

**Topsoil Protection Plan – 304.c.(14)**

**Federal RGU 44-1-298 Oil and Gas Location**

**Loc ID #335640**

**November 2022**



## **RULE 1001. INTRODUCTION**

TEP Rocky Mountain LLC (hereafter “TEP”) has developed the following topsoil protection plan to address compliance with Federal, State, and local requirements regarding topsoil management and preservation during expansion of the existing Federal RGU 44-1-298 well pad and for construction of the proposed access road and pipeline corridors. Proper management of topsoil from Oil and Gas Locations during initial site construction is necessary to ensure topsoil is preserved for site reclamation—following completion of development of the well pad and pipeline corridor—and to ensure adequate organic material for the re-establishment of desirable vegetation is available at reclamation (restoring the land as nearly as practicable to its condition at commencement of drilling and production operations).

## **RULE 1002. SITE PREPARATION AND STABILIZATION**

There are three (3) components of the Federal RGU 44-1-298 development plan that require removal and temporary storage of topsoil: expansion of the existing Federal RGU 44-1-298 well pad and construction of the proposed access road and pipeline corridors. Topsoil stripped during initial construction of these project components will be managed according to use and duration of development.

Prior to separation and storage of the topsoil horizon, or top six (6) inches, from the well pad facility, proposed access road, and proposed pipeline corridor, woody vegetation will be mulched and stormwater control measures properly installed to control erosion and sedimentation during precipitation events. (The facility’s stormwater management plan includes details on stormwater control measures planned for use.) When separating soil horizons, TEP will segregate each horizon based upon noted changes in physical characteristics, such as organic content, color, texture, density, or consistency.

To the extent feasible, stockpiled soils will be protected from degradation due to contamination, compaction, and from wind and water erosion during drilling and production operations. Surface roughening, temporary seeding and mulching, erosion control blankets, or soil binders will be used as needed, and best management practices implemented, to prevent weed establishment and to maintain soil microbial activity.

### **Existing Federal RGU 44-1-298 Well Pad**

During construction at the existing well pad location, including expansion of the soil stockpile area to the northwest, TEP’s excavation contractor will strip the topsoil horizon within the proposed limits of disturbance (except for the existing working pad surface, access road, and existing topsoil within the proposed topsoil stockpile area). Topsoil will be stripped to a depth no less than six inches (6”) and stockpiled northwest of the existing wells. Topsoil will be segregated from other subsurface materials disturbed during well pad construction activities and no topsoil will be used for building the location or left in place and covered by subsoil in a cut and fill situation. To control sedimentation, wattles will be properly installed around the base of topsoil stockpiles and a metal sign (11” x 17”) with the wording “Topsoil Stockpile” will be placed on the east/SE (pad) side of the stockpile area. Upon completion of well pad construction activities, hydro-seed/mulch will be applied to topsoil stockpiles to stabilize the soils and promote the growth of desirable plants until interim reclamation can be completed.

- Quantity of topsoil that will be disturbed for the existing well pad: approximately 3,470 cubic yards (based on 6” depth, not including the working surface).
- Location of topsoil that will be disturbed: indicated on Colorado Oil and Gas Conservation Commission (COGCC) Form 2A and Bureau of Land Management (BLM) Application for Permit to Drill (APD).

When E & P operations and recontouring of the site are complete (as described in the Interim Reclamation Plan), topsoil will be moved from the stockpile area and placed over the facility’s cut and fill slopes. Following the uniform placement of topsoil over cut and fill slopes, hydro-seed/mulch will be applied to stabilize soils to promote the growth of desirable vegetation. The facility’s Interim Reclamation Plan provides specific details about the materials and methods to be used for interim reclamation of the stockpile area.

### **Proposed Access Road**

During construction of the proposed access road, TEP’s excavation contractor will strip the topsoil horizon between the top of road cut and toe of road fill. Topsoil will be stripped to a depth no less than six inches (6”) and windrowed above the top of cut and below the toe of fill of the proposed access road profile. Topsoil will be segregated from all other subsurface materials disturbed during access road construction and not topsoil will be used for building the location nor will be left in place and covered by subsoil in a cut and fill situation.

- Quantity of topsoil that will be disturbed: approximately 121 cubic yards (based on 6” average depth).
- Location of topsoil that will be disturbed: topsoil will be stripped from the access road ROW and windrowed along the downhill side of the ROW.

### **Proposed Pipeline Corridor**

During construction of the pipeline corridor, TEP’s pipeline installation contractor will strip the topsoil horizon within the fifty-foot (50’) construction pipeline right-of-way (ROW) width and place the material along the downhill side. Topsoil will be segregated from subsurface materials excavated during pipeline installation and stockpiled upslope of the trench. When construction is complete and the pipeline ROW has been re-contoured to pre-construction slopes, stripped topsoil will be uniformly re-placed across the disturbance.

- Quantity of topsoil that will be disturbed: approximately 2,815 cubic yards (based on 6” average depth).
- Location of topsoil that will be disturbed: topsoil will be stripped from the pipeline ROW and windrowed along the downhill side of the ROW.

Following the uniform placement of topsoil, the pipeline ROW will be hydro-seeded/mulched to stabilize the soil and promote growth of desirable vegetation. The project's Reclamation Plan provides specific details about the reclamation materials and methods to be used for the pipeline corridor.


## Federal RGU 44-1-298 Topsoil Protection Plan

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### REQUIREMENT 1: CERTIFICATION STATEMENT

*Certification Statement:*

*"I hereby certify that this Topsoil Protection Plan was prepared by me (or under my direct supervision) in accordance with the provisions of Rule 304.c.(14) of the Colorado Oil and Gas Conservation Commission (COGCC)."*

Daniel Kintz, 

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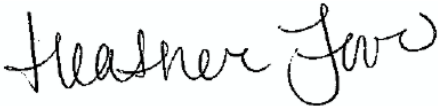
12/2/2022

Preparer's Name

Date

*Operator's Certification:*

*"This Topsoil Protection Plan has been submitted as part of the Oil and Gas Location Assessment (Form 2A) for the COGCC. I understand that additional erosion control, sediment control and water quality enhancing measures may be required of the operator and his or her agents due to unforeseen pollutant discharges or if the submitted plan does not function as intended. The requirements of this plan shall be the obligation of the operator and/or his successors or heirs; until such time as the plan is properly completed, modified, or voided."*



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12/14/2022

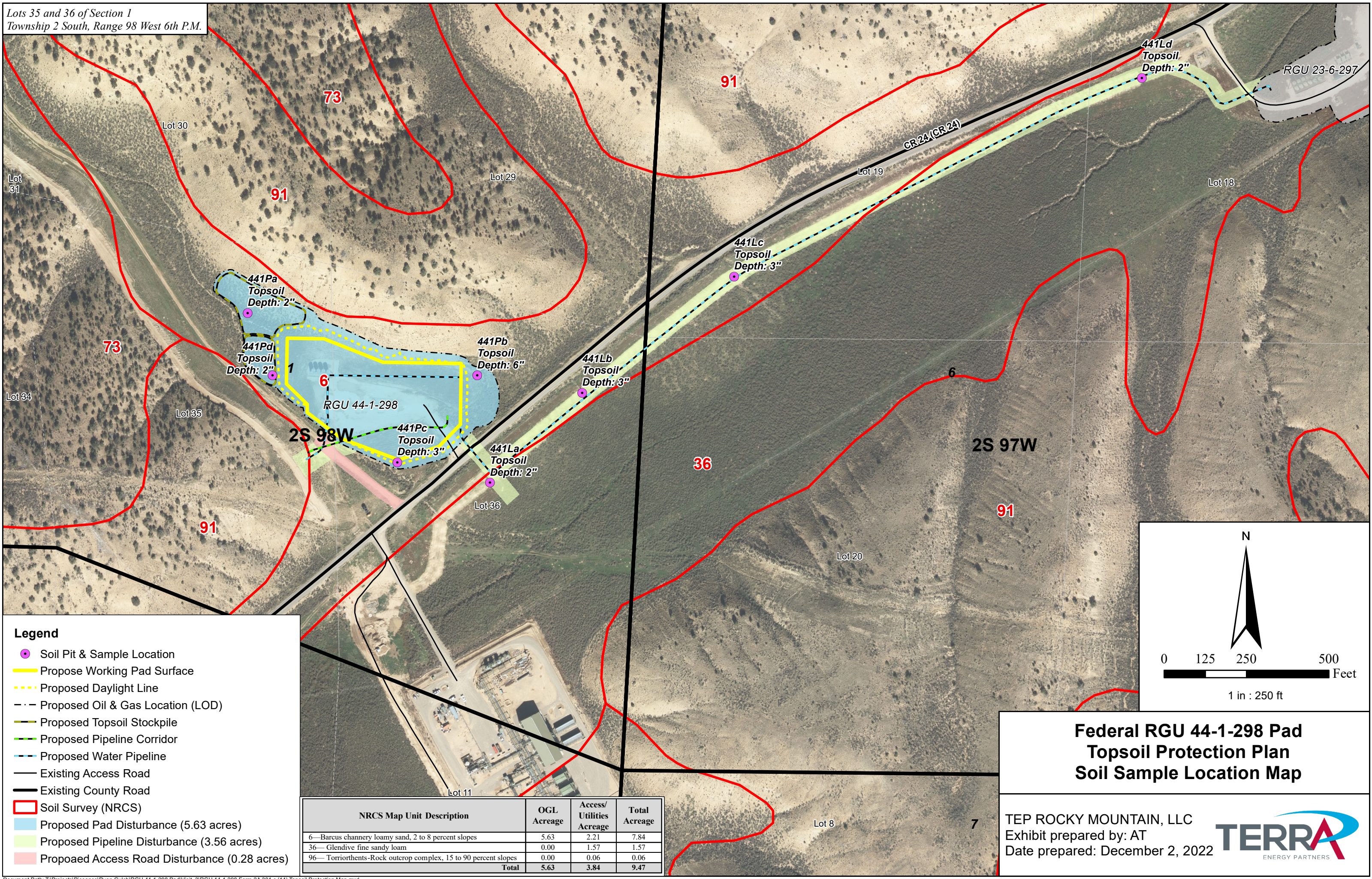
Operator or Authorized Agent

Date

## **REQUIREMENT 2: SMALL-SCALE AERIAL PHOTOGRAPH**



Lots 35 and 36 of Section 1  
Township 2 South, Range 98 West 6th P.M.



**Legend**

- Soil Pit & Sample Location
- Propose Working Pad Surface
- Proposed Daylight Line
- Proposed Oil & Gas Location (LOD)
- Proposed Topsoil Stockpile
- Proposed Pipeline Corridor
- Proposed Water Pipeline
- Existing Access Road
- Existing County Road
- Soil Survey (NRCS)
- Proposed Pad Disturbance (5.63 acres)
- Proposed Pipeline Disturbance (3.56 acres)
- Propoaed Access Road Disturbance (0.28 acres)

NRCS Map Unit Description	OGL Acreage	Access/ Utilities Acreage	Total Acreage
6—Barcus channery loamy sand, 2 to 8 percent slopes	5.63	2.21	7.84
36— Glendive fine sandy loam	0.00	1.57	1.57
96— Torriorthents-Rock outcrop complex, 15 to 90 percent slopes	0.00	0.06	0.06
Total	5.63	3.84	9.47

**Federal RGU 44-1-298 Pad  
Topsoil Protection Plan  
Soil Sample Location Map**

TEP ROCKY MOUNTAIN, LLC  
Exhibit prepared by: AT  
Date prepared: December 2, 2022

**TERRA**  
ENERGY PARTNERS



### **REQUIREMENT 3: NRCS SOIL SURVEY**





United States  
Department of  
Agriculture

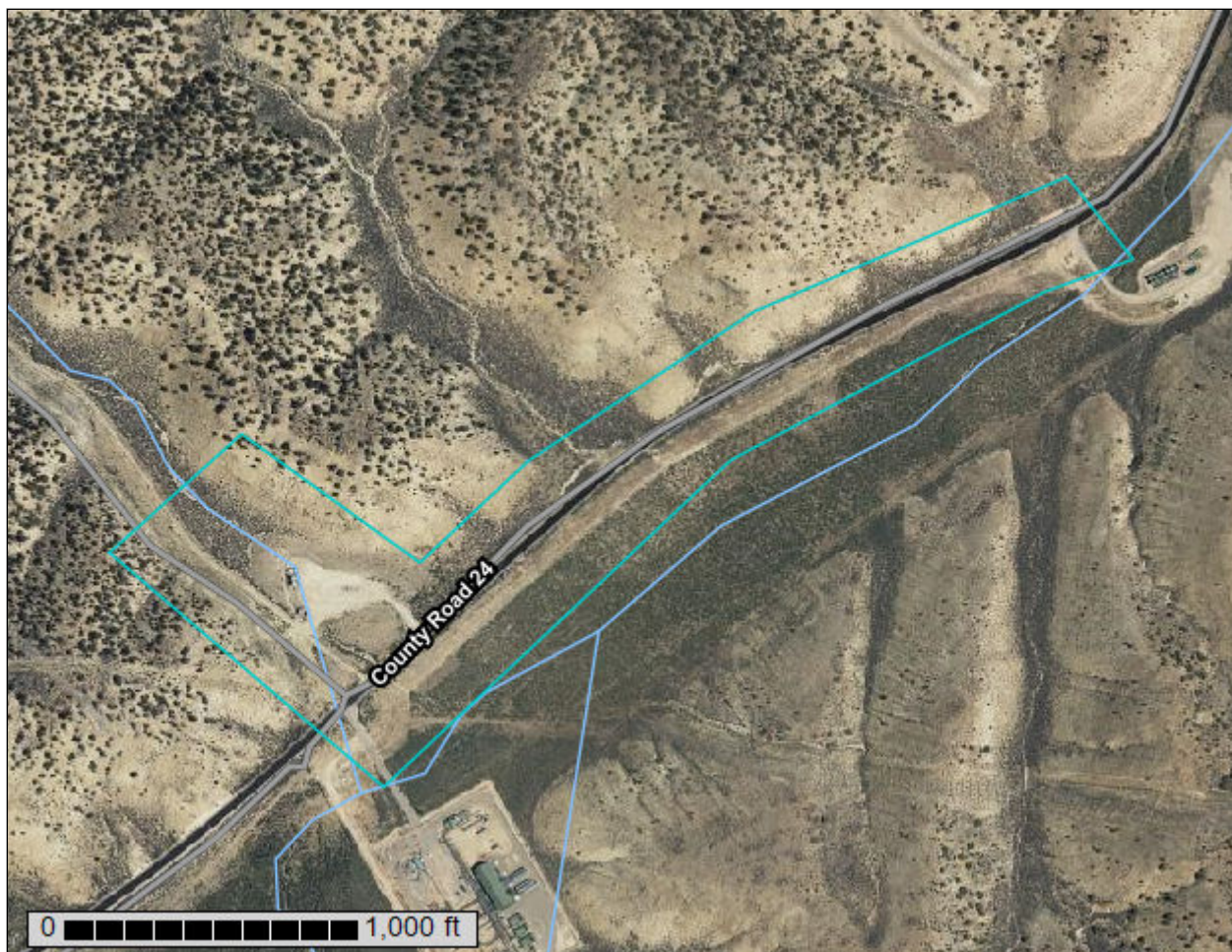
**NRCS**

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 **Rio Blanco County Area, Colorado**

**RGU 44-1-298**



March 21, 2022

# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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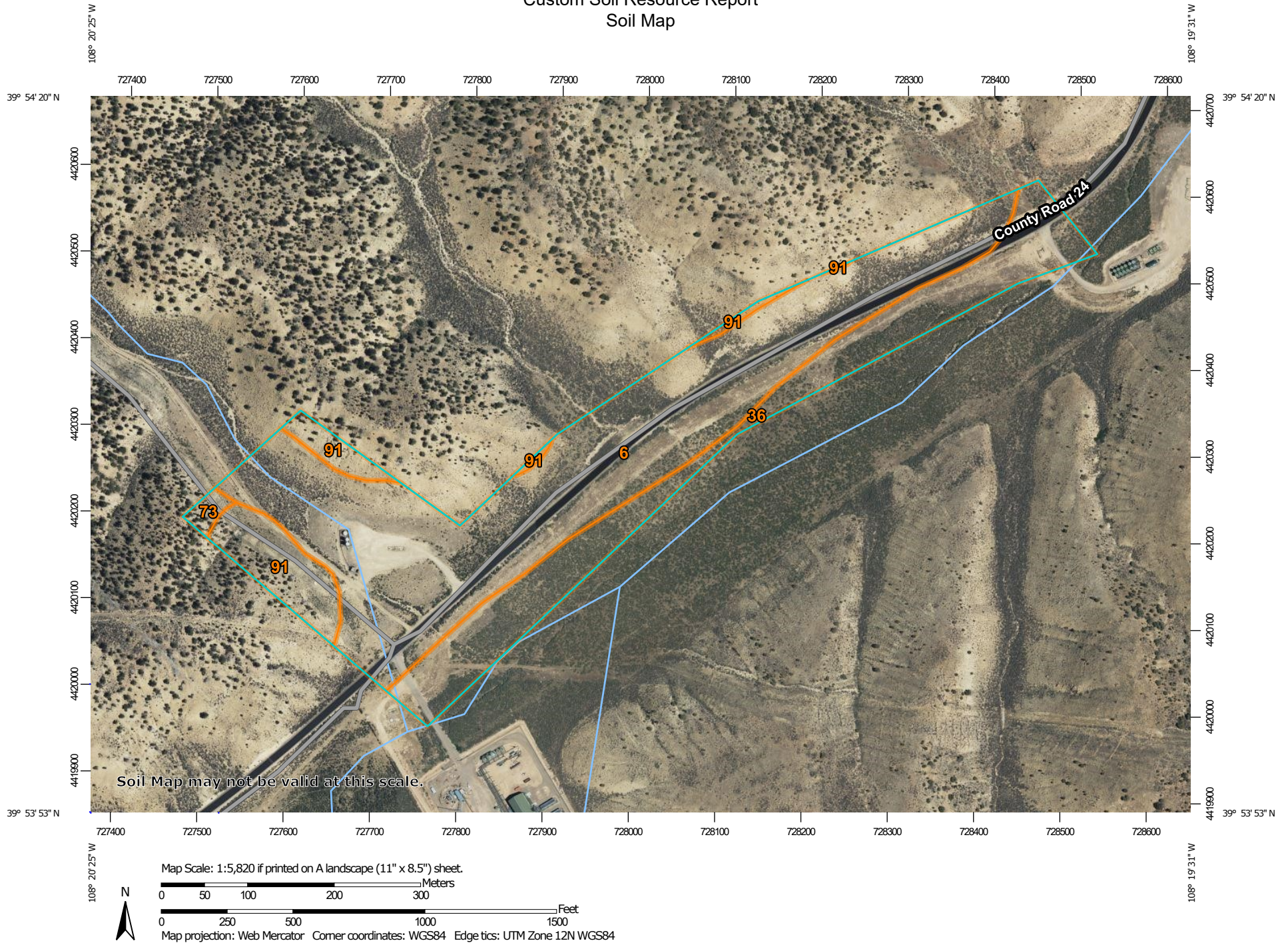


# Soil Map

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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map





# Custom Soil Resource Report

## 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 1:24,000.

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: Rio Blanco County Area, Colorado  
Survey Area Data: Version 16, Sep 2, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 24, 2020—Jul 8, 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

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
6	Barcus channery loamy sand, 2 to 8 percent slopes	26.2	63.7%
36	Glendive fine sandy loam	10.6	25.9%
73	Rentsac channery loam, 5 to 50 percent slopes	0.4	0.9%
91	Torriorthents-Rock outcrop complex, 15 to 90 percent slopes	3.9	9.5%
<b>Totals for Area of Interest</b>		<b>41.1</b>	<b>100.0%</b>

## Map Unit Descriptions

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.

## Custom Soil Resource Report

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.



## Rio Blanco County Area, Colorado

### 6—Barcus channery loamy sand, 2 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* jp5n  
*Elevation:* 5,800 to 6,800 feet  
*Mean annual precipitation:* 14 to 16 inches  
*Mean annual air temperature:* 42 to 44 degrees F  
*Frost-free period:* 80 to 105 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Barcus and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Barcus

##### Setting

*Landform:* Alluvial fans, valleys  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Linear  
*Parent material:* Calcareous alluvium derived from sandstone and shale

##### Typical profile

*H1 - 0 to 6 inches:* channery loamy sand  
*H2 - 6 to 16 inches:* channery sand  
*H3 - 16 to 60 inches:* stratified very channery sand to very channery loamy fine sand

##### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Somewhat excessively drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (6.00 to 20.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* NoneRare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Available water supply, 0 to 60 inches:* Low (about 3.6 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 6e  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* A  
*Ecological site:* R048AY285CO - Foothill Swale  
*Hydric soil rating:* No

#### Minor Components

##### Other soils

*Percent of map unit:* 15 percent

*Hydric soil rating:* No

### **36—Glendive fine sandy loam**

#### **Map Unit Setting**

*National map unit symbol:* jp4t  
*Elevation:* 5,800 to 7,200 feet  
*Mean annual precipitation:* 14 to 17 inches  
*Mean annual air temperature:* 42 to 45 degrees F  
*Frost-free period:* 80 to 105 days  
*Farmland classification:* Prime farmland if irrigated

#### **Map Unit Composition**

*Glendive and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Glendive**

##### **Setting**

*Landform:* Drainageways, valley floors  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

##### **Typical profile**

*H1 - 0 to 6 inches:* fine sandy loam  
*H2 - 6 to 60 inches:* loam, silt loam, sandy loam  
*H2 - 6 to 60 inches:*  
*H2 - 6 to 60 inches:*

##### **Properties and qualities**

*Slope:* 2 to 4 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:* NoneRare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Maximum salinity:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Very high (about 28.3 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* R048AY285CO - Foothill Swale  
*Hydric soil rating:* No

**Minor Components**

**Other soils**

*Percent of map unit:* 15 percent

*Hydric soil rating:* No

**73—Rentsac channery loam, 5 to 50 percent slopes**

**Map Unit Setting**

*National map unit symbol:* jp64

*Elevation:* 6,000 to 7,600 feet

*Mean annual precipitation:* 14 to 18 inches

*Mean annual air temperature:* 42 to 45 degrees F

*Frost-free period:* 80 to 105 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Rentsac and similar soils:* 80 percent

*Minor components:* 20 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Rentsac**

**Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Upper third of mountainflank

*Down-slope shape:* Convex, linear

*Across-slope shape:* Convex, linear

*Parent material:* Residuum weathered from calcareous sandstone

**Typical profile**

*H1 - 0 to 5 inches:* channery loam

*H2 - 5 to 16 inches:* extremely channery loam, extremely gravelly sandy loam,  
very flaggy loam

*H2 - 5 to 16 inches:* unweathered bedrock

*H2 - 5 to 16 inches:*

*H3 - 16 to 20 inches:*

**Properties and qualities**

*Slope:* 5 to 50 percent

*Depth to restrictive feature:* 10 to 20 inches to lithic bedrock

*Drainage class:* Well drained

*Runoff class:* Very high

*Capacity of the most limiting layer to transmit water (Ksat):* Very low (0.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 15 percent

*Maximum salinity:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Very low (about 2.0 inches)



**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* D

*Ecological site:* F048AY448CO - Mountain Pinyon

*Hydric soil rating:* No

**Minor Components**

**Other soils**

*Percent of map unit:* 20 percent

*Hydric soil rating:* No

**91—Torriorthents-Rock outcrop complex, 15 to 90 percent slopes**

**Map Unit Setting**

*National map unit symbol:* jp6s

*Elevation:* 5,100 to 7,500 feet

*Mean annual precipitation:* 8 to 18 inches

*Mean annual air temperature:* 40 to 50 degrees F

*Frost-free period:* 70 to 130 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Torriorthents and similar soils:* 50 percent

*Rock outcrop:* 30 percent

*Minor components:* 20 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Torriorthents**

**Setting**

*Landform:* Ridges, canyons, mountains, hills

*Landform position (three-dimensional):* Head slope, nose slope, side slope, base slope

*Down-slope shape:* Linear, concave

*Across-slope shape:* Linear, concave

*Parent material:* Colluvium derived from siltstone and/or residuum weathered from limestone, sandstone, and shale

**Typical profile**

*H1 - 0 to 3 inches:* channery loam

*H2 - 3 to 16 inches:* very channery loam

*H3 - 16 to 20 inches:* unweathered bedrock

**Properties and qualities**

*Slope:* 15 to 65 percent

*Depth to restrictive feature:* 10 to 20 inches to lithic bedrock

*Drainage class:* Well drained

*Runoff class:* Very high

## Custom Soil Resource Report

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 5 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Very low (about 2.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* D

*Ecological site:* R048AY287CO - Stony Foothills

*Hydric soil rating:* No

### Description of Rock Outcrop

#### Typical profile

*H1 - 0 to 60 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 35 to 90 percent

*Depth to restrictive feature:* 0 to 4 inches to paralithic bedrock

*Runoff class:* Very high

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.14 in/hr)

*Available water supply, 0 to 60 inches:* Very low (about 0.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 8s

*Hydric soil rating:* No

### Minor Components

#### Other soils

*Percent of map unit:* 20 percent

*Hydric soil rating:* No

# **Soil Information for All Uses**

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## **Soil Properties and Qualities**

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

## **Soil Erosion Factors**

Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

### **K Factor, Whole Soil**

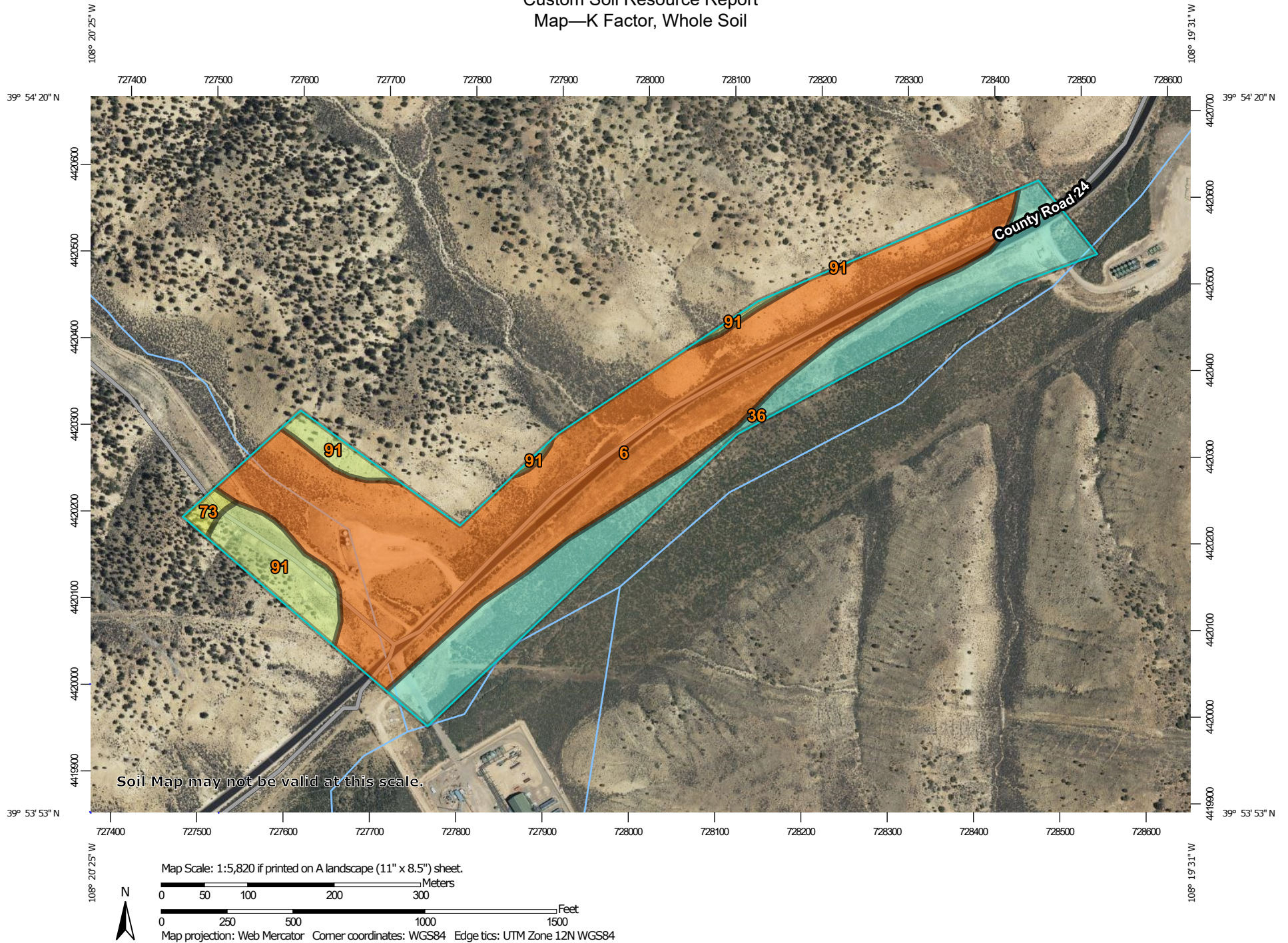
Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). 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.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Factor K does not apply to organic horizons and is not reported for those layers.




# Custom Soil Resource Report Map—K Factor, Whole Soil



# Custom Soil Resource Report
















## MAP LEGEND

### Area of Interest (AOI)







 Area of Interest (AOI)










### Soils

#### Soil Rating Polygons
















	.02
	.05
	.10
	.15
	.17
	.20
	.24
	.28
	.32
	.37
	.43
	.49
	.55
	.64
	Not rated or not available

#### Soil Rating Lines








	.02
	.05
	.10
	.15
	.17
	.20

	.24
	.28
	.32
	.37
	.43
	.49
	.55
	.64
	Not rated or not available

#### Soil Rating Points

	.02
	.05
	.10
	.15
	.17
	.20
	.24
	.28
	.32
	.37
	.43
	.49
	.55
	.64
	Not rated or not available

### Water Features

	Streams and Canals
	Rails
	Interstate Highways
	US Routes
	Major Roads
	Local Roads
	Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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: Rio Blanco County Area, Colorado  
Survey Area Data: Version 16, Sep 2, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 24, 2020—Jul 8, 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—K Factor, Whole Soil**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
6	Barcus channery loamy sand, 2 to 8 percent slopes	.05	26.2	63.7%
36	Glendive fine sandy loam	.32	10.6	25.9%
73	Rentsac channery loam, 5 to 50 percent slopes	.20	0.4	0.9%
91	Torriorthents-Rock outcrop complex, 15 to 90 percent slopes	.24	3.9	9.5%
<b>Totals for Area of Interest</b>			<b>41.1</b>	<b>100.0%</b>

**Rating Options—K Factor, Whole Soil***Aggregation Method: Dominant Condition*

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

*Component Percent Cutoff: None Specified*

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

*Tie-break Rule:* Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

*Layer Options (Horizon Aggregation Method):* Surface Layer (Not applicable)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

## Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

## Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:



## Custom Soil Resource Report

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

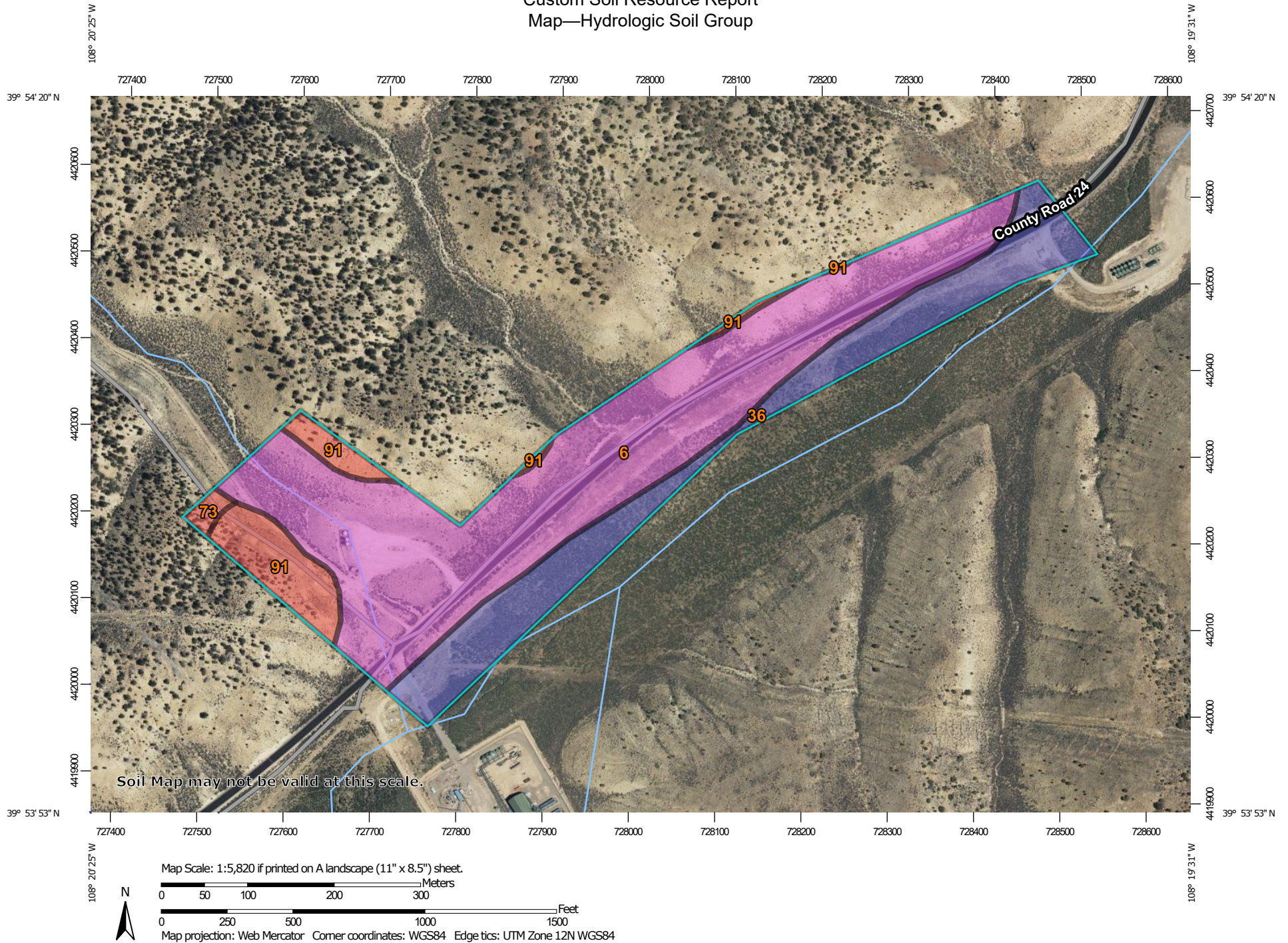
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.


# Custom Soil Resource Report Map—Hydrologic Soil Group



## Custom Soil Resource Report

### MAP LEGEND

#### Area of Interest (AOI)









 Area of Interest (AOI)

#### Soils

##### Soil Rating Polygons





 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

##### Soil Rating Lines


 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

##### Soil Rating Points






 A  
 A/D  
 B  
 B/D

 C  
 C/D  
 D  
 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 1:24,000.

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: Rio Blanco County Area, Colorado  
Survey Area Data: Version 16, Sep 2, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 24, 2020—Jul 8, 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—Hydrologic Soil Group**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
6	Barcus channery loamy sand, 2 to 8 percent slopes	A	26.2	63.7%
36	Glendive fine sandy loam	B	10.6	25.9%
73	Rentsac channery loam, 5 to 50 percent slopes	D	0.4	0.9%
91	Torriorthents-Rock outcrop complex, 15 to 90 percent slopes	D	3.9	9.5%
<b>Totals for Area of Interest</b>			<b>41.1</b>	<b>100.0%</b>

**Rating Options—Hydrologic Soil Group***Aggregation Method: Dominant Condition*

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

*Component Percent Cutoff: None Specified*



## Custom Soil Resource Report

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

*Tie-break Rule:* Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

# References

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## Custom Soil Resource Report

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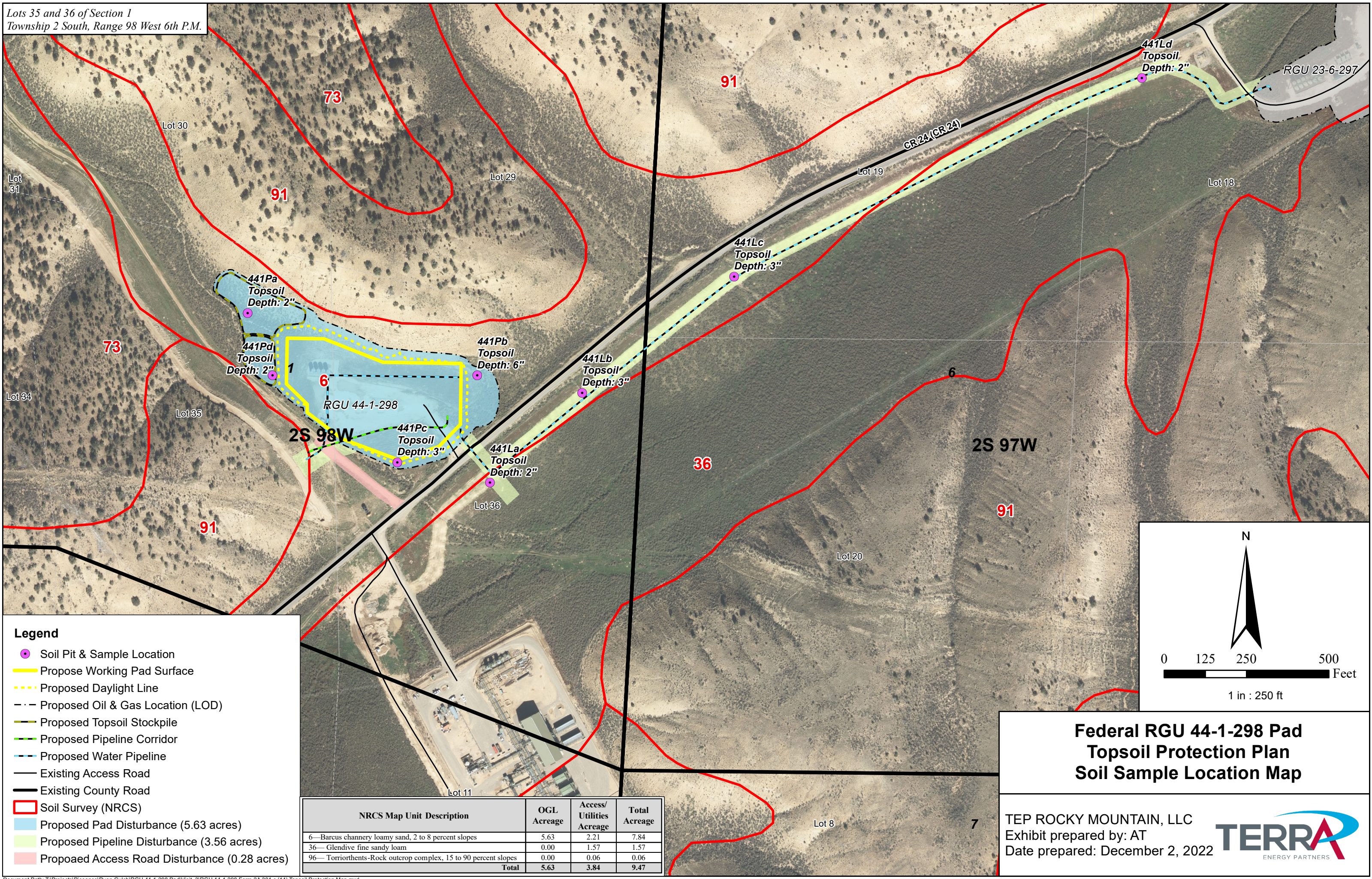
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**REQUIREMENT 4: SCALED AERIAL PHOTOGRAPH OF SOIL PIT  
LOCATIONS**



Lots 35 and 36 of Section 1  
Township 2 South, Range 98 West 6th P.M.



**Legend**

- Soil Pit & Sample Location
- Propose Working Pad Surface
- Proposed Daylight Line
- Proposed Oil & Gas Location (LOD)
- Proposed Topsoil Stockpile
- Proposed Pipeline Corridor
- Proposed Water Pipeline
- Existing Access Road
- Existing County Road
- Soil Survey (NRCS)
- Proposed Pad Disturbance (5.63 acres)
- Proposed Pipeline Disturbance (3.56 acres)
- Propoaed Access Road Disturbance (0.28 acres)

NRCS Map Unit Description	OGL Acreage	Access/ Utilities Acreage	Total Acreage
6—Barcus channery loamy sand, 2 to 8 percent slopes	5.63	2.21	7.84
36— Glendive fine sandy loam	0.00	1.57	1.57
96— Torriorthents-Rock outcrop complex, 15 to 90 percent slopes	0.00	0.06	0.06
Total	5.63	3.84	9.47

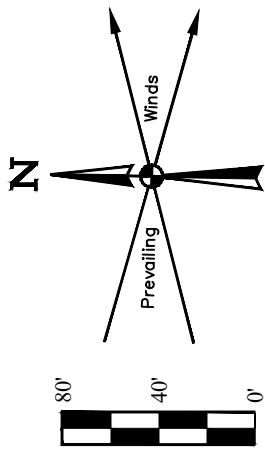
**Federal RGU 44-1-298 Pad  
Topsoil Protection Plan  
Soil Sample Location Map**

TEP ROCKY MOUNTAIN, LLC  
Exhibit prepared by: AT  
Date prepared: December 2, 2022

**TERRA**  
ENERGY PARTNERS



**REQUIREMENT 5: FIGURE SHOWING TOPSOIL DEPTHS FOR SOIL  
PIT LOCATIONS**



Sed. Trap  
Vol. = 17,010 cu.ft.  
L= 135'; W=60'; D=2.1'

Total Trench Capacity  
W/2' of Freeboard  
= 50,950 Bbbls.±  
Total Trench Volume  
= 10,590 Cu. Yds

NOTE:  
Pipeline data provided by  
TEP Rocky Mountain LLC.

FINISHED GRADE ELEVATION = 6277.5'

- NOTES:
- Rounded corners shown at 35' radius.
  - Construct diversion ditches as needed.
  - Contours shown at 2' intervals.
  - Trench slopes 1:1 (Typ. except where noted).
  - Cut/Fill slopes 1 1/2:1 (Typ. except where noted).
  - Pile slopes 2:1 (Typ.).



UELS, LLC  
Corporate Office \* 85 South 200 East  
Vernal, UT 84078 \* (435) 789-1017

- LEGEND:
- OIL & GAS LOCATION (LOD)
  - WORKING PAD SURFACE
  - ST = SEDIMENT TRAP
  - W = WATTLE

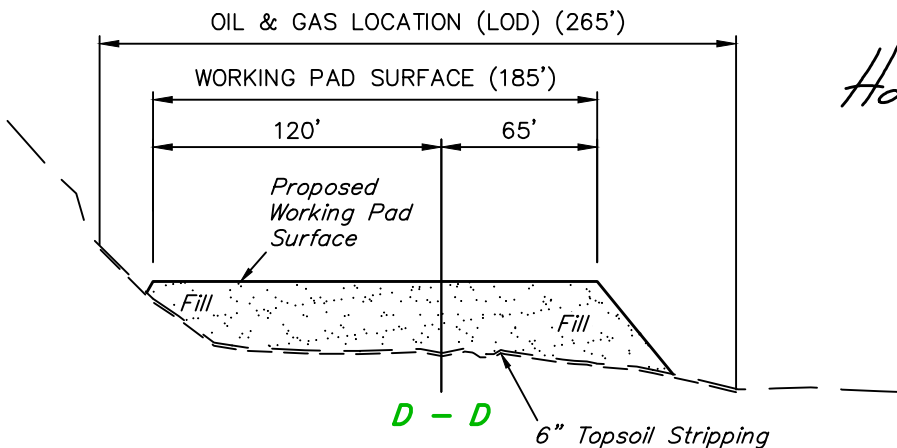
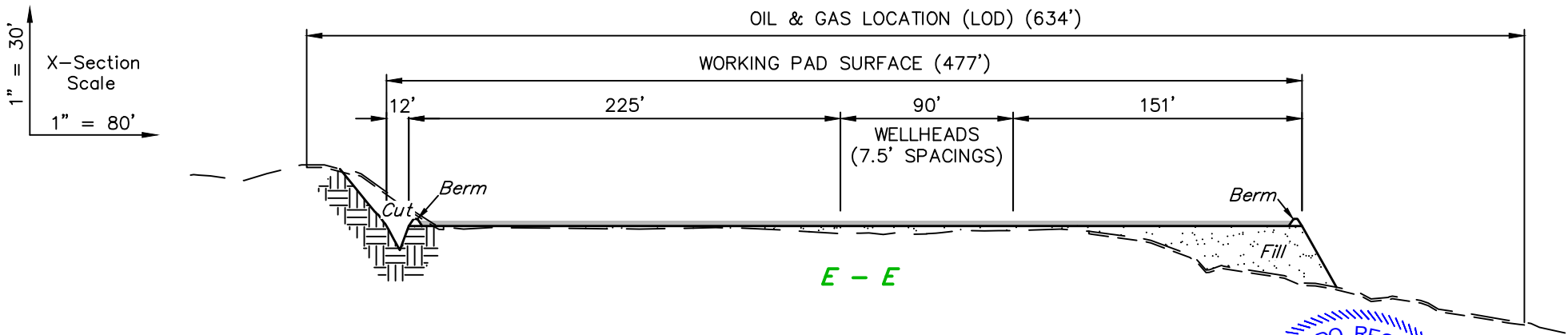
REV: 6 11-08-22 M.D. (LABEL & PILE CHANGES)

TEP Rocky Mountain LLC

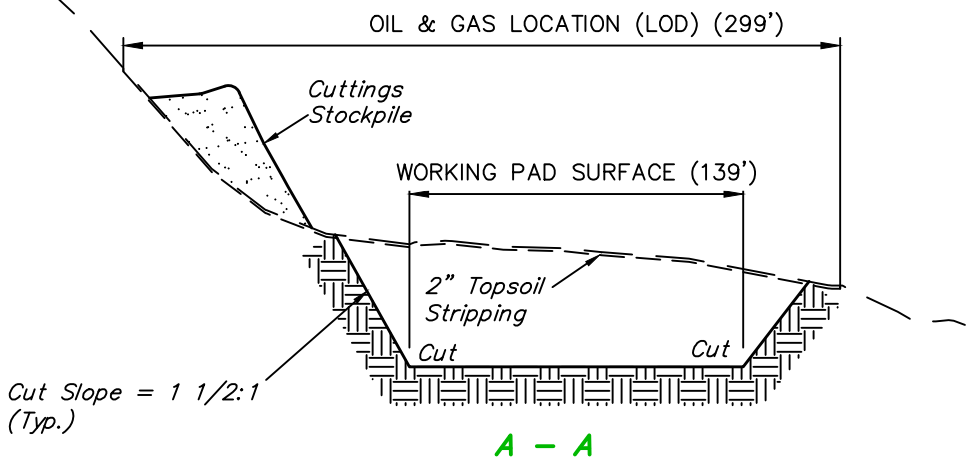
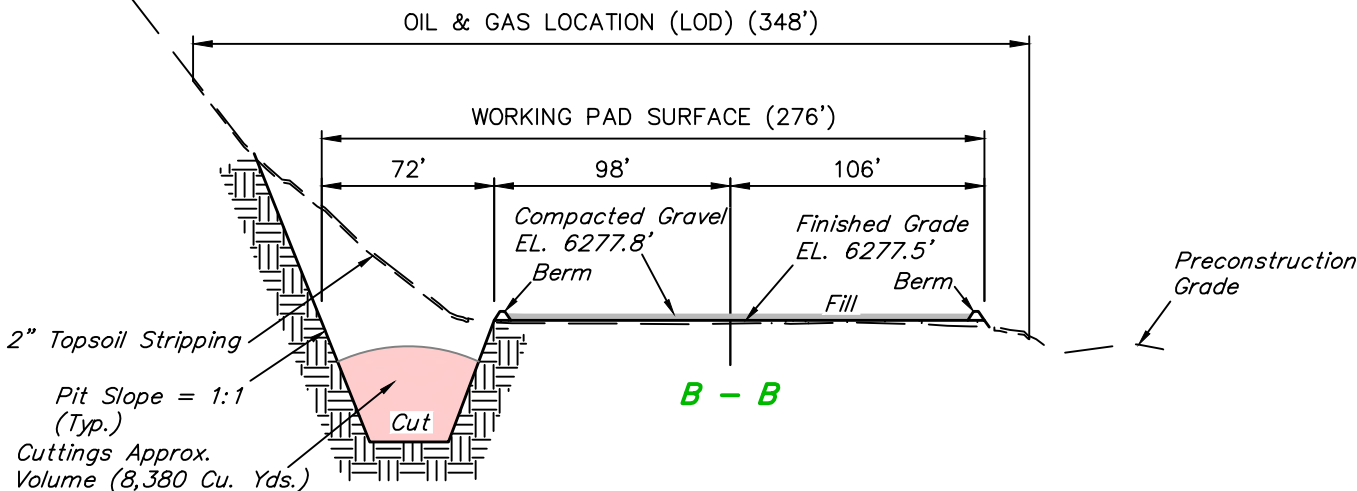
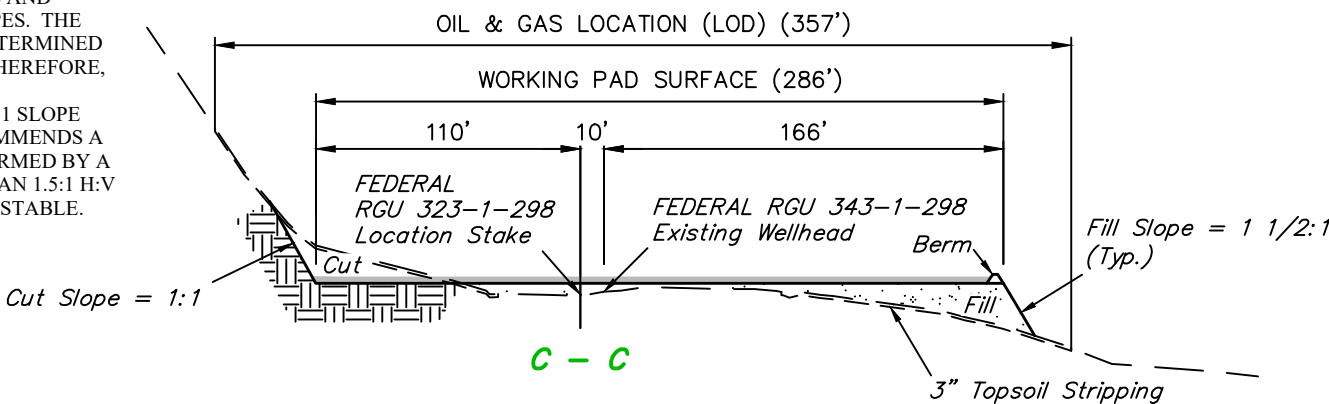
FEDERAL RGU 44-1-298 PAD  
LOTS 35 & 36, SECTION 1, T2S, R98W, 6th P.M.  
RIO BLANCO COUNTY, COLORADO

SURVEYED BY	BART HUNTING	08-18-21	SCALE
DRAWN BY	T.L.L.	07-28-21	1" = 80'

CONSTRUCTION LAYOUT-PLAN VIEW



UELS, LLC WAS REQUESTED TO COMPUTE PITS AND ASSOCIATED PIT VOLUMES WITH 1:1 SIDESLOPES. THE STABILITY OF 1:1 EARTH CUTS CANNOT BE DETERMINED WITHOUT GEOTECHNICAL INVESTIGATION. THEREFORE, UELS, LLC DOES NOT ASSUME ANY LIABILITY CONCERNING THE SAFETY OR STABILITY OF 1:1 SLOPE CUTS SHOWN ON THIS PLAT. UELS, LLC RECOMMENDS A GEOTECHNICAL INVESTIGATION TO BE PERFORMED BY A QUALIFIED ENGINEER ON SLOPES STEEPER THAN 1.5:1 H:V OR LESS STEEP WHEN SOILS APPEAR TO BE UNSTABLE.



APPROXIMATE EARTHWORK QUANTITIES	
** (6") TOPSOIL STRIPPING FOR LOD (New Construction Only)	3,470 Cu. Yds.
REMAINING LOCATION	14,110 Cu. Yds.
CUTTINGS TRENCH	10,590 Cu. Yds.
TOTAL CUT	28,170 Cu. Yds.
FILL	14,110 Cu. Yds.
CUTTINGS TRENCH	10,590 Cu. Yds.
TOPSOIL	3,470 Cu. Yds.
TOTAL FILL	28,170 Cu. Yds.
EXCESS UNBALANCE	0 Cu. Yds.

NOTE:

- 1,350 Cu. Yds. Min. 4" of aggregate base. Gravel to increase location stability. Compacted Volume of Approximately 1,350 Cu. Yds. Gravel is to be Applied to Entire Well Pad Footprint.

\*\* LESS PROPOSED TOPSOIL STOCKPILE AREA & EXISTING PAD.

APPROXIMATE SURFACE DISTURBANCE AREAS		
	DISTANCE	ACRES
50' WIDE PIPELINE R-O-W DISTURBANCE (8" GAS)	±465'	±0.180
50' WIDE PIPELINE R-O-W DISTURBANCE (6" WATER)	±285'	
50' WIDE PIPELINE R-O-W DISTURBANCE (6" WATER LINE TO RGU 23-6-97)	±3,552'	±3.380
TOTAL PIPELINE R-O-W DISTURBANCE		±3.560

APPROXIMATE SURFACE DISTURBANCE AREAS		
	DISTANCE	ACRES
35' WIDE ACCESS ROAD UPGRADE R-O-W DISTURBANCE	±356'	±0.280
TOTAL ROAD R-O-W DISTURBANCE		±0.280

APPROXIMATE SURFACE DISTURBANCE AREAS		
	DISTANCE	ACRES
WORKING PAD SURFACE DISTURBANCE	NA	±3.080
CONSTRUCTION DISTURBANCE	NA	±2.550
TOTAL OIL & GAS LOCATION (LOD)		±5.630

TOTAL PROJECT DISTURBANCE	±9.470
---------------------------	--------

REV: 6 11-08-22 M.D. (ADD ROWS, TOPSOIL STRIPPING, LABEL & PILE CHANGES)

- NOTES:
- Fill quantity includes 10% for compaction.
  - Calculations based on 6" of topsoil stripping.
  - Cut/Fill slopes 1 1/2:1 (Typ. except where noted).



UELS, LLC

Corporate Office \* 85 South 200 East

Vernal, UT 84078 \* (435) 789-1017

TEP Rocky Mountain LLC

FEDERAL RGU 44-1-298 PAD

LOTS 35 & 36, SECTION 1, T2S, R98W, 6th P.M.

RIO BLANCO COUNTY, COLORADO

SURVEYED BY	BART HUNTING	08-18-21	SCALE
DRAWN BY	T.L.L.	07-28-21	AS SHOWN

CONSTRUCTION LAYOUT CROSS SECTIONS



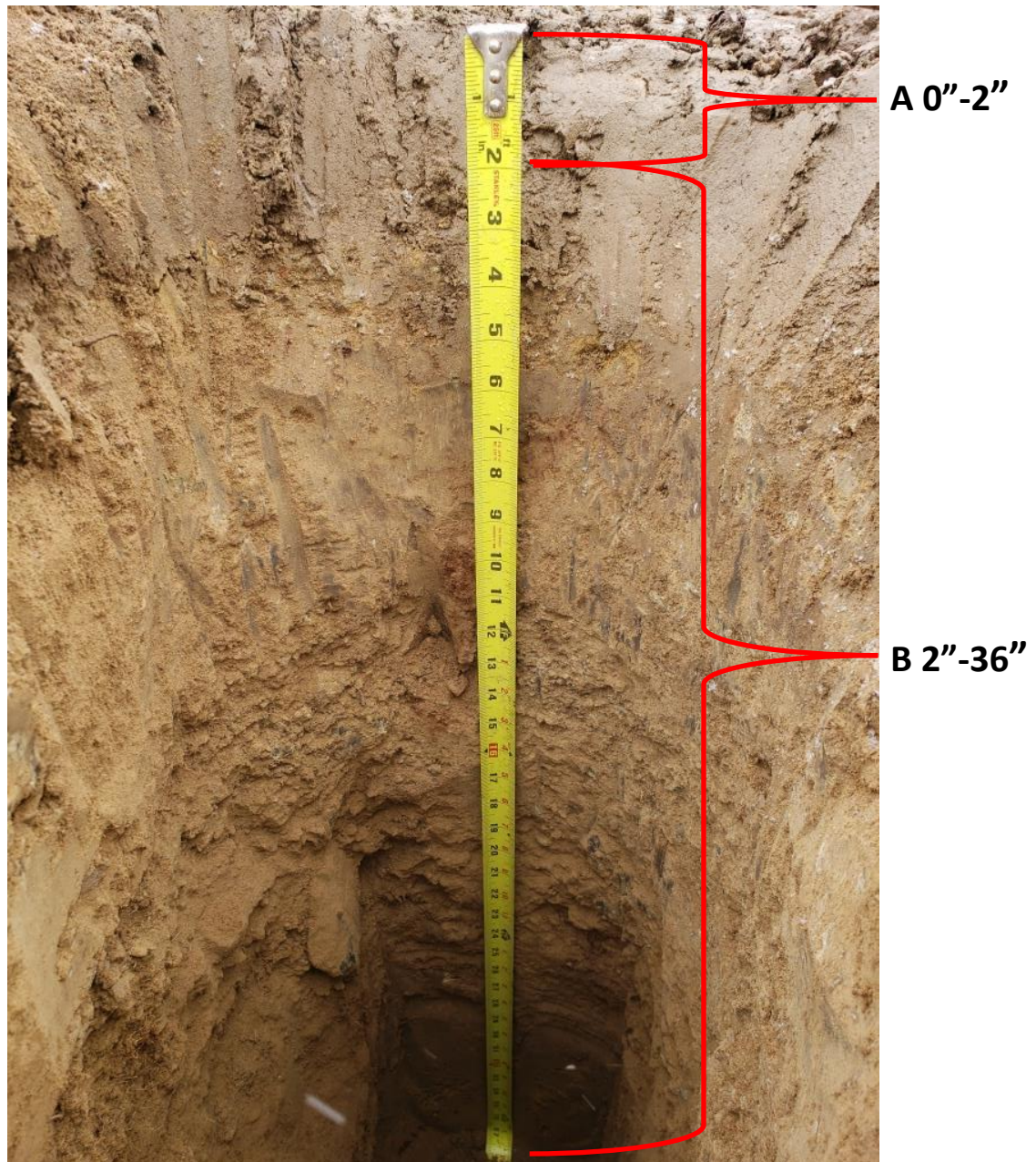
## **REQUIREMENT 6: EVALUATION OF SOIL PIT PROFILES**

**Figure 1**

Soil Profile Pit Number Pipeline 1: Pit excavated by hand, sample collected 0-8".

Location Coordinates	Munsell Color	A Horizon	B Horizon	
N 39.900355 W -108.335014	10 YR 4/4	Surface to 2" with minimal roots	2"-36" with little to no roots, rock fragments	-

*Note:* Root zone from surface to 3", likely existing pipeline fill material, total depth at 36".



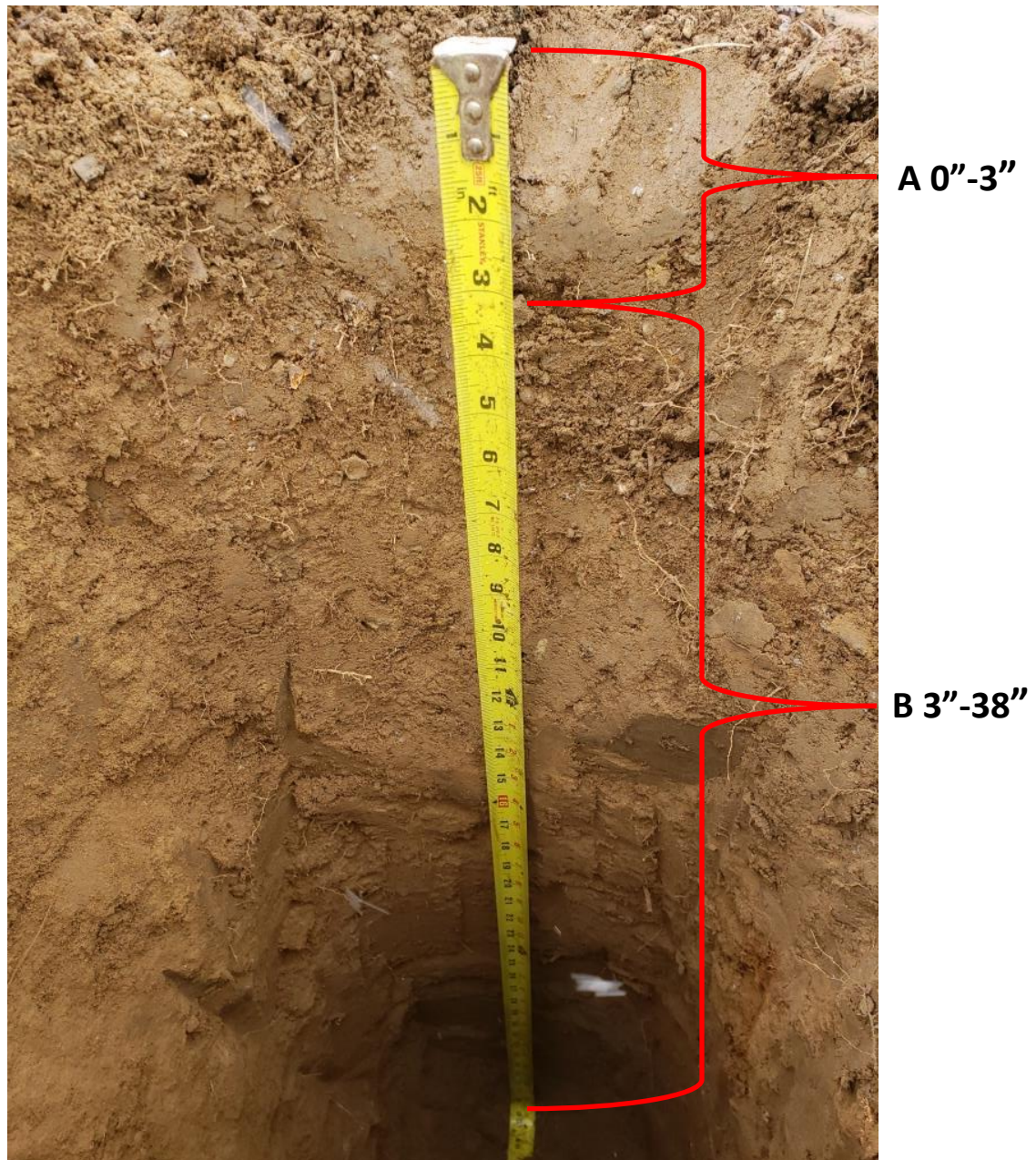


**Figure 2**

Soil Profile Pit Number Pipeline 2: Pit excavated by hand, sample collected 0-8".

Location Coordinates	Munsell Color	A Horizon	B Horizon	
N 39.901128 W -108.334047	10 YR 3/4	Surface to 3" with some roots	3"-38" with rock fragments less than 2"	-

*Note:* Root zone from surface to 12", likely existing pipeline fill material, total depth at 38".

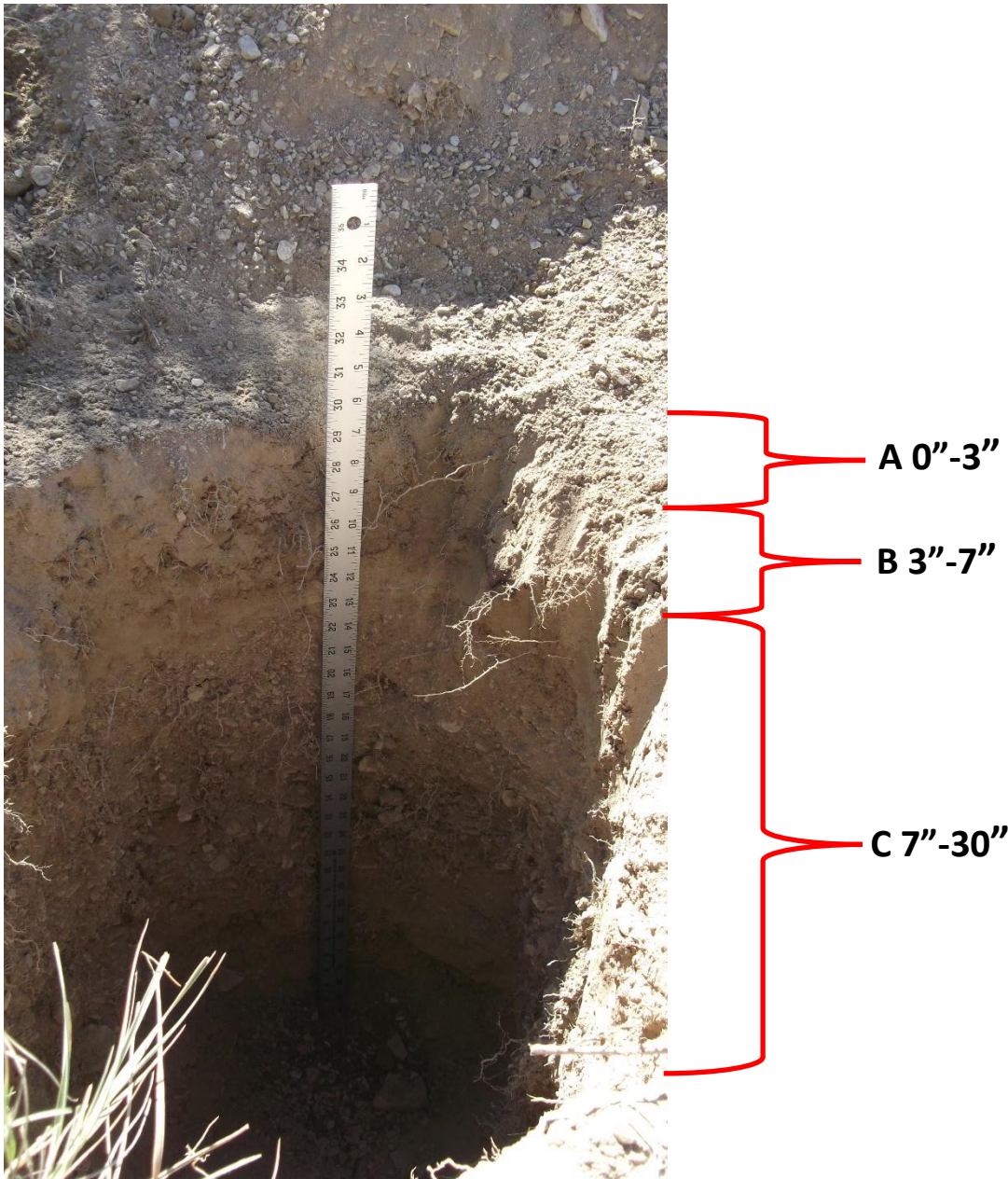


**Figure 3**

Soil Profile Pit Number Pipeline 3: Pit excavated by hand, sampled collected 0-7".

Location Coordinates	Munsell Color	A Horizon	B Horizon	C Horizon
N 39.902134 W -108.332443	10 YR 4/4	Surface to 3", some roots	3"-7" with some roots	7"-30" with rock fragments and roots

*Note:* Root zone from surface to 15", total depth at 30".



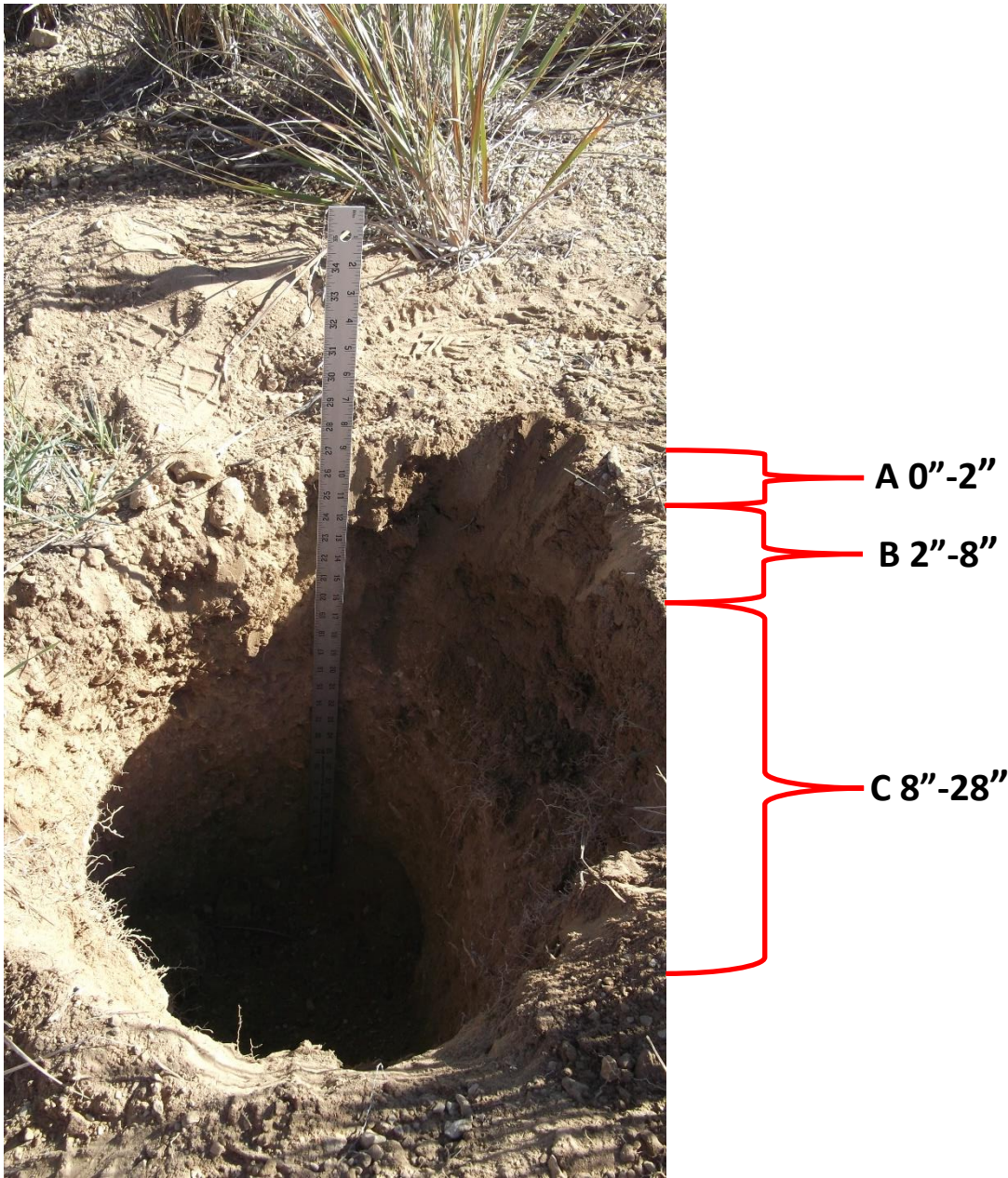


**Figure 4**

Soil Profile Pit Number Pipeline 4: Pit excavated by hand, sample collected 0-8".

Location Coordinates	Munsell Color	A Horizon	B Horizon	C Horizon
N 39.903893 W -108.338184	10 YR 4/4	Surface to 2" with some roots	2"-8" with some roots	8"-28" with rock fragments

*Note:* Root zone from surface to 22", total depth at 28".

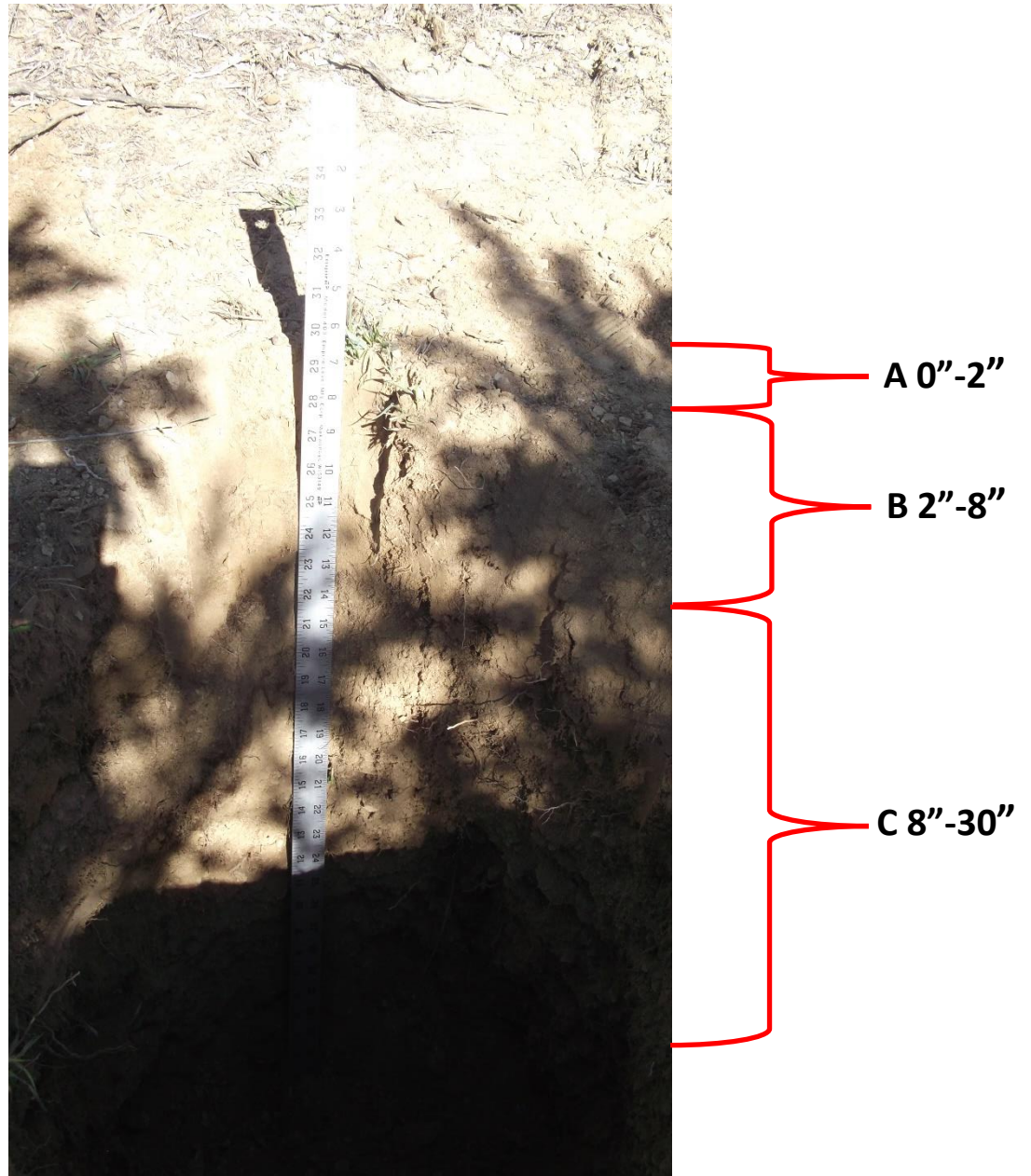


**Figure 5**

Soil Profile Pit Number Pad 1: Pit excavated by hand, sample collected 0-8".

Location Coordinates	Munsell Color	A Horizon	B Horizon	C Horizon
N 39.901705 W -108.337692	10 YR 4/4	Surface to 2" with some roots	2"-8" with some roots	8"-30" with larger rock fragments

*Note:* Root zone from surface to 15", total depth at 30".



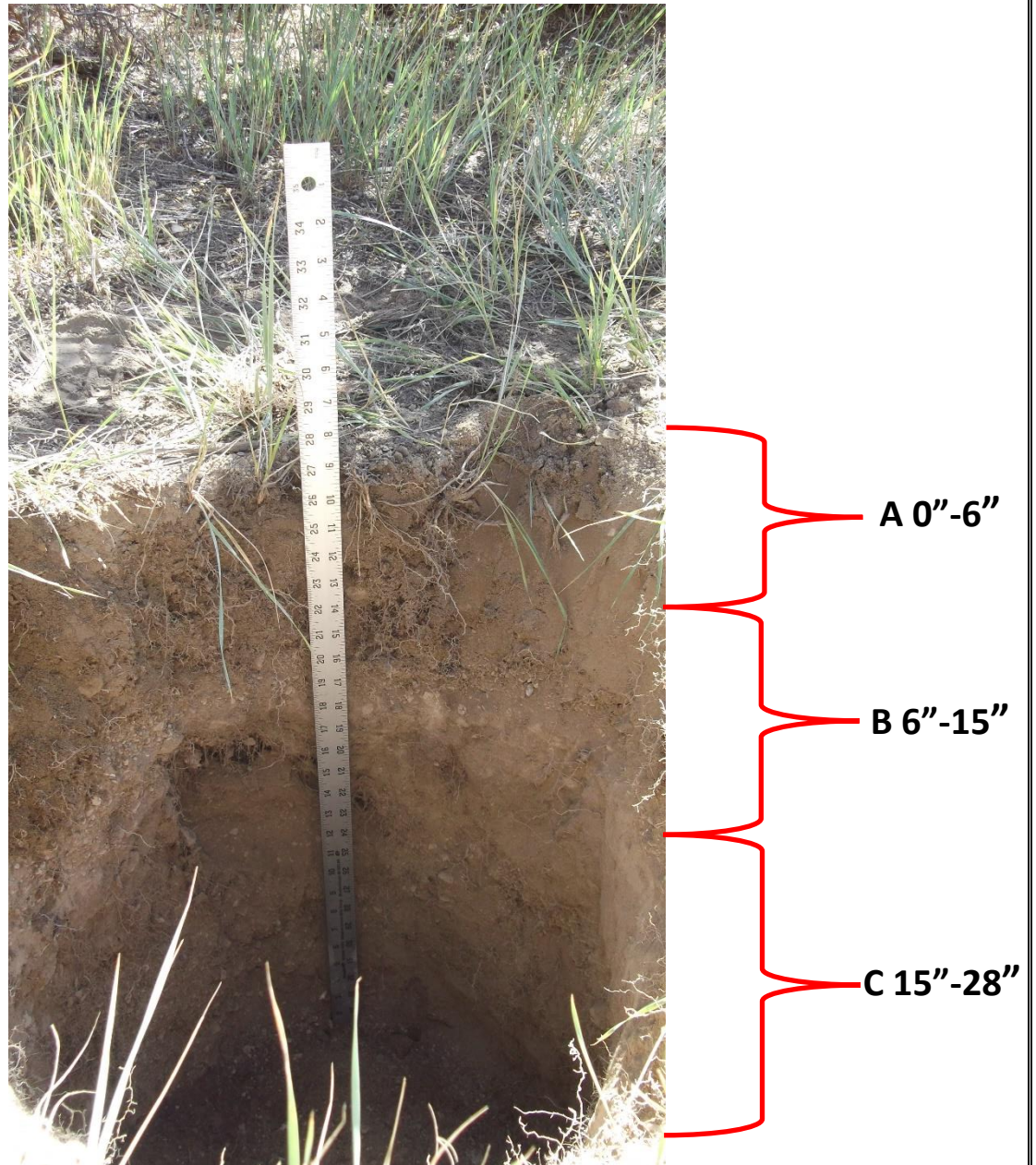


**Figure 6**

Soil Profile Pit Number Pad 2. Pit excavated by hand, sample collected 0-8".

Location Coordinates	Munsell Color	A Horizon	B Horizon	C Horizon
N 39.901245 W -108.335188	10 YR 4/4	Surface to 6" with some roots	6"-15" with roots and rock fragments	15"-28" with larger rock fragments

*Note:* Root zone from surface to 23", total depth at 28".

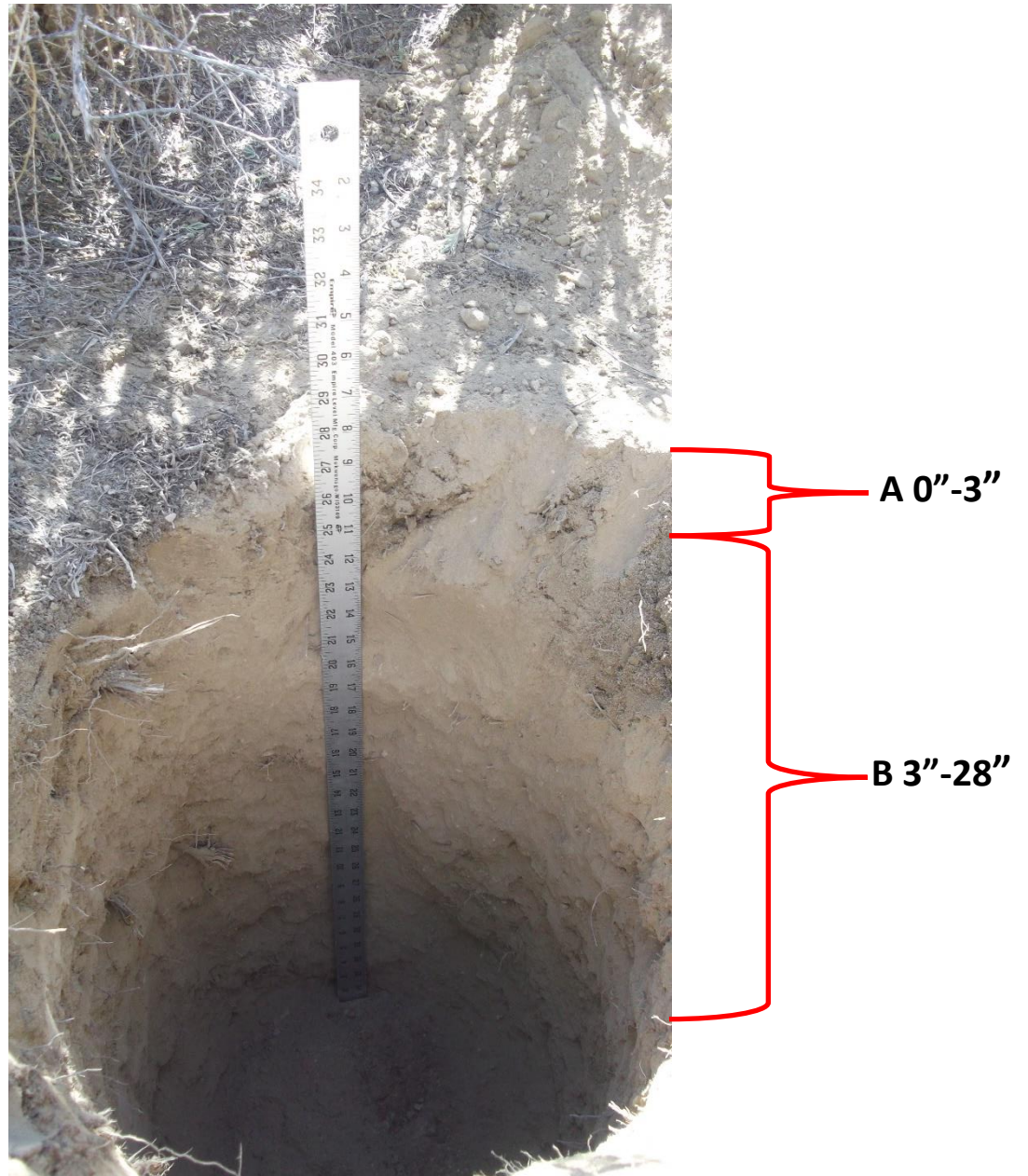


**Figure 7**

Soil Profile Pit Number Pad 3. Pit excavated by hand, sample collected 0-10".

Location Coordinates	Munsell Color	A Horizon	B Horizon	-
N 39.00500 W -108.336022	10 YR 4/4	Surface to 3" with some roots	3"-28" with some roots and rock frags	-

*Note:* Root zone from surface to 17", total depth at 28".



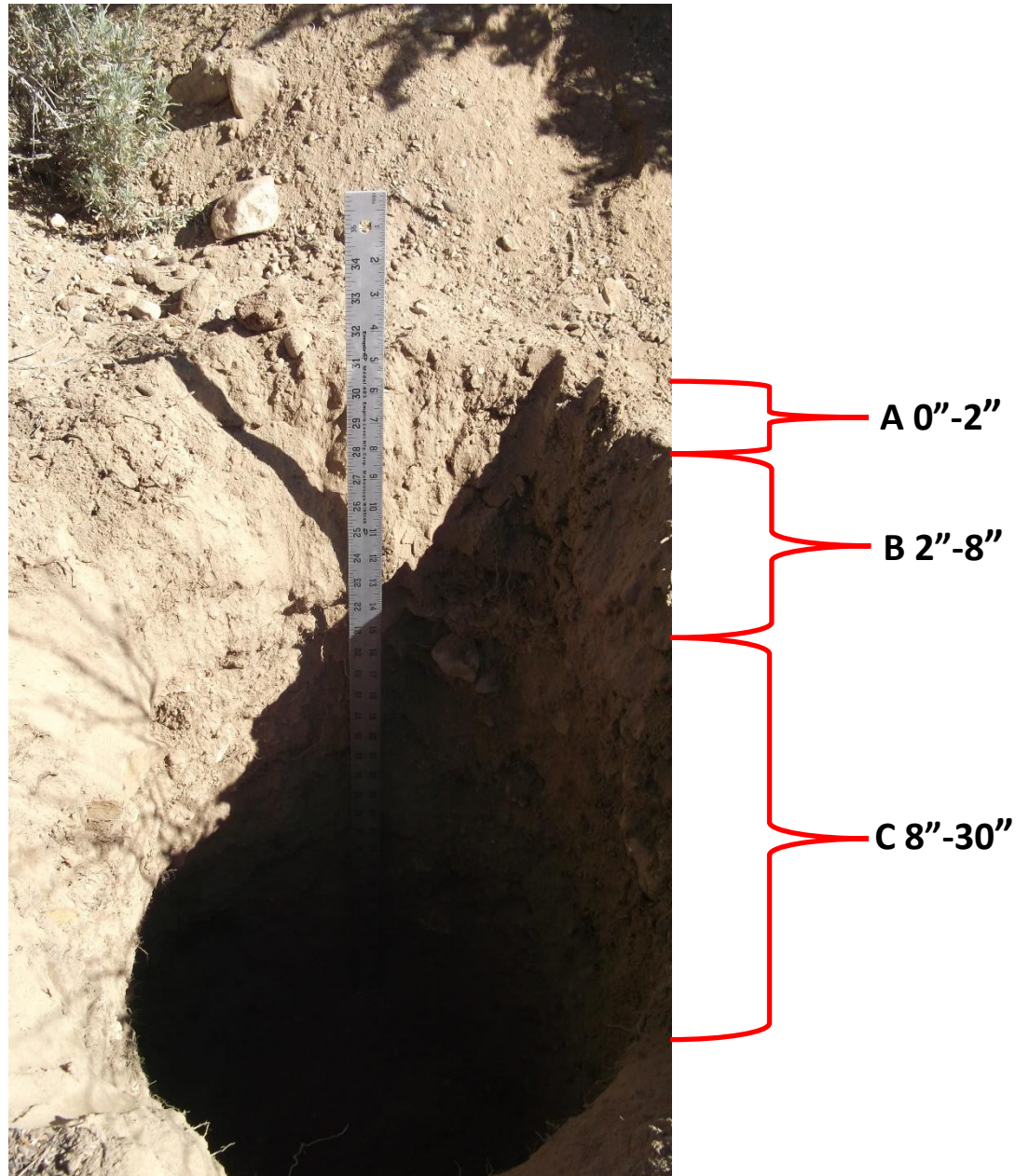


**Figure 8**

Soil Profile Pit Number Pad 4. Pit excavated by hand, sample collected 0-6".

Location Coordinates	Munsell Color	A Horizon	B Horizon	C Horizon
N 39.901194 W -108.337400	10 YR 4/4	Surface to 2" with some roots	2"-8" with roots and rock fragments	8"-30" rock increasing in size

*Note:* Root zone from surface to 17", R-Rock layer encountered at 12", total depth at 30"



## **REQUIREMENT 7: SOIL SAMPLE ANALYSES**

# SOIL ANALYSIS

Submitted by **8001106**  
**Summit Services Group, LLC**  
**15690 E 33rd Ave**  
**Unit A**  
**Aurora, CO 80011-1322**  
 Date Received  
**6-Oct-2021**

Submitted for  
**SUMMIT SERVICES GROUP**  
**436 MONTERO ST**  
**GRAND JUNCTION, CO 81507**  
 Date Reported  
**08-Oct-2021**



Laboratory Sample #  
**CD33121 - CD33128**  
 Information Sheet #  
**109889**

Laboratory Turnaround **2 Days** Samples Will Be Stored Until **21-Oct-2021** Field **RGU 44-1-298 PAD AND PIPEL**

SUMMARY REPORT OF ANALYTICAL RESULTS													
Sample Number	% Organic Matter	Nitrate N ppm	Phosphorus IF pH < 7.1	Phosphorus IF pH > 7.1	Potassium ppm	Magnesium ppm	Calcium ppm	Sulfur ppm	Zinc ppm	Manganese ppm	Copper ppm	Iron ppm	Boron ppm
441LA	441LA and 441LB results included on pages 5-8												
441LB													
441LC	2.1	4.0	----	4	119	128	3699	7.6	0.1	1.8	0.3	7.1	0.9
441LD	1.5	10.2	----	11	107	133	2984	7.3	0.1	1.9	0.2	5.0	0.5
441PA	2.8	4.8	----	8	88	84	3191	5.1	0.1	2.6	0.4	6.4	0.5
441PB	1.5	7.4	----	5	275	98	3213	7.5	0.1	2.6	0.2	5.8	0.4
441PC	2.1	3.6	----	7	142	101	3589	4.7	0.1	1.5	0.3	4.6	0.6
441PD	2.1	5.3	----	5	132	116	3978	5.4	0.3	2.2	0.4	7.1	0.7
Average	2.3	12.2		9	164	123	3383	14.0	0.2	2.0	0.3	8.2	0.7

SUMMARY OF ANALYTICAL RESULTS							CATION EXCHANGE CAPACITY						
Sample Number	Soil pH	Buffer Index	Excess Carbonate	Soluble Salts mmhos/cm	Sodium ppm	Bulk Density	ACTUAL % OF TOTAL CEC						
							% K	% Mg	% Ca	% Na	% H	Total CEC	
441LA	441LA and 441LB results included on pages 5-8												
441LB													
441LC	8.5	----	H - 2.9%	0.32	66	1.24	1.5	5.3	91.8	1.4	0.0	20.2	
441LD	9.2	----	H - 3.4%	0.43	237	1.31	1.6	6.4	86.1	5.9	0.0	17.3	
441PA	8.4	----	H - 2.7%	0.26	30	1.18	1.3	4.1	93.8	0.8	0.0	17.0	
441PB	8.5	----	H - 2.8%	0.31	72	1.28	3.9	4.6	89.8	1.8	0.0	17.9	
441PC	8.3	----	H - 2.6%	0.27	27	1.27	1.9	4.3	93.2	0.6	0.0	19.3	
441PD	8.4	----	H - 2.8%	0.31	39	1.20	1.6	4.5	93.1	0.8	0.0	21.4	
Average	8.5		H - 2.8%	0.43	169	1.24	2.2	5.4	88.6	3.9	0.0	19.1	

DISCLAIMER: Data and information in this report are intended solely for the individual(s) for whom samples were submitted. Reproduction of this report must be in its entirety. Levels listed are guidelines only. Data was reported based on standard laboratory procedures and deviations.

# SOIL ANALYSIS

Submitted by **8001106**  
**Summit Services Group, LLC**  
**15690 E 33rd Ave**  
**Unit A**  
**Aurora, CO 80011-1322**  
 Date Received  
**6-Oct-2021**

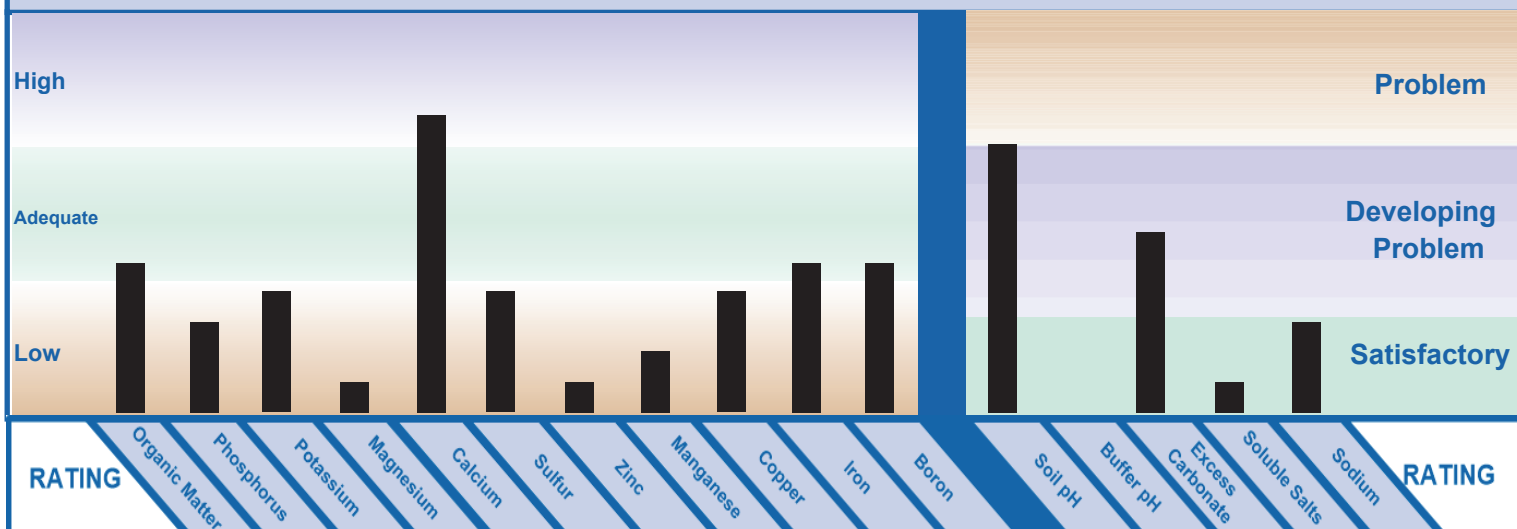
Submitted for  
**SUMMIT SERVICES GROUP**  
**436 MONTERO ST**  
**GRAND JUNCTION, CO 81507**  
 Date Reported  
**08-Oct-2021**



Laboratory Sample #  
**CD33121 - CD33128**  
 Information Sheet #  
**109889**

Laboratory Turnaround **2 Days** Samples Will Be Stored Until **21-Oct-2021** Field **RGU 44-1-298 PAD AND PIPEL**

## GRAPHIC SUMMARY OF WEIGHTED AVERAGE TEST RESULTS



## SUMMARY OF SOIL FERTILITY AND PLANT NUTRIENT GUIDELINES

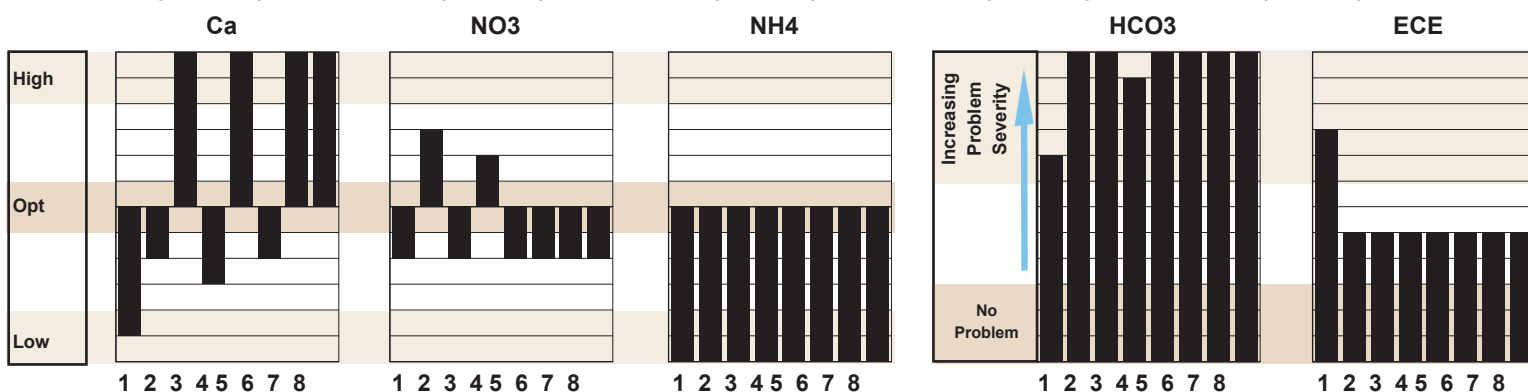
Sample Number	Crop Yield or Turf/Ornamental Code	Lime Gypsum Sulfur	PLANT FOOD NEED IN:										
			N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MgO	S	Zn	Mn	Cu	Fe	B	
441LA													
441LB													
441LC													
441LD													
441PA													
441PB													
441PC													
441PD													
Average													



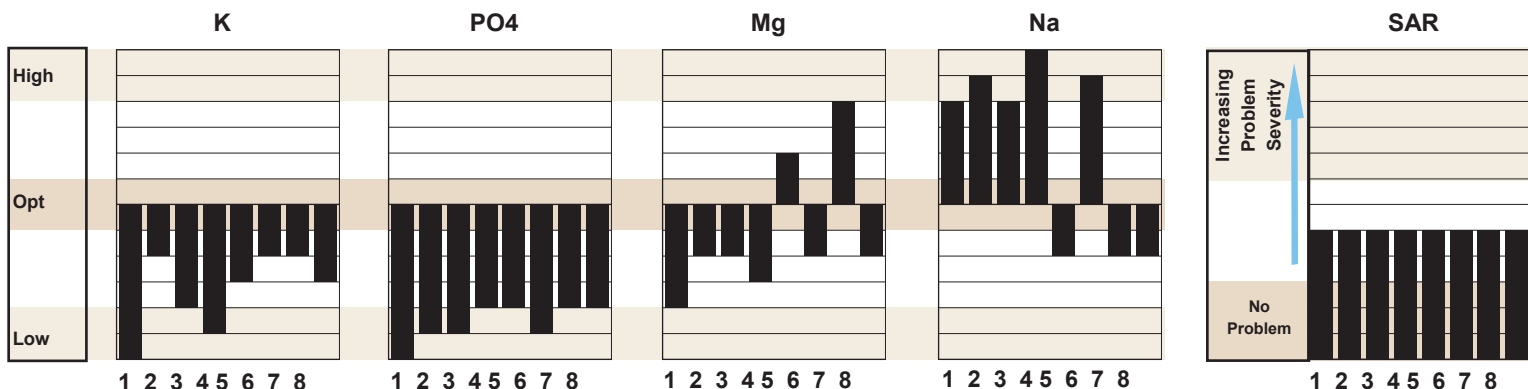
Submitted for **SUMMIT SERVICES GROUP**

Field **RGU 44-1-298 PAD AND PIPELI**

-----Salinity-----										
Sample ID	Ca ppm	Ca Target Range	NO3 ppm	NO3 Target Range	NH4 ppm	NH4 Target Range	HCO3 ppm	HCO3 Target Range	ECE mmhos/cm	ECE Target Range
441LA	441LA and 441LB results included on pages 5-8									
441LB										
441LC	71	19 - 24	5	4 - 8	0	4 - 8	233	17 - 30	0.3	0 - 2
441LD	26	37 - 47	20	8 - 16	0	8 - 15	109	34 - 59	0.6	0 - 2
441PA	54	19 - 25	7	4 - 8	0	4 - 8	167	18 - 31	0.3	0 - 2
441PB	39	32 - 41	13	7 - 14	0	7 - 13	138	29 - 51	0.5	0 - 2
441PC	67	19 - 25	7	4 - 8	0	4 - 8	221	18 - 31	0.3	0 - 2
441PD	55	17 - 21	7	3 - 7	0	4 - 7	181	15 - 27	0.3	0 - 2



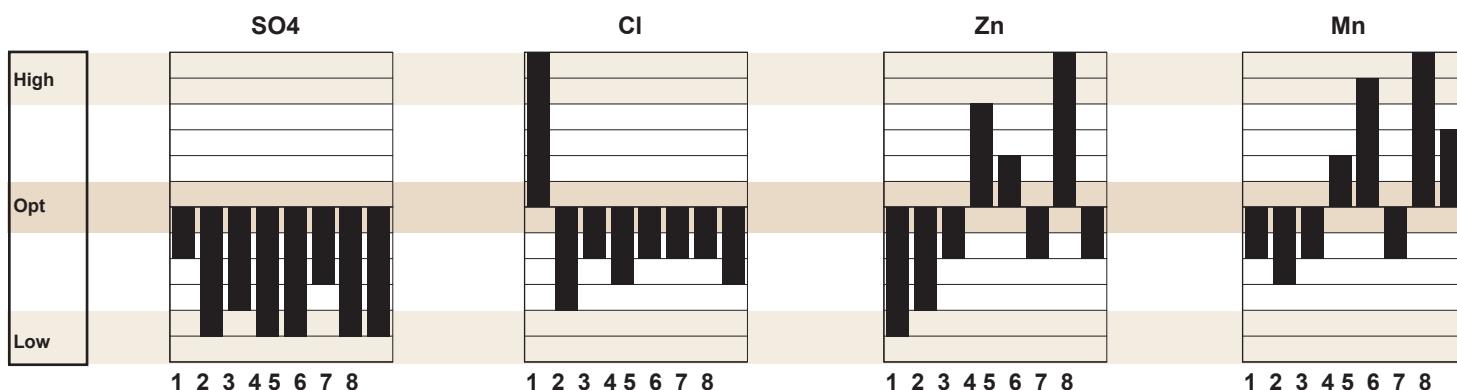
-----Salinity-----										
Sample ID	K ppm	K Target Range	PO4 ppm	PO4 Target Range	Mg ppm	Mg Target Range	Na ppm	Na Target Range	SAR	SAR Target Range
441LA	441LA and 441LB results included on pages 5-8									
441LB										
441LC	5	10 - 16	1	3 - 6	6	5 - 7	20	7 - 13	1	0 - 6
441LD	5	19 - 31	2	6 - 13	7	10 - 13	95	13 - 25	4	0 - 6
441PA	6	10 - 16	2	3 - 7	9	5 - 7	10	7 - 13	0	0 - 6
441PB	21	17 - 27	1	5 - 11	7	9 - 12	39	11 - 21	2	0 - 6
441PC	10	10 - 16	2	3 - 7	12	5 - 7	10	7 - 13	0	0 - 6
441PD	5	9 - 14	1	3 - 6	7	5 - 6	8	6 - 11	0	0 - 6



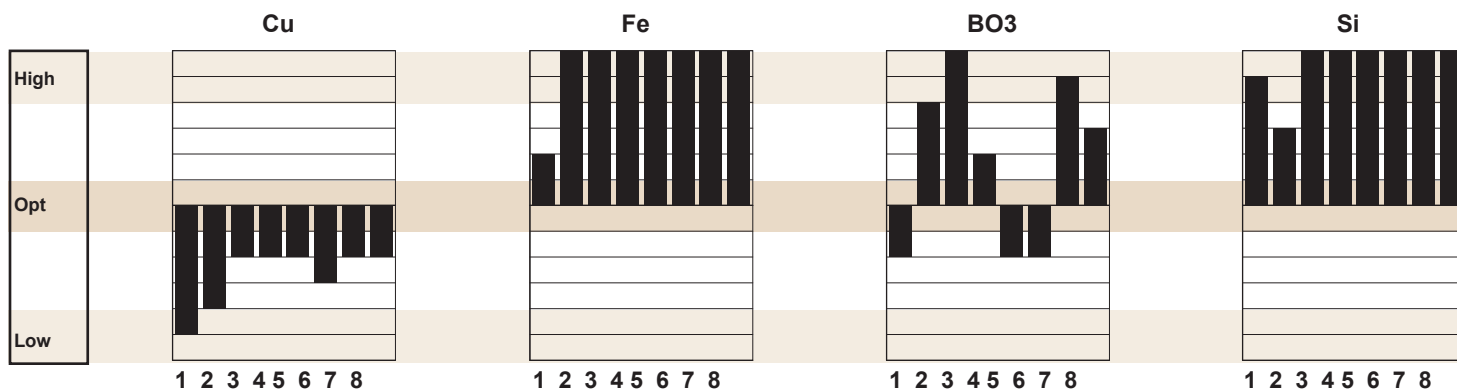
Submitted for **SUMMIT SERVICES GROUP**

Field **RGU 44-1-298 PAD AND PIPELI**

-----Salinity-----								
Sample ID	SO4 ppm	SO4 Target Range	Cl ppm	Cl Target Range	Zn ppm	Zn Target Range	Mn ppm	Mn Target Range
441LA	441LA and 441LB results included on pages 5-8							
441LB								
441LC	13	32 - 47	20	14 - 22	0.03	0.02 - 0.03	0.08	0.03 - 0.07
441LD	25	62 - 93	20	27 - 42	0.10	0.04 - 0.06	0.18	0.06 - 0.13
441PA	10	33 - 49	12	14 - 22	0.04	0.02 - 0.03	0.13	0.03 - 0.07
441PB	35	54 - 81	37	24 - 37	0.04	0.03 - 0.05	0.05	0.06 - 0.12
441PC	10	33 - 49	15	14 - 22	0.06	0.02 - 0.03	0.18	0.03 - 0.07
441PD	9	28 - 42	9	12 - 19	0.03	0.02 - 0.03	0.09	0.03 - 0.06



-----Salinity-----									
Sample ID	Cu ppm	Cu Target Range	Fe ppm	Fe Target Range	BO3 ppm	BO3 Target Range	Si ppm	Si Target Range	Moisture %
441LA	441LA and 441LB results included on pages 5-8								
441LB									
441LC	0.02	0.02 - 0.03	2.4	0.2 - 0.5	0.12	0.03 - 0.06	10.7	1.8 - 3.3	96
441LD	0.04	0.04 - 0.06	8.4	0.5 - 1	0.14	0.06 - 0.11	32.2	3.5 - 6.4	100
441PA	0.02	0.02 - 0.03	8.3	0.3 - 0.5	0.07	0.03 - 0.06	25.1	1.8 - 3.4	79
441PB	0.02	0.03 - 0.05	2.4	0.4 - 0.9	0.07	0.05 - 0.10	13.4	3.1 - 5.6	56
441PC	0.02	0.02 - 0.03	13.4	0.3 - 0.5	0.11	0.03 - 0.06	39.2	1.9 - 3.4	64
441PD	0.02	0.02 - 0.03	4.1	0.2 - 0.5	0.07	0.03 - 0.05	16.6	1.6 - 2.9	61



# SOIL ANALYSIS

Submitted by **8001106**  
**Summit Services Group, LLC**  
**15690 E 33rd Ave**  
**Unit A**  
**Aurora, CO 80011-1322**  
 Date Received  
**18-Mar-2022**

Submitted for  
**SUMMIT SERVICES GROUP**  
**1226 G ROAD**  
**LOMA, CO 81524**  
 Date Reported  
**22-Mar-2022**



Laboratory Sample #  
**CG58611 - CG58612**  
 Information Sheet #  
**131610**

Laboratory Turnaround **4 Days** Samples Will Be Stored Until **02-Apr-2022** Field **RGU 44-1-298**

SUMMARY REPORT OF ANALYTICAL RESULTS													
Sample Cumber	0 Orhanic > atter	Citrate C ppm	x hosphorus ppm IP p3 < N	IP p3 5 N	x otassium ppm	> aHesium ppm	%alcium ppm	Sulfur ppm	Zinc ppm	> anHanese ppm	%opper ppm	Iron ppm	Boron ppm
441LA	2E	21E	----	14	6. 1	1. N	6764	12E	F7	4E	F7	16E	1E
441LB	2E	2NE	----	1.	28F	2F2	6412	19E	F7	6E	F7	12E	1E
Average	2E	24E		1.	617	1N	6. 26	1. E	F7	6E	F7	12E	1E

SUMMARY OF ANALYTICAL RESULTS							CATION EXCHANGE CAPACITY					
Sample Cumber	Soil p3	Buffer Inde/	M cess %arbonate	Soluble Salts mmhos/cm	Sodium ppm	Bulk Density	ACTUAL % OF TOTAL CEC					
							0 g	0 > H	0 %a	0 Ca	0 3	Total %M%
441LA	N9	----	3 - 2E0	F79	1N	1E2	4E	7E	87E	6E	F7	21E
441LB	8E	----	3 - 2E0	F77	6N7	1E4	6E	8E	8F9	NB	F7	21E
Average	8E		3 - 2E0	FE 8	2N7	1E8	6E	NB	86E	. E	F7	21E

# SOIL ANALYSIS

Submitted by **8001106**  
**Summit Services Group, LLC**  
**15690 E 33rd Ave**  
**Unit A**  
**Aurora, CO 80011-1322**  
 Date Received  
**18-Mar-2022**

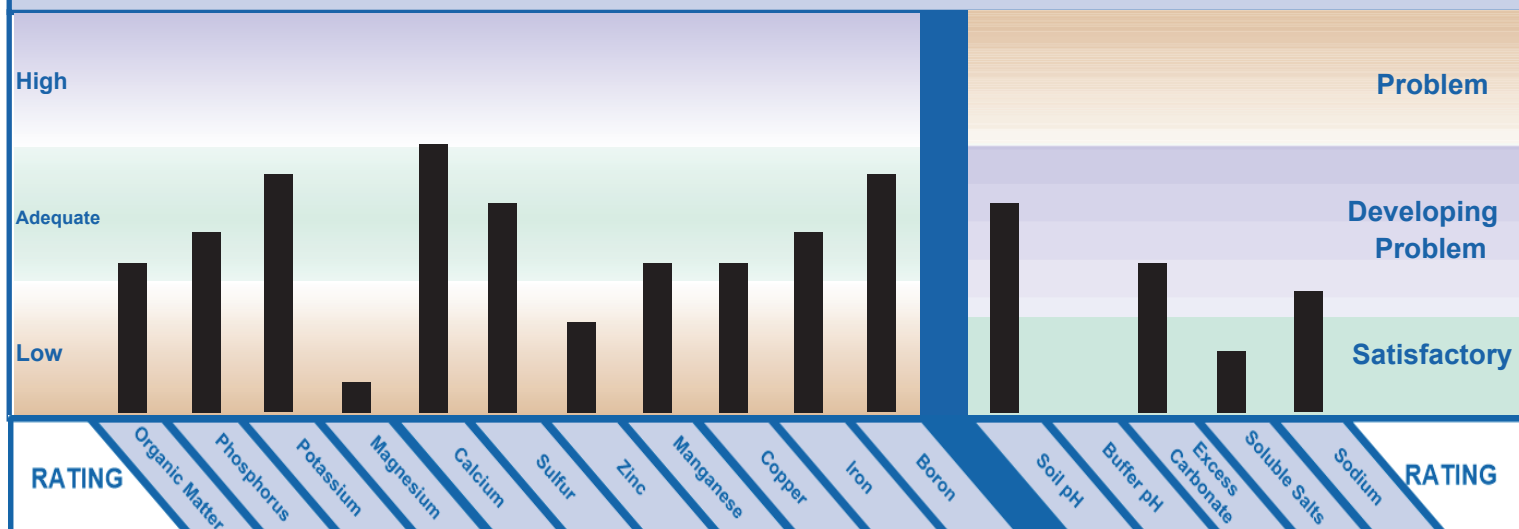
Submitted for  
**SUMMIT SERVICES GROUP**  
**1226 G ROAD**  
**LOMA, CO 81524**  
 Date Reported  
**22-Mar-2022**



Laboratory Sample #  
**CG58611 - CG58612**  
 Information Sheet #  
**131610**

Laboratory Turnaround **4 Days** Samples Will Be Stored Until **02-Apr-2022** Field RGU 44-1-298

## GRAPHIC SUMMARY OF WEIGHTED AVERAGE TEST RESULTS



## SUMMARY OF SOIL FERTILITY AND PLANT NUTRIENT GUIDELINES

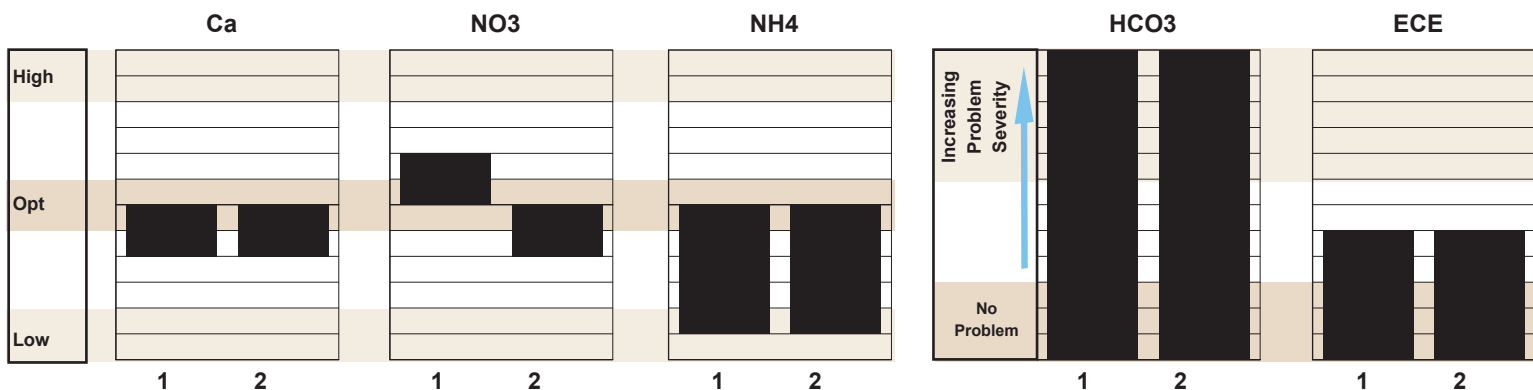
Sample Cumber	%rop Yield or TurfOrnamental %ode	Lime Gypsum Sulfur	x LACT POOD CMMD IC:									
			C	x <sub>2</sub> O	g <sub>2</sub> O	> HO	S	Zn	> n	%u	Pe	B
441LA												
441LB												
Average												



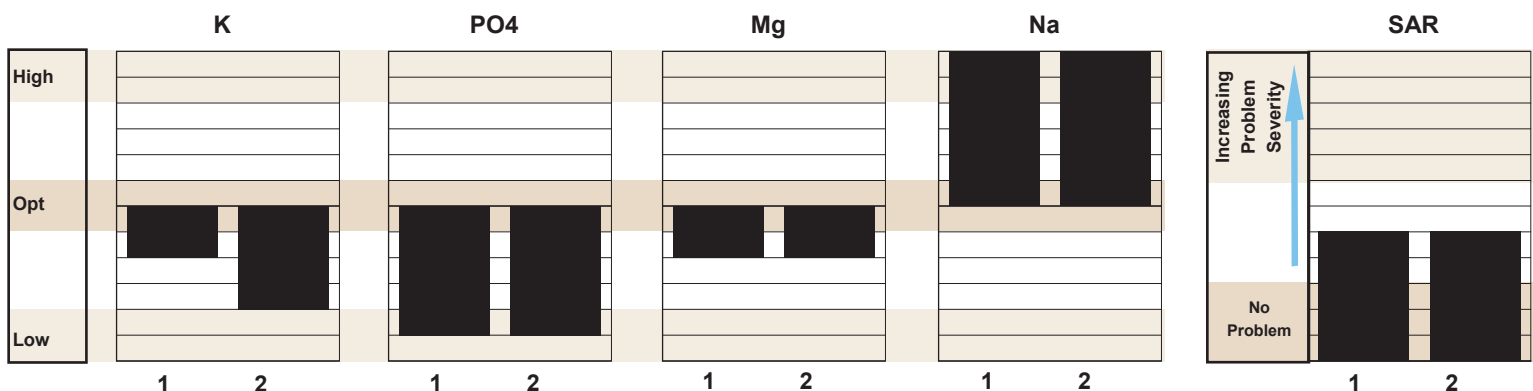
Submitted for SUMMIT SERVICES GROUP

Field RGU 44-1-298

-----Salinity-----										
Sample ID	Ca ppm	Ca Target Range	NO3 ppm	NO3 Target Range	NH4 ppm	NH4 Target Range	HCO3 ppm	HCO3 Target Range	ECE mmhos/cm	ECE Target Range
441LA	71	. . - NF	62	11 - 26	6	12 - 22	2.9	. F - 88	FB	F - 2
441LB	1F9	1F1 - 129	4N	21 - 46	.	21 - 41	. . 7	92 - 171	1E	F - 2



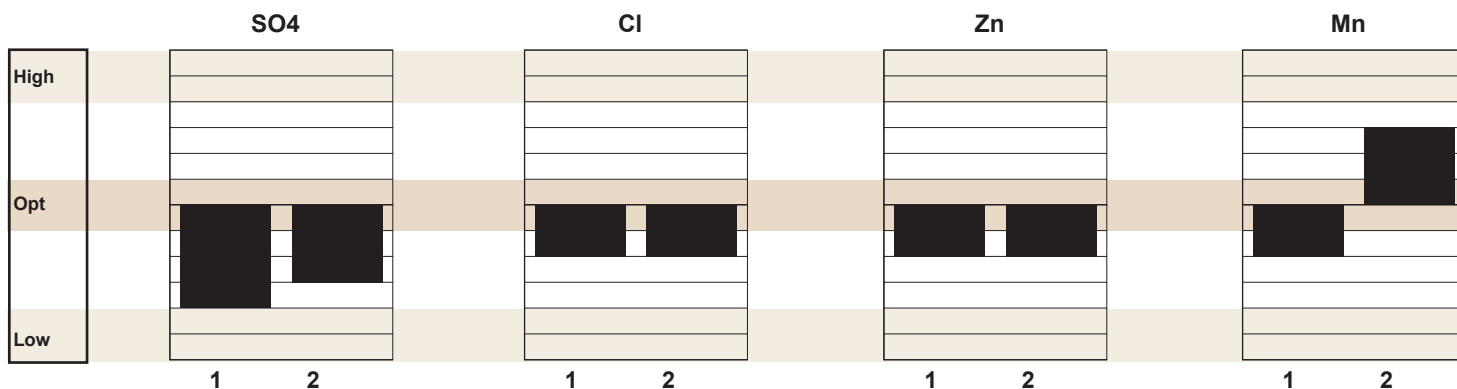
-----Salinity-----										
Sample ID	K ppm	K Target Range	PO4 ppm	PO4 Target Range	Mg ppm	Mg Target Range	Na ppm	Na Target Range	SAR	SAR Target Range
441LA	2N	28 - 47	6	9 - 19	14	1. - 2F	98	19 - 6N	6	F - 7
441LB	28	. 2 - 8.	.	1N - 64	6F	28 - 6N	26N	67 - 7N	.	F - 7



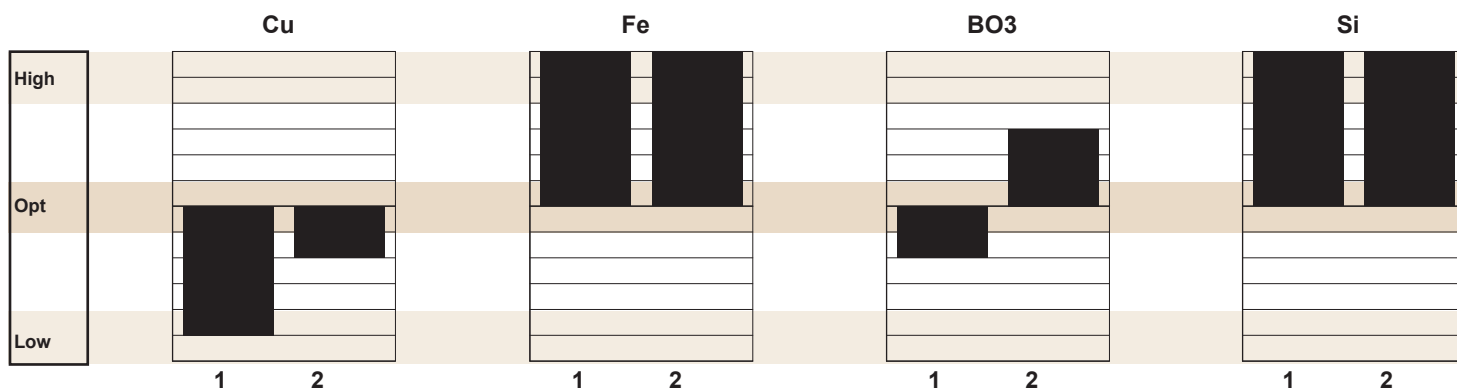
Submitted for **SUMMIT SERVICES GROUP**

Field **RGU 44-1-298**

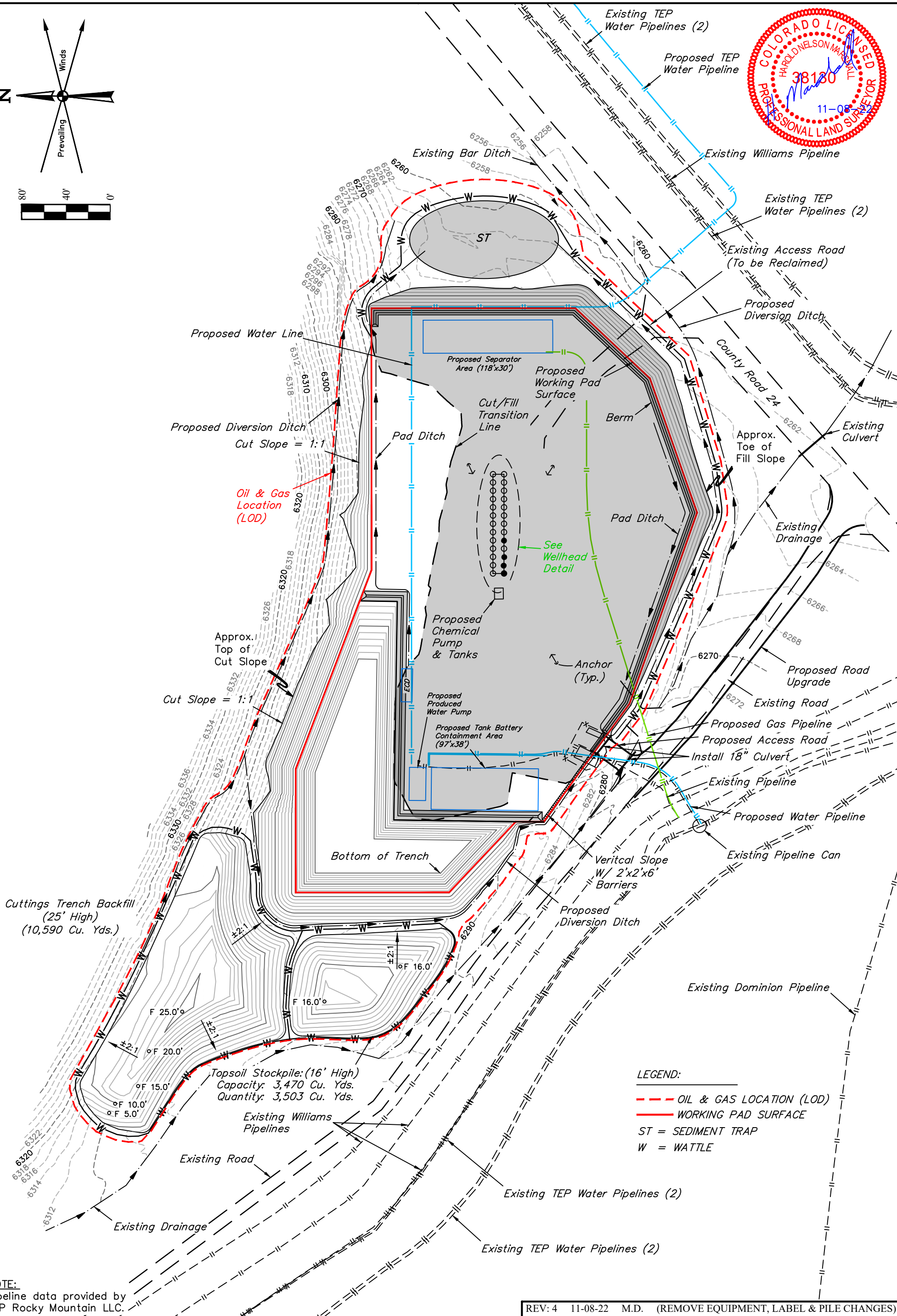
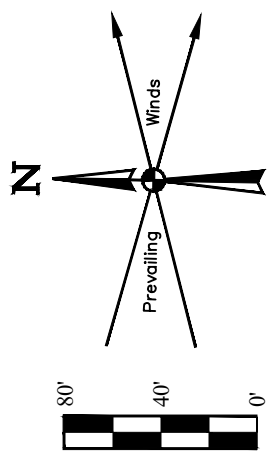
-----Salinity-----								
Sample ID	SO4 ppm	SO4 Target Range	Cl ppm	Cl Target Range	Zn ppm	Zn Target Range	Mn ppm	Mn Target Range
441LA	42	96 - 168	..	4F - 76	FE.	FE7 - FE8	FB4	FBF - FE2F
441LB	126	1N1 - 2.4	166	N4 - 117	FB8	FB1 - FB7	FE2	FBN - FB6N



-----Salinity-----									
Sample ID	Cu ppm	Cu Target Range	Fe ppm	Fe Target Range	BO3 ppm	BO3 Target Range	Si ppm	Si Target Range	Moisture %
441LA	FE2	FE7 - FE8	NE	FBN - 1E	FBN	FE9 - FB7	2NB	. E2 - 9E7	71
441LB	FE9	FB1 - FB7	61B	1B6 - 2B8	FB4	FB7 - FB6F	N6B	9E7 - 1NB	78



**REQUIREMENT 8: SCALED DIAGRAM SHOWING TOPSOIL  
STOCKPILE LOCATIONS**



NOTE:  
Pipeline data provided by  
TEP Rocky Mountain LLC.

- NOTES:
- Contours shown at 2' intervals.
  - Trench slopes 1:1 (Typ. except where noted).
  - Cut/Fill slopes 1 1/2:1 (Typ. except where noted).

REV: 4 11-08-22 M.D. (REMOVE EQUIPMENT, LABEL & PILE CHANGES)

### TEP Rocky Mountain LLC

FEDERAL RGU 44-1-298 PAD  
LOTS 35 & 36, SECTION 1, T2S, R98W, 6th P.M.  
RIO BLANCO COUNTY, COLORADO

SURVEYED BY	BART HUNTING	08-18-21	SCALE
DRAWN BY	T.L.L.	10-19-21	1" = 80'

**FINAL CONSTRUCTION GRADING**



UELS, LLC  
Corporate Office \* 85 South 200 East  
Vernal, UT 84078 \* (435) 789-1017



## **REQUIREMENT 9: DESCRIPTION OF AVAILABLE TOPSOIL TO BE SALVAGED AND CUBIC YARDS FOR EACH TOPSOIL STOCKPILE**

### **Existing Federal RGU 44-1-298 Well Pad**

During construction and expansion of the existing well pad, approximately 3,470 cubic yards of topsoil within the limits of disturbance of the Oil and Gas Location (excluding the existing production pad, access road, and proposed topsoil stockpile area) will be salvaged. Topsoil will be stripped to a depth no less than six inches (6") and stockpiled northwest of the existing pad location. Topsoil will be segregated from all subsurface materials disturbed during well pad construction and no topsoil will be used for building the location or will be left in place and covered by subsoil in a cut and fill situation.

### **Proposed Access Road**

During construction of the proposed access road, approximately 121 cubic yards of topsoil between the top of road cut and toe of road fill will be salvaged. Topsoil will be stripped to a depth no less than six inches (6") and windrowed above the top of cut and below the toe of fill of the proposed access road profile. Topsoil will be segregated from all other subsurface materials disturbed during access road construction and no topsoil will be used for building the location nor will be left in place and covered by subsoil in a cut and fill situation.

### **Proposed Pipeline Corridor**

During construction of the pipeline corridor, approximately 2,815 cubic yards of topsoil within the pipeline right-of-way (ROW) will be salvaged. Topsoil will be stripped to a depth no less than six inches (6") and windrowed along the downhill side of the ROW. Topsoil will be segregated from all other subsurface materials disturbed during pipeline construction and no topsoil will be used for construction of the corridor or will be left in place and covered by subsoil in a cut and fill situation.

## **REQUIREMENT 10: DESCRIPTION OF MEASURED TOPSOIL DEPTHS**

### **Federal RGU 44-1-298 Oil and Gas Location Soil Pit Profile Description**

The Federal RGU 44-1-298 facility is located in the high elevation desert ecosystem; dominant plant types include pinyon, juniper, and perennial and annual grasses. Eight (8) samples were collected from two NRCS-defined soil type areas: two for the pipeline corridor soil type 36, two for the pipeline corridor soil type 6, and four for the well pad soil type 6. Soil profiles did not include Horizon O and the topsoil Horizon A was poorly defined and appeared to have a high mineral to organic matter ratio. Soil profiles along the proposed pipeline appeared to be influenced by existing pipeline right-of-way fill materials.

Soil samples were collected by hand from the surface to depths of 6" to 10" to meet the minimum depth requirement for topsoil sample collections (COGCC reclamation rule 1002.B). From the sample locations, no topsoil horizons extended more than 6" below the surface elevation and measured topsoil depths among soil pit and sample locations varied. Horizon A, or topsoil horizon, averaged:

- Approximately 2" thickness for NRCS soil type 36
- Approximately 3" thickness for NRCS soil type 6

The topsoil horizon was defined as an A horizon containing mixed organic material and mineral content, with minerals and some organics identified in shallow, root-dense layers of the soil profile.

# **REQUIREMENT 11: DESCRIPTION OF BMPs FOR SHORT- AND LONG-TERM STABILIZATION OF TOPSOIL STOCKPILES**

## **RULE 1002. INTRODUCTION**

During construction activities, topsoil stockpiles may be formed with soils removed from and segregated for roads, pipelines, well pads, and other TEP facilities. The preserved soils will be used to re-contour disturbed surfaces or for reclamation/restoration of disturbed areas that will utilize vegetative final stabilization. Stockpiles will be protected from degradation due to contamination, compaction, and, to the extent practicable, from wind and water erosion during drilling and production operations. Best management practices (BMPs) to prevent weed establishment and to maintain soil microbial activity will be implemented.

### **BMPs for Short-Term Stabilization**

Proper stockpile construction (e.g., away from drainages, with 2:1 slopes, proper heights, and control measures downgradient) and management should help preserve the chemical and biological integrity of topsoil. According to site conditions, the following BMPs may be used to stabilize topsoil stockpiles in the initial phase of construction.

- Protection from Contamination: based on changes in physical characteristics (e.g., organic content, color, texture, density, or consistency), soil horizons will be segregated and stockpiled separately; stockpiles of different soil types will be separated by compacted earthen berms, sediment control logs, straw bale barriers, etc.; and stockpile surfaces will be stabilized to control for erosion and sedimentation.
- Protection from Compaction: topsoil stockpiles will be indicated on site with signage; stockpiles will be placed in areas away from vehicle and equipment traffic; and when stockpiling, compaction will be minimized by limiting the number of equipment passes, limiting stockpile height, and using vegetation.
- Protection from Wind Erosion: surface roughening, applying hydro-seed/mulch, using soil tackifier, covering stockpiles with rolled erosion control products, etc.
- Protection from Water Erosion: surface roughening, applying hydro-seed/mulch, using soil tackifier, covering stockpiles with rolled erosion control products, etc.
- Weed Establishment Prevention: TEP uses cultural, mechanical, biological, and chemical controls to prevent the establishment of weeds. TEP's complete Weed Control plan is included in Requirement 12 below.

## **BMPs for Long-Term Stabilization**

**Interim reclamation:** When drilling and completion operations and recontouring of the site are complete (as described in the Interim Reclamation Plan), all topsoil will be moved from the stockpile area and placed over the facility's cut and fill slopes to ensure long term topsoil health, including protection from erosion, prevention of weed establishment, and maintenance of soil microbial activity until final reclamation. The following BMPs will be used after topsoil placement is complete on cut and fill slopes.

- The seed bed will be prepared on all topsoiled areas to alleviate compaction and minimize the potential for erosion.
- Topsoiled areas will be planted with desirable species or a seed mixture provided by the surface owner for this particular location.
- Protection from Wind and Water Erosion: topsoiled areas will be covered with a certified weed-free mulch at an application rate specified by the product's manufacturer, or a specification sheet that follows good engineering practices.
- Weed Establishment Prevention: TEP uses cultural, mechanical, biological, and chemical controls to prevent the establishment of weeds. TEP's complete Weed Control plan is included below in Requirement 12.

**Final reclamation:** During final reclamation, topsoil will be stripped from cut and fill slopes and stockpiled during final recontouring of the facility. BMP practices listed in the short-term stabilization will be used. Once recontouring is complete, topsoil will be moved from the stockpile area and placed over surfaces recontoured for final reclamation. The following BMPs will be used after topsoil placement is complete on finally reclaimed surfaces.

- The seed bed will be prepared on all topsoiled areas to alleviate compaction and minimize the potential for erosion.
- Topsoiled areas will be planted with desirable species or a seed mixture provided by the surface owner for this particular location.
- Protection from Wind and Water Erosion: topsoiled areas will be covered with a certified weed-free mulch at an application rate specified by the product's manufacturer, or a specification that follows good engineering practices.
- Weed Establishment Prevention: TEP uses cultural, mechanical, biological, and chemical controls to prevent the establishment of weeds. TEP's complete Weed Control plan is included below in Requirement 12.

Seed Mix: refer to the following page(s).



## **SEED MIX 2**

<b>Cultivar</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Application Rate (lbs PLS/acre)</b>
Arriba	Western Wheatgrass	<i>Pascopyrum smithii</i>	4
Rimrock	Indian Ricegrass	<i>Achnatherum hymenoides</i>	3.5
Whitmar	Bluebunch Wheatgrass	<i>Pseudoroegneria spicata ssp. inermis</i>	4
Lodorm	Green Needlegrass	<i>Nassella viridula</i>	2.5
Timp	Northern Sweetvetch	<i>Hedysarum boreale</i>	3
	Sulphur Flower Buckwheat	<i>Eriogonum umbellatum</i>	1.5

### **Alternates**

	Needle and Thread	<i>Hesperostipa comata spp. comata</i>	3
	Scarlet Globemallow	<i>Sphaeralcea coccinea</i>	0.5

### **Acceptable for following range sites**

Deep Loam
Loamy Slopes
Loamy
Loamy 10-14 in PPT
Loamy Bottom
Loamy Breaks
Rolling Loam

## **REQUIREMENT 12: WEED CONTROL PLAN**



Terra Energy Partners, Rocky Mountain LLC

## Noxious Weed Management Plan



Noxious weed infestations may occur on lands that fall within Terra Energy Partners, LLC (TEP) lease boundaries. These areas include well pads, lease roads, disturbed sites, reclaimed sites, as well as some undisturbed areas. In order to minimize impacts that may result from the presence of noxious weeds, improve reclamation success, and ensure good land stewardship, TEP has adopted the following Integrated Noxious Weed Management Plan. The Weed management plan is designed to bring TEP into compliance with the Colorado Noxious Weed Act (C.R.S. Title 35, Article 5.5), Colorado Oil & Gas Conservation Act, the Rio Blanco County Noxious Weed Management Plan, and the BLM Gold Book. Weed Management activities will primarily focus on the Colorado Noxious Weed List and the Rio Blanco County Noxious Weed List (see list below). TEP's Integrated Weed Management plan will focus four key components of weed management.

- Prevention
- Inventory and Mapping
- Weed Control
- Monitoring

Prevention - Prevention is a key component of the TEP weed management program. TEP addresses prevention in the planning, development, and operations phases of field development. TEP tries to avoid or limit ground disturbance activities when practical. If ground disturbing activities cannot be avoided, TEP tries to plan development that will avoid identified weed infestation or areas where weed establishment may be more optimal if this is practical to operations. If ground disturbing activities do occur, TEP uses temporary or permanent seed mixes that help to develop healthy stands of vegetation that can be self sustaining and deter the establishment of invasive species.

Inventory and Mapping - TEP uses various means to inventory noxious weeds that fall within its lease boundaries. First, members of TEP Environmental staff are trained in weed identification and note noxious weed occurrences when they are completing field work. Second, the environmental staff works to educate field operations staff to identify weed infestations so that they can also document infestations and inform environmental staff where those infestations occur. If operations personnel are unsure of a suspected infestation, they contact the Environmental staff, and the suspected infestation is then investigated before it is documented. Third, TEP hires a Certified Weed Applicator to do its bare ground and noxious weed spraying. While the Applicator is conducting their annual spraying activities they are required to GPS infestations they find and treat for a company inventory and also for annual reporting. Lastly, many of the lands that TEP operates on are also used for livestock grazing or agricultural purposes and TEP works with the lessees to document weed infestations that the lessees may identify.

Weed Control - TEP uses an Integrated Weed Management Approach for the control of identified noxious weed infestations. This is made up of four control methods. These include Cultural, Mechanical, Biological, and Chemical.

- Cultural - Cultural control is the use of management practices that will help to favor the growth of desirable species over undesirable species. This establishment is accomplished by using appropriate seed mixes that reflect the surrounding area or species that have been developed and are approved



for rapid stabilization of a site. Purchased seed and mulch is certified weed free to decrease the opportunity for noxious weed species to be introduced into disturbed sites.

- Mechanical - Mechanical controls methods most often used by TEP include the following. Mowing, tillage, and hand pulling. However, because mechanical methods tend to be fairly labor intensive and cost prohibitive, it is not typically a preferred method but can be used in sensitive areas or areas where topography or other environmental factors may be considered prohibitive.
- Biological - Biological Control Methods are the release of organisms that are known to be effective in controlling specific weed species. This method may be chosen if there is a heavy infestation of a specific species on a site. TEP will consult with the Colorado Department of Agriculture Insectary located in Palisade, Colorado when exploring control options. The BLM will also be consulted if this method is being considered on federally controlled lands.
- Chemical - Chemical control is the use of herbicides to control weed populations. This is the primary weed control method used by TEP. TEP annually contracts a Certified Commercial applicator to apply herbicides on lease acreage. Both bare ground and noxious weed applications occur throughout spring, summer, and fall. TEP encourages the use of spot spray application on lease land to ensure vegetation diversity components are maintained. Broadcast applications are only used if a weed infestation is extremely heavy and has created a monoculture in the infested area. The use of appropriate PPE, pesticide storage, pesticide handling, spray mixtures and application rates will occur on TEP lease acreage.

Monitoring - Areas where noxious weed infestations are identified and treated will be inspected over time to ensure that control methods are working to reduce and suppress the identified infestation. The sites will be monitored until the infestations are eliminated or reduced to acceptable levels. These inspections will be used to prioritize future weed control efforts.

## GARFIELD COUNTY NOXIOUS WEED LIST

Common Name	Scientific Name	Colorado Listed
• Leafy spurge	<i>Euphorbia esula</i>	B
• Russian knapweed	<i>Acroptilon repens</i>	B
• Yellow starthistle	<i>Centaurea solstitialis</i>	A
• Plumeless thistle	<i>Carduus acanthoides</i>	B
• Houndstongue	<i>Cynoglossum officinale</i>	B
• Common burdock	<i>Arctium minus</i>	C
• Scotch thistle	<i>Onopordum acanthium</i>	B
• Canada thistle	<i>Cirsium arvense</i>	B
• Spotted knapweed	<i>Centaurea maculosa</i>	B
• Diffuse knapweed	<i>Centaurea diffusa</i>	B
• Dalmatian toadflax	<i>Linaria dalmatica</i>	B
• Yellow toadflax	<i>Linaria vulgaris</i>	B
• Hoary cress/White top	<i>Cardaria draba</i>	B
• Saltcedar	<i>Tamarix parviflora</i>	B
• Saltcedar	<i>Tamarix ramosissima</i>	B
• Oxeye Daisy	<i>Chrysanthemum leucanthemum</i>	B
• Jointed Goatgrass	<i>Aegilops cylindrical</i>	B
• Chicory	<i>Cichorium intybus</i>	C
• Musk thistle	<i>Carduus nutans</i>	B
• Purple loosestrife	<i>Lythrum salicaria</i>	A
• Russian olive	<i>Elaeagnus angustifolia</i>	B

## RIO BLANCO COUNTY NOXIOUS WEED LIST

• Black henbane	<i>Hyoscyamus Niger</i>	B
• Canada thistle	<i>Cirsium arvense</i>	B
• Common burdock	<i>Arctium minus</i>	C
• Common mullein	<i>Verbascum thapsus</i>	C
• Dalmatian toadflax	<i>Linaria genistifolia ssp.dalmatica</i>	B
• Diffuse knapweed	<i>Centaurea diffusa</i>	B
• Field bindweed	<i>Convolvulus arvensis</i>	C
• Halogeton	<i>Halogeton glomeratus</i>	C
• Hoary cress/White top	<i>Cardaria draba</i>	B
• Houndstongue	<i>Cynoglossum officinale</i>	B
• Leafy spurge	<i>Euphorbia esula</i>	B
• Musk thistle	<i>Carduus nutans</i>	B
• Perennial pepperweed	<i>Lepidium latifolium</i>	B
• Plumeless thistle	<i>Carduus acanthoides</i>	B
• Russian knapweed	<i>Centaurea repens</i>	B
• Scotch thistle	<i>Onopordum acanthium and tauricum</i>	B
• Spotted knapweed	<i>Centaurea maculosa</i>	B
• Yellow toadflax	<i>Linaria vulgaris</i>	B