



LOCATION: Front Range 2

DOCUMENT: Geologic Hazards Plan

Section 23, Township 6 North, Range 67 West

Lat: 40.466418°, Long: -104.859778°

Form 2A Doc No. 111111111

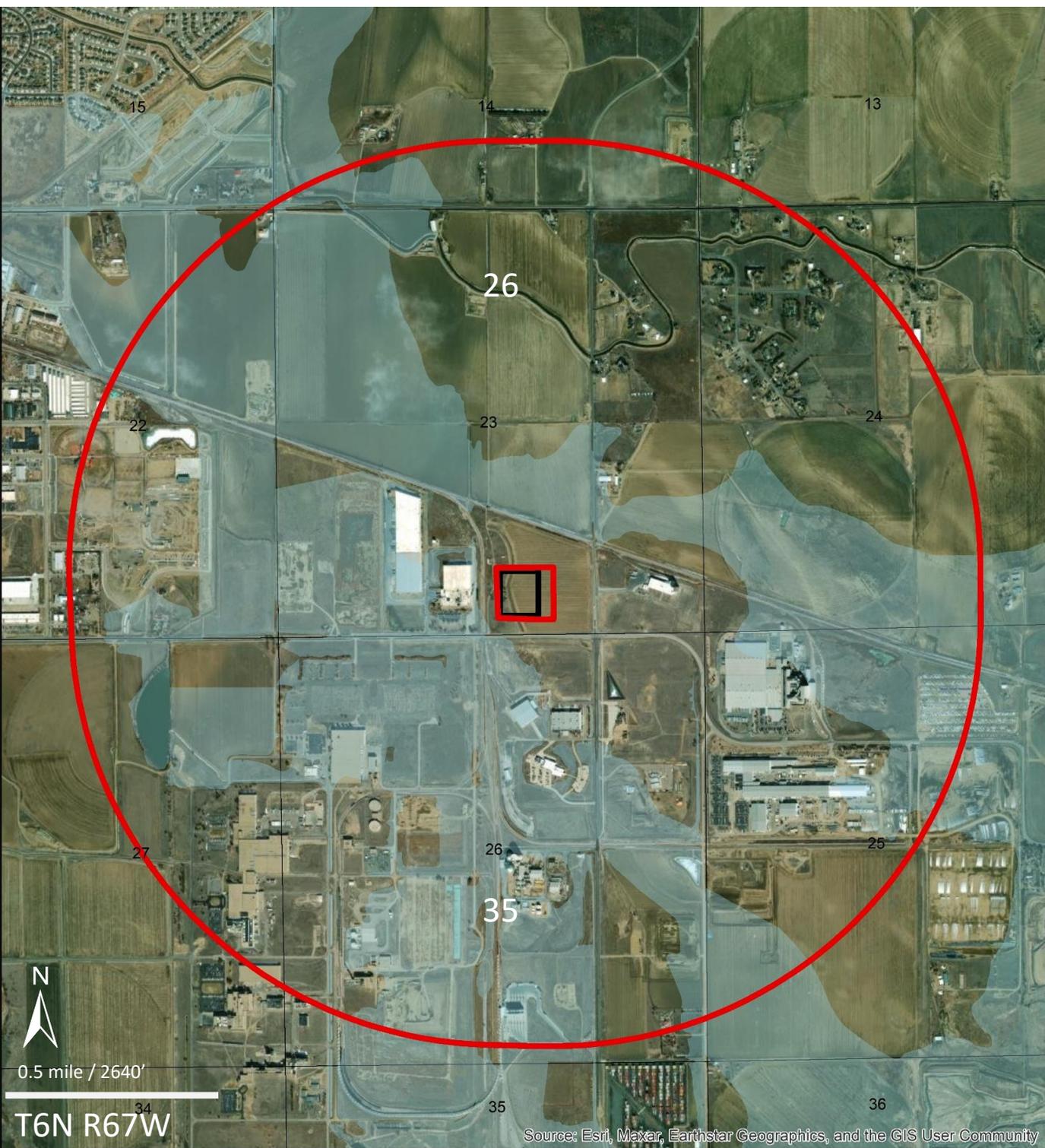
Weld County, Colorado

## **Background**

Carbon Storage Solutions seeks to develop a well that will support a Class VI Carbon Capture Sequestration program. This EPA required well will monitor pressure, temperature, and formation fluid sampling.

## **Introduction**

This Geologic Hazard Plan is intended to facilitate compliance with the Front Range 2 ECMC Rules and Regulations, Rule 304.c.(21). This document serves as the Geologic Hazards Plan for Form 2A.



I, Julia Rausch Lemaster, certify that I am a Professional Geologist, having met the educational requirements and professional work experience required by C.R.S. § 23-41-208(b). I have reviewed information pertaining to this Drill Location and the surrounding area, and have identified the following Geologic Hazards within a 1-mile radius:

- Corrosive Soil to Steel
- Collapsible and Hydrocompressive Soil Potential

No other hazards within a 1-mile radius were identified, including:

- Avalanches
- Landslides
- Rock falls
- Mudflows
- Slope stability
- Seismic
- Radioactivity
- Ground subsidence
- Mines

Julia Rausch Lemaster      2/1/2024

Julia Rausch Lemaster  
 Geologic Consultant with  
 Carbon Solutions, LLC for CSS  
 WYPG #3894

Date

Please note:  
 100-year effective floodplain displayed on map as blue shading.

- NOTES:
- Faults: [https://ECMCmap.state.co.us/ECMC\\_gis\\_online/ \(01-17-24\)](https://ECMCmap.state.co.us/ECMC_gis_online/ (01-17-24))
  - Landslide: <https://cologeosurvey.maps.arcgis.com/apps/webappview/index.html>
  - Mines: <https://maps.dnrgis.state.co.us/drms/Index.html?viewer=drms>
  - Collapsible Soils: <https://cologeosurvey.maps.arcgis.com/apps/webappview/index.html>
  - Radioactive Minerals: <https://cologeosurvey.maps.arcgis.com/apps/webappviewer/index.html?id=c5381e1335284d63bfa5d4b018b3372f>
  - Floodplain: 100-year effective from ECMC GIS data
  - Hazards: <https://coloradogeologicalsurvey.org/hazards/>

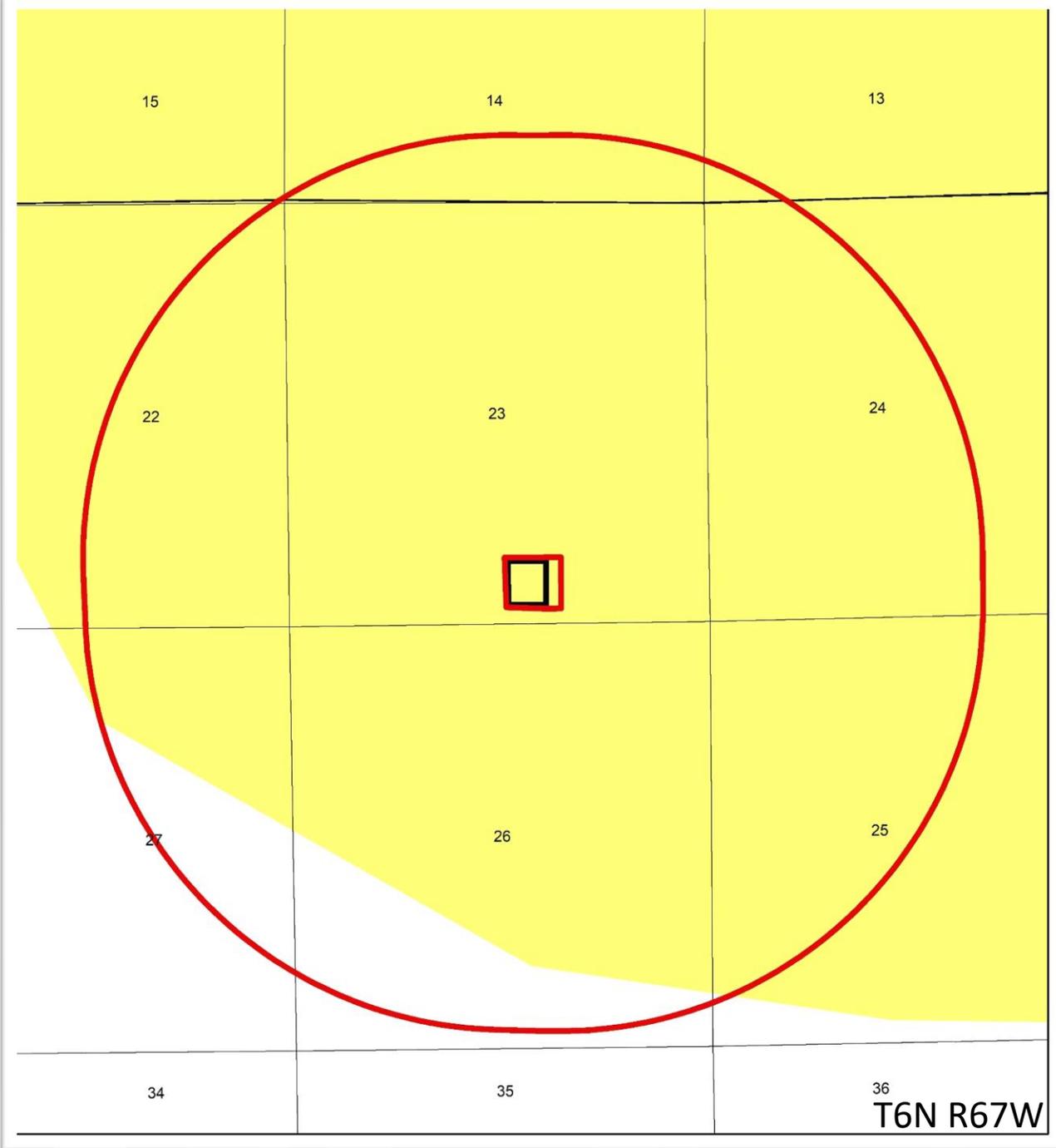
 Pad with 1-mile radius

**CARBON STORAGE SOLUTIONS**  
**FRONT RANGE 2**  
**450' FSL 2325' FEL**  
**SW ¼ SE ¼, SECTION 23, T6N, R67W, 6<sup>th</sup> P.M.**  
**WELD COUNTY, CO**

**GEOLOGIC HAZARD MAP EXHIBIT 1**



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



**Collapsible Soil**

Published by Colorado Geological Survey  
[cgs\\_services/Collapsable Soils\\_withMeeker \(MapServer\) \(mines.edu\)](http://cgs_services/Collapsable_Soils_withMeeker(MapServer)(mines.edu))

 Loess – can be a collapsible soil

Per analysis by other operators in the general area, there have been no known cases of subsidence due to eolian soil collapse in the area as a result of drilling operations in the greater Wattenberg Field area.

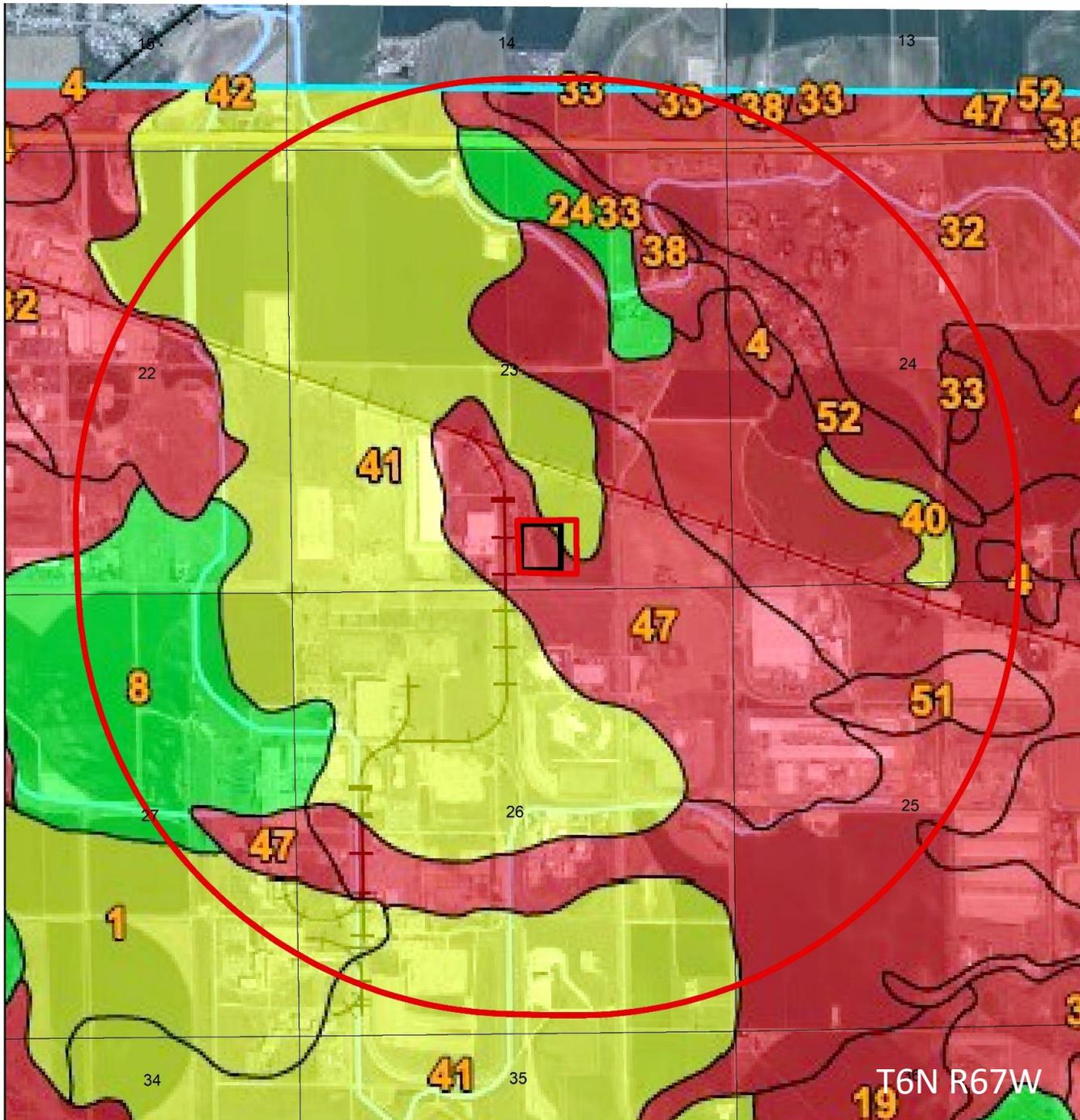
The drill site will be constructed and managed for water.

Collapsible soils are identified as a potential hazard. Prior to construction at the proposed location, topsoil is removed. During the cut and fill process, the ground is wetted and compacted. A cap of about 4-6" of road base provides additional protection from differential compaction. The grade and ditches promote flow off of the proposed location to further mitigate the risk of water saturating soils. Considering the soil composition, and the facility design and management, I determine the collapsible soil hazard is low.

 Pad with 1-mile radius

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**GEOLOGIC HAZARD MAP EXHIBIT 2**



**Corrosion of Steel**

USDA Natural Resources Conservation Service

Web Soil Survey

<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

**Soil Corrosion Rating**

- High
- Moderate
- Low

**Soil Type**

- 1, 8, 24, 32, 33, 38, 40: loam
- 4: Aquillos and Aquents, flooded
- 41: clay loam
- 46, 47, 51, 52: sandy loam

Corrosion to steel is identified as a potential hazard in vicinity of, but not at, the proposed location. No steel at the proposed location will be exposed to the soil because

- 1) all steel equipment on location will have impervious liners,
- 2) steel flowlines will have protective lining, and
- 3) imported gravel or road base will separate the natural soil from steel.

Considering the primary soil on the location, and facility design and management, I determine the steel corrosion hazard from soil at the proposed location is insignificant.

Pad with 1-mile radius

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**GEOLOGIC HAZARD MAP EXHIBIT 3**