Map Extent - Pre-Plugging Overview**

Imagery: USGS
 Imagery Date: 24 Apr 2002
 Map Date: 04 Mar 2024
 Datum: NAD_1983_UTM_Zone_13N
 POC: Soil Sage

- | | |
|---------------------|------------------|
| ◆ Wells | Reference Extent |
| ▲ Vegetation Points | Tank Battery |
| — Flowline | Separator |
| Reclaim Extent | |

0 25 50 100 Meters

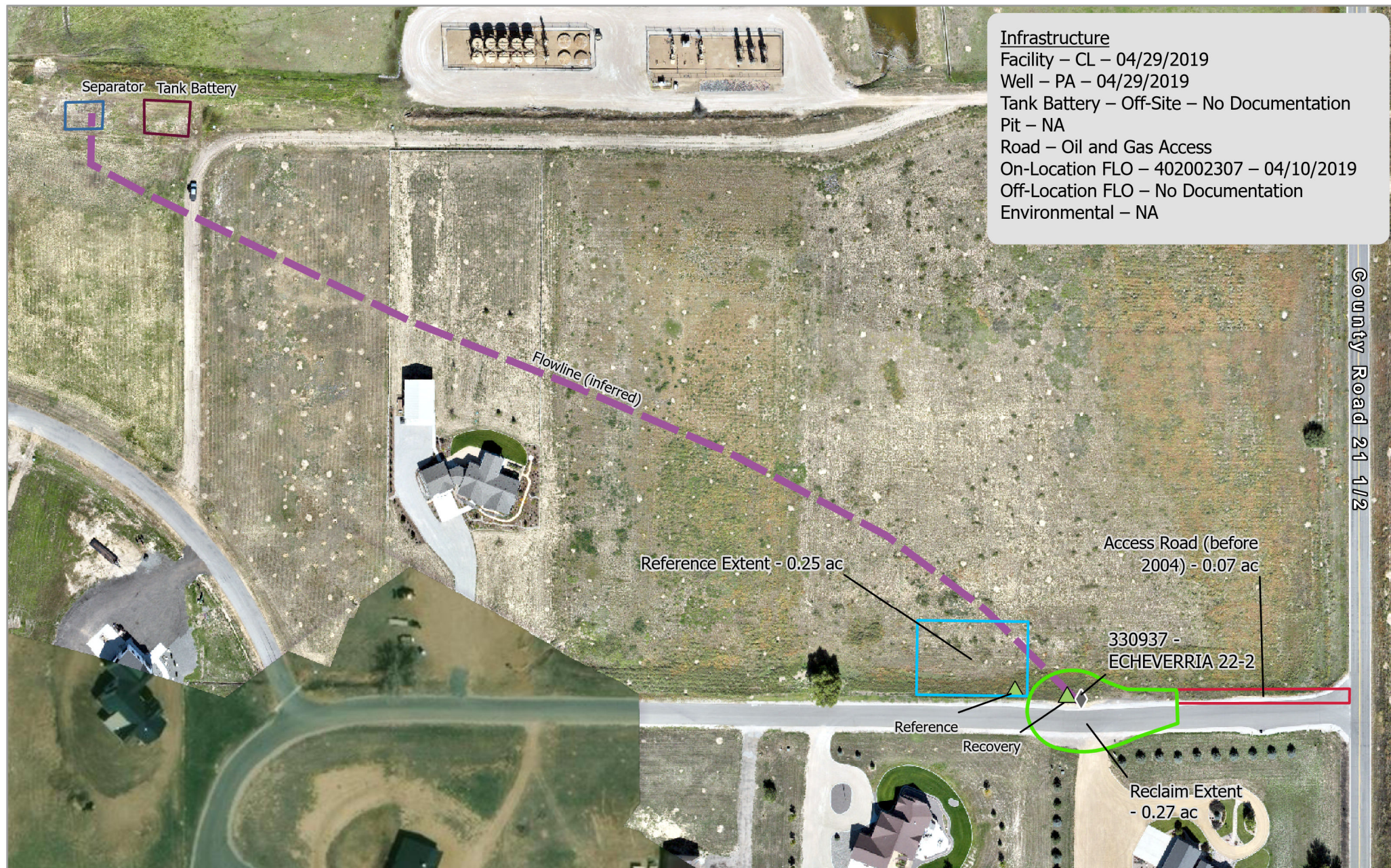
Total Disturbance:
 0.30 Acres
 Scale: 1:1,800

Pad Location:
 40.168849
 -104.858906



Service Credits - esi_imagery, Maxar, Microsoft





CIV - 330937 - ECHEVERRIA 22-2 **Map Extent - Post-Plugging Overview**

Imagery: RS Orthomosaic and DSM
 Imagery Date: 27 Sep 2023
 Map Date: 04 Mar 2024
 Datum: NAD_1983_UTM_Zone_13N
 POC: Soil Sage

- ◆ Wells
- ▲ Vegetation Points
- Flowline
- ◻ Reclaim Extent
- ◻ Reference Extent
- ◻ Tank Battery
- ◻ Separator

0 25 50 100 Meters

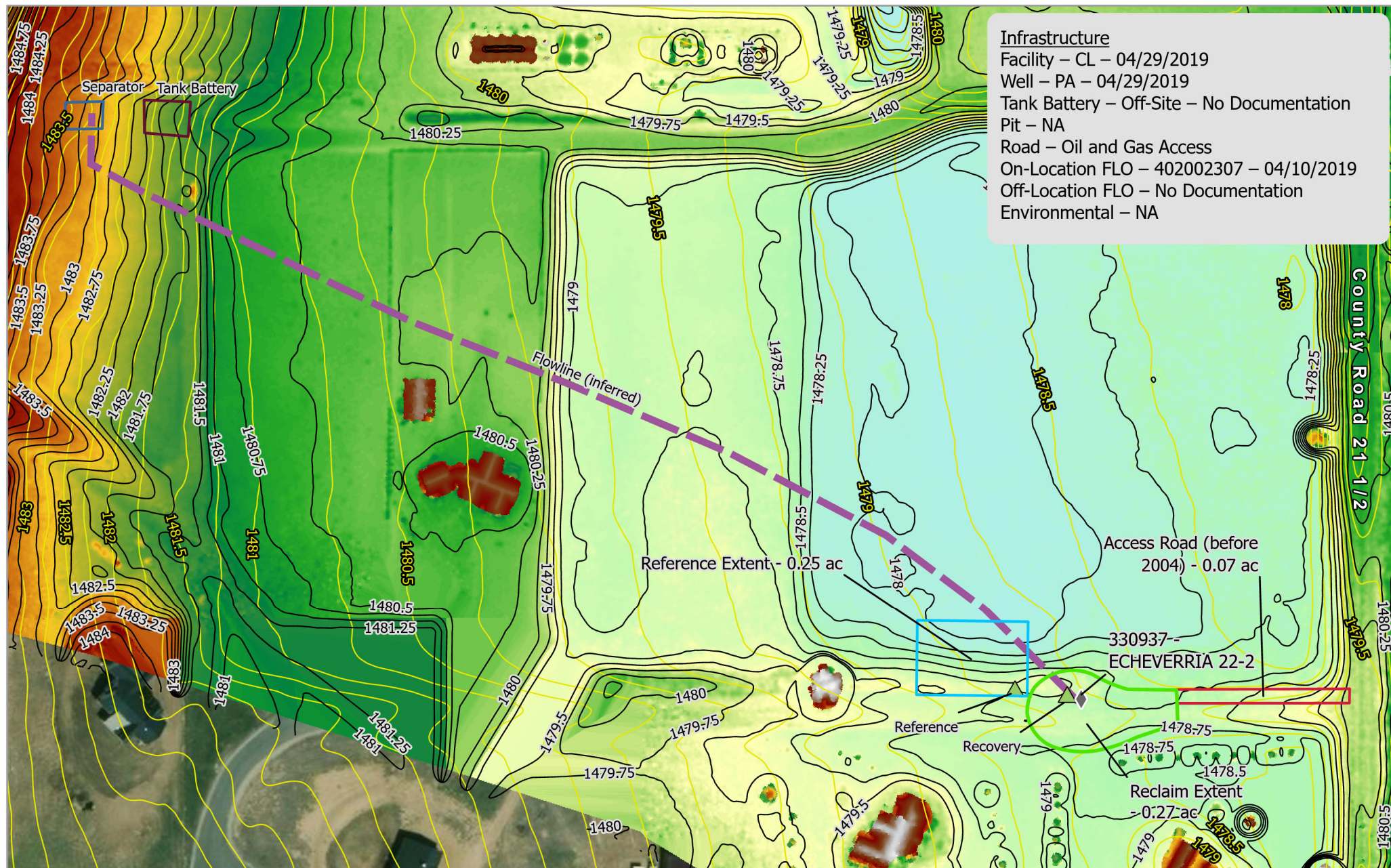
Total Disturbance:
 0.30 Acres
 Scale: 1:1,800

Pad Location:
 40.168849
 -104.858906



Service Credits - esi_imagery, Maxar, Microsoft





CIV - 330937 - ECHEVERRIA 22-2 Map Extent - Elevation & Contours

Imagery: RS DSM, USGS

Imagery Date: 27 Sep 2023, 2014

Map Date: 04 Mar 2024

Datum: NAD_1983_UTM_Zone_13N

POC: Soil Sage

- ◆ Wells
- ▲ Vegetation Points
- Flowline
- ~ 0.25 Meter Contours (2013)
- ~ 0.25 Meter Contours (2014)
- Reclaim Extent
- Reference Extent
- Tank Battery
- Separator
- Elevation
- Meters
- 1497
- 1477

0 25 50 100 Meters

Total Disturbance:

0.30 Acres

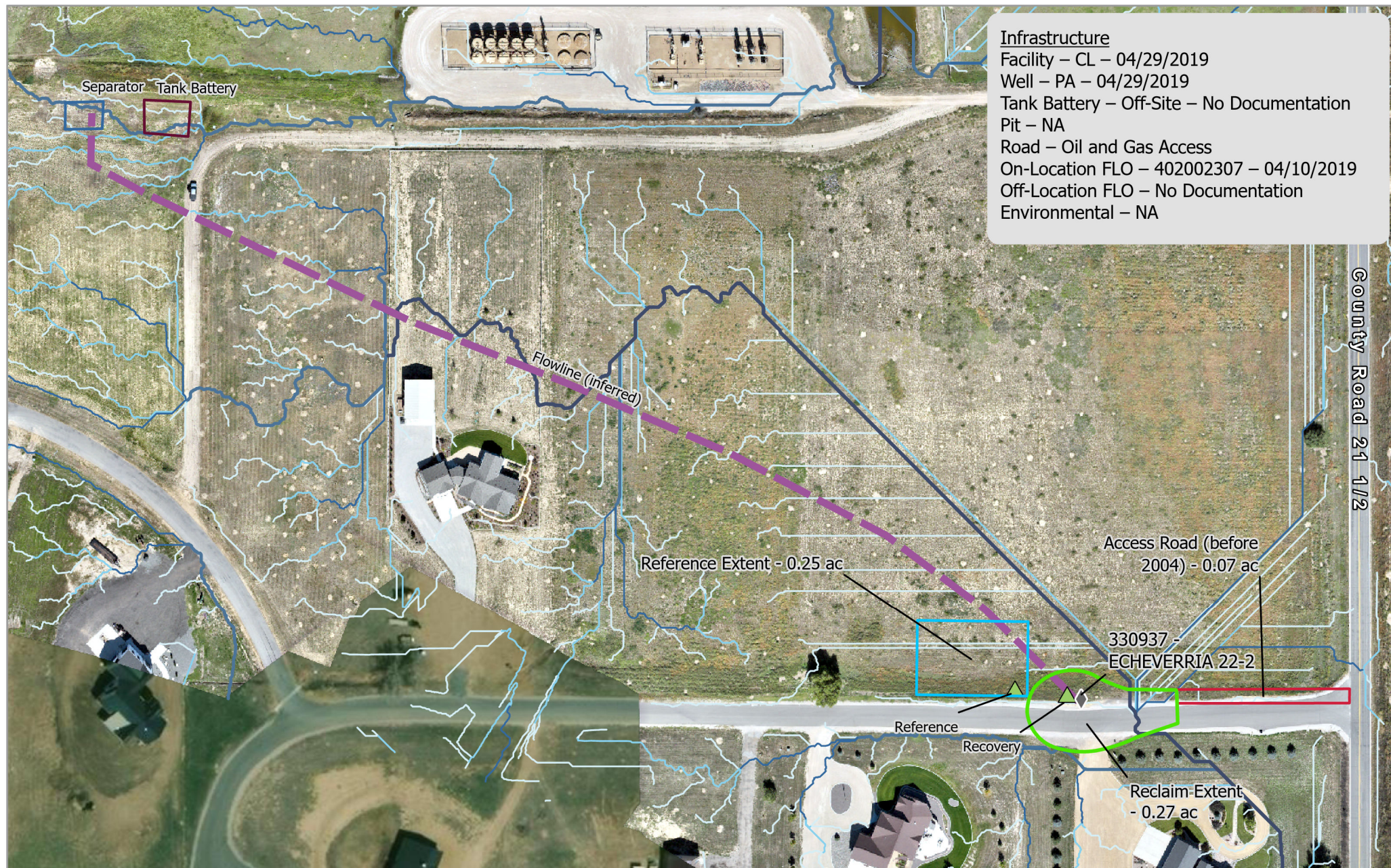
Scale: 1:1,800

Pad Location:

40.168849

-104.858906

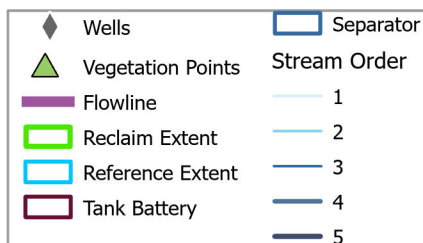




Infrastructure
 Facility – CL – 04/29/2019
 Well – PA – 04/29/2019
 Tank Battery – Off-Site – No Documentation
 Pit – NA
 Road – Oil and Gas Access
 On-Location FLO – 402002307 – 04/10/2019
 Off-Location FLO – No Documentation
 Environmental – NA

CIV - 330937 - ECHEVERRIA 22-2 **Map Extent - Hydrology**

Imagery: RS DSM, Orthomosaic
 Imagery Date: 27 Sep 2023
 Map Date: 04 Mar 2024
 Datum: NAD_1983_UTM_Zone_13N
 POC: Soil Sage



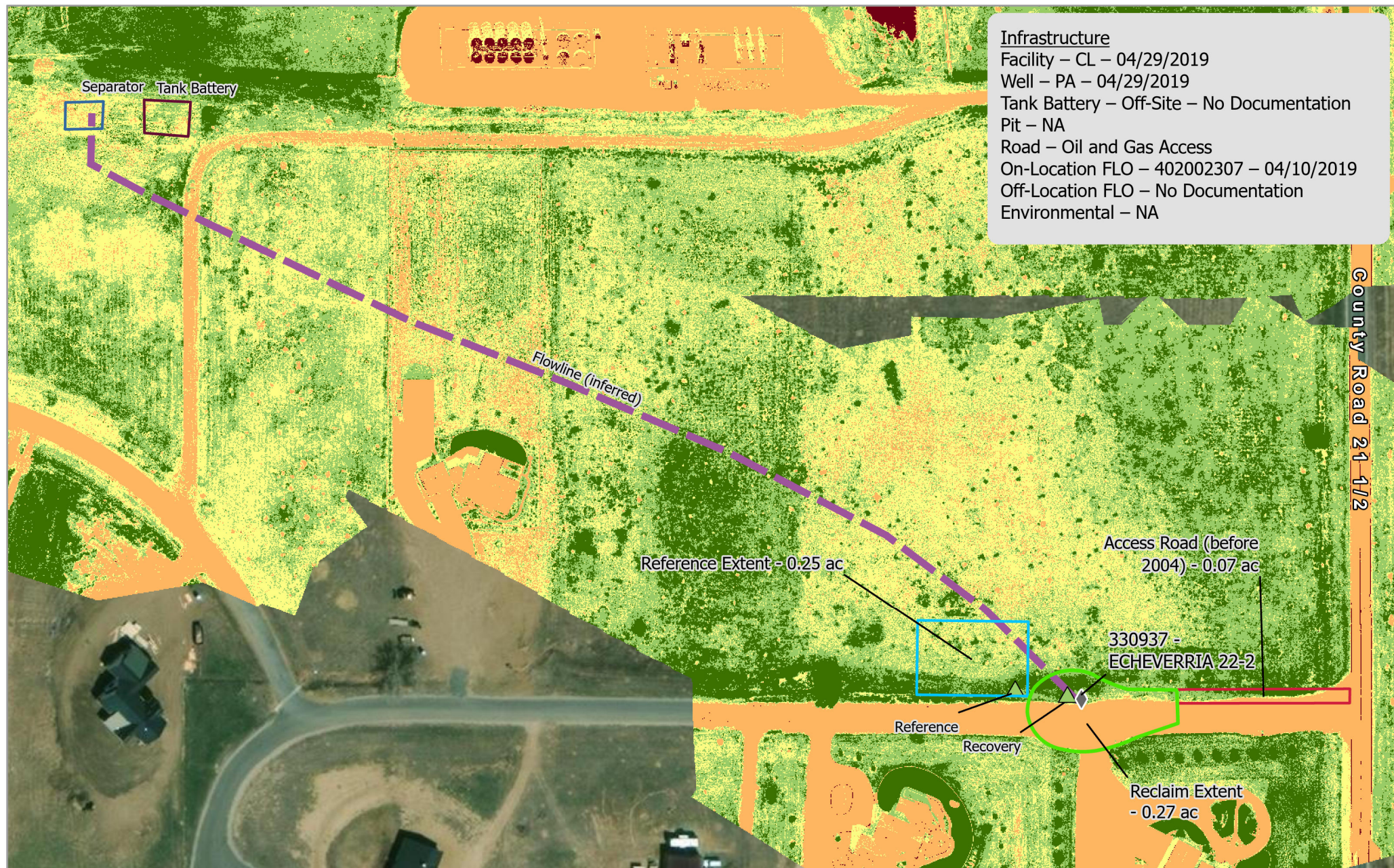
Total Disturbance:
 0.30 Acres
 Scale: 1:1,800

Pad Location:
 40.168849
 -104.858906



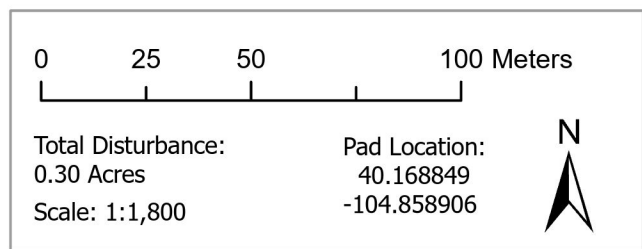
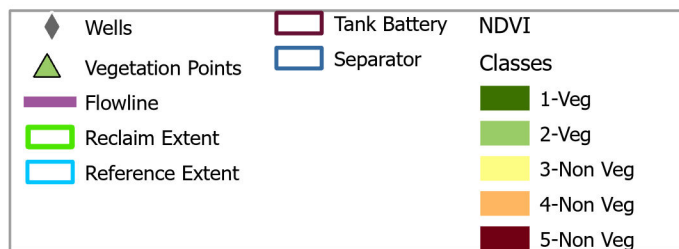
Service Credits - esi_imagery, Maxar, Microsoft

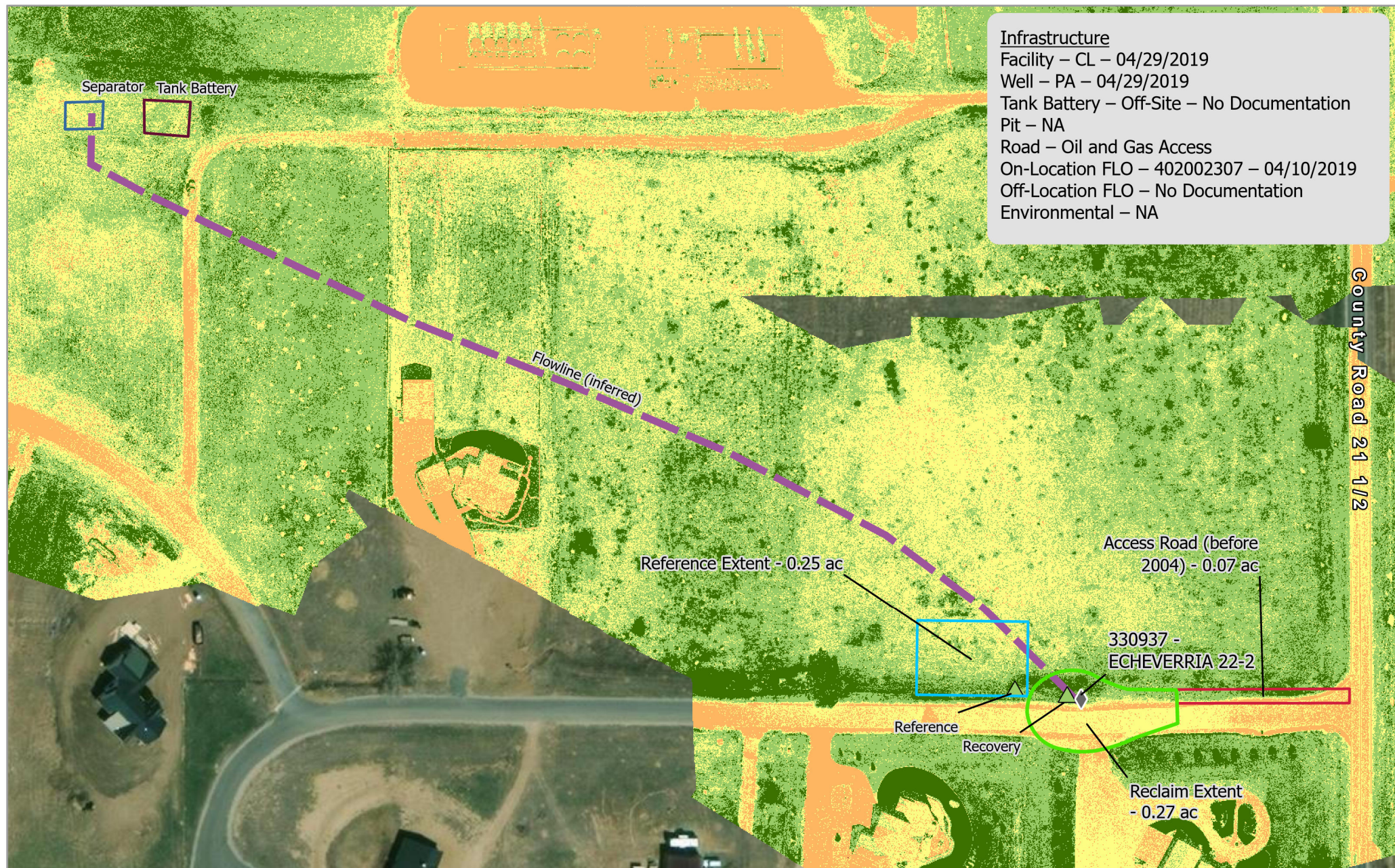




CIV - 330937 - ECHEVERRIA 22-2 **Map Extent - NDVI**

Imagery: RS Multispectral
 Imagery Date: 27 Sep 2023
 Map Date: 04 Mar 2024
 Datum: NAD_1983_UTM_Zone_13N
 POC: Soil Sage



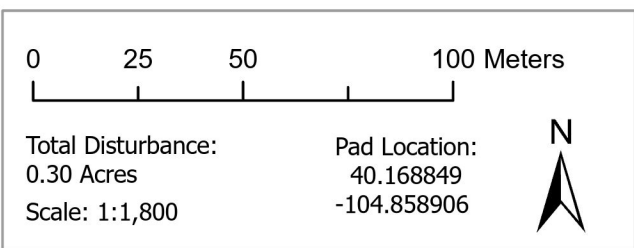
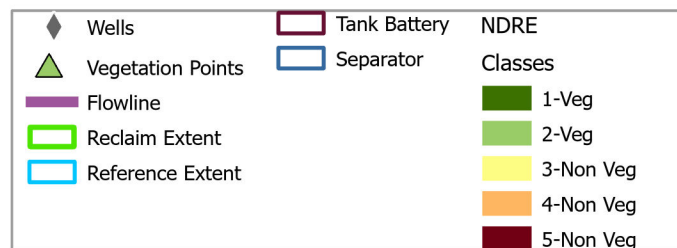


Infrastructure
 Facility – CL – 04/29/2019
 Well – PA – 04/29/2019
 Tank Battery – Off-Site – No Documentation
 Pit – NA
 Road – Oil and Gas Access
 On-Location FLO – 402002307 – 04/10/2019
 Off-Location FLO – No Documentation
 Environmental – NA

County Road 21 1/2

CIV - 330937 - ECHEVERRIA 22-2 **Map Extent - NDRE**

Imagery: RS Multispectral
 Imagery Date: 27 Sep 2023
 Map Date: 04 Mar 2024
 Datum: NAD_1983_UTM_Zone_13N
 POC: Soil Sage



Soil Properties

USDA Soil Description

Reference Soil Information

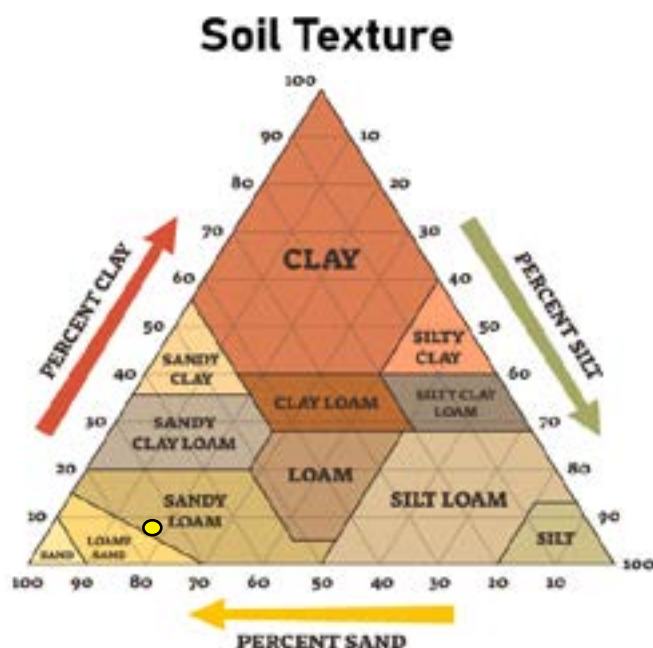
The location of the site is contained within one soil type, Vona loamy sand.

Map Unit 73 Reference Soil information - Vona loamy sand

This soil is formed from eolian sands. Landform is Hillslopes, hills, with the Deep Sand Ecological Site. Soils are well drained with a moderate water holding capacity, and slope 3-5 percent.

Depth (in)	Physical			Chemical			
	Texture	Bulk Density	Particle Size Percent sand, silt, clay	pH	EC	SAR	OM%
0-10	Loamy Sand	1.62	75-18-7	7.3	0.1	0.0	0.93
10-20	Sandy Loam	1.61	67-22-11	7.5	0.1	0.0	0.61
20-30	Sandy Loam	1.59	67-23-10	8.1	0.1	0.0	0.25
30-40	Sandy Loam	1.59	67-23-10	8.1	0.1	0.0	0.25
40-50	Sandy Loam	1.58	73-20-7	8.1	0.1	0.0	0.17
50 +	Loamy Sand	1.58	78-17-5	8.1	0.1	0.0	0.10

Soil Texture Triangle reflect the 0-10 in depth



Erosion Potential (10 inches)

- K Factor, Whole soil - .20. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.
- Wind Erodibility Group – 2. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

Soil Reference Information

There is a general relationship of soil bulk density to root growth based on soil texture. Bulk densities ideal for root growth are less than 1.60 g/cc for sandy textures, less than 1.40 g/cc for loamy textures, and less than 1.10 g/cc for clayey textures. Bulk densities that restrict root growth are greater than 1.80 g/cc for sandy textures, 1.65 g/cc for loamy textures, and 1.47 g/cc for clayey textures.

Vegetation

Reference vegetation – Deep Sand Ecology

Climate

Average Annual Precipitation 14 to 17 inches annually - average 15 inches

Average Annual Air Temperature ranges from 48 to 52 degrees F

Drought conditions in effect

Long-term effects of these latest drought events have yet to be determined. Growth of native cool-season plants begin about April 1 and continue to mid-June. Native warm-season plants begin growth about May 1 and continue to about August 15. Regrowth of cool-season plants occur in September in most years, depending on moisture.

Reference dynamics

The Reference State is characterized by a dominance of warm-season tallgrasses (sand bluestem, prairie sandreed, switchgrass, and Indiangrass). The Shrub State is dominated by sand sagebrush and a minor component of understory species. The Eroded State is characterized by annual forbs and grasses (kochia, Russian thistle, cheatgrass) and early successional plants (sandhill muhly, sand dropseed, Fendler threeawn, and lemon scurfpea).

Drought has increased mortality of blue grama and other bunchgrasses significantly in some locales.

Dominants are sand bluestem, prairie sandreed, switchgrass and Indiangrass. Sub-dominant grasses include needle and thread, blue grama and little bluestem. Significant forbs and shrubs are pacific peavine, prairie clovers, dotted blazing star (aka dotted gayfeather), leadplant, western sandcherry, and sand sagebrush. The potential vegetation is about 70-85% grasses and grass-like plants, 8-15% forbs and 7-15% woody plants.

Not well suited for carbon sequestration.

Reference Vegetation – Deep Sand Ecology

At Risk Plant Community

Key species from the Reference Plant Community, sand bluestem, prairie sandreed, yellow Indiangrass, switchgrass, western sandcherry and leadplant have decreased in frequency and production. Blue grama and sand sagebrush are the dominant species. Sand dropseed, red threeawn, slimflower scurfpea, hairy goldenaster, croton, western ragweed, stickleaf, lupine, loco, and milkvetch have also increased.

The risk of losing some of the tall grass species, palatable forbs and shrubs. The reduction of tall grass species, nitrogen-fixing forbs, key shrub component and increased warm season shortgrass has altered the biotic integrity of this plant community. Nutrient cycle, water cycle and energy flow may be impaired. It will require considerable time and expense to return this community once it crosses a threshold to the shrub state.

Vegetation

Deep Sand Ecosystem Vegetative Community Composition

Common Name	Scientific Name
Prairie Sandreed	<i>Calamovilfa longifolia</i>
Sand Bluestem	<i>Andropogon hallii</i>
Switchgrass	<i>Panicum virgatum</i>
Indiangrass	<i>Sorghastrum nutans</i>
Blowout Grass	<i>Redfeldia flexuosa</i>
Little Bluestem	<i>Schizachyrium scoparium</i>
Sideoats Grama	<i>Bouteloua curtipendula</i>
Sand Dropseed	<i>Sporobuolus cryptandrus</i>
Blue Grama	<i>Bouteloua gracilis</i>
Western Wheatgrass	<i>Pascopyrum smithii</i>
Needle and Thread	<i>Hesperostipa comata</i> ssp. <i>comata</i>
Indian Ricegrass	<i>Achnatherum hymenoides</i>
Squirreltail	<i>Elymus elymoides</i> ssp. <i>elymoides</i>
Purple Prairie Clover	<i>Dalea purpurea</i> var. <i>purpurea</i>
Painted Milkvetch	<i>Astragalus ceramicus</i> var. <i>filifolius</i>
White Prairie Clover	<i>Dalea candida</i>
Dotted Blazing Star	<i>Liatris punctata</i>
Whitest Evening Primrose	<i>Oenothera albicaulis</i>
Upright Prairie Coneflower	<i>Ratibida coumnera</i>
Broadbeard Beardtongue	<i>Penstemon angustifolius</i>
Scarlet Globemallow	<i>Sphaeralcea coccinea</i>
Annual Buckwheat	<i>Eriogonum annuum</i>