

# **RECLAMATION PLAN**

**WHITE ROCK FIELD**

**ARAPAHOE AND ELBERT COUNTIES, COLORADO**

**September 2024**

**Prepared for:**

**GMT EXPLORATION COMPANY, LLC**

**4949 South Niagara Street, Suite 250**

**Denver, Colorado 80237**

**Prepared by:**

**CDH CONSULTING, LLC**

**Thornton, Colorado 80229**

**720.431.7468**



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## 1.0 Introduction and Site Background

CDH Consulting, (CDH) on behalf of GMT Exploration Company, LLC. (GMT) has prepared this reclamation plan. The purpose of this document is to outline a path forward with regard to interim reclamation activities including reseeding and weed mitigation efforts, with specific efforts to address Cereal rye (*Secale cereale*). The plan is intended to include all of GMT's facilities, which are located in Arapahoe and Elbert Counties, Colorado.

Copies of this plan are retained digitally on the GMT internal server and can be accessed from the GMT office.

### 1.1 Site History

GMT active assets in southern Arapahoe County and northern Elbert County consist of seven separate facilities and the related lease roads, which is denoted as the White Rock field. Production began in June of 2022. Interim stabilization efforts began in the spring and summer of 2023 at four of the pads.

The following facilities are applicable for interim reclamation as of the current date of this plan. This plan will be updated as other sites are developed and reach interim reclamation status.

**TABLE 1**

**LIST OF LOCATIONS INCLUDED IN THIS PLAN**

Production Pad Name	Pad Location Lat/Long	Status
Vulcan 6-64 Pad	39.545483 / -104.542233	Interim Reclamation
Crystal Ruby Pad	39.512209 / -104.645752	Interim Reclamation
Irwin Taylor Pad	39.509592 / -104.625946	Interim Reclamation
Marble Redstone Pad	39.510864 / -104.617644	Interim Reclamation
State 35-13	39.567655 / -104.639861	Interim Reclamation
Cinnamon Pad	39.514816 / -104.602009	Construction
Ragged Pad	39.562385 / -104.551646	Construction

### 1.2 Soil Description

The White Rock Field is a large area covering portions of Arapahoe and Elbert Counties. Referencing the Natural Resources Conservation Service Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/>) topsoil varies within the area but is predominantly classified as Bresser-Stapleton sandy loam, Bresser-Truckton fine sandy loam, and various other soil types. Percentages of each type of topsoil vary widely throughout the area. Soil descriptions for the most predominant types can be found in Appendix A.

### 1.3 Pre-Disturbance Vegetation

The location is arid rangeland. According to an on-site environmental review, vegetation is Blue Grama, Sideoats Grama, Western Wheatgrass, Great Plains Yucca, One-seed Juniper, Plains Prickly Pear, and Tree Cholla. There was approximately 65 percent (%) vegetative cover observed prior to construction.

## **1.4 Proposed Sequence for Major Construction Activities**

Approximately twelve to seventeen acres of land is disturbed during the construction of a new pad site. The construction phase includes the following sequence of activities: control measure installation, clearing and grubbing, grading, trenching (where required) installation of the working surface material (gravel or compacted road base), and stabilization of cut and fill slopes and stockpiles. After completion of pad construction, the oil and gas wells are drilled and completed. Production facility pads will have the additional steps of equipment and pipeline installation.

Completed wells are connected to the production equipment located at the production facility and production begins. The production phase includes the production of oil and gas and from a reclamation perspective, the ongoing monitoring and maintenance of control measures implemented to manage stabilized areas that have not yet reached eighty percent (80 %) revegetation per the Colorado Energy and Carbon Management Commission (ECMC) Rule 1003.e.(2). Oil and gas wells in the field are projected to produce for approximately 20 to 30 years.

After drilling and completions activities have been completed and production has commenced, interim reclamation activities are initiated. Interim reclamation is the process of restoring any land not needed for ongoing oil and gas production operations to its original purpose and configuration. Crop land is returned to agricultural use and other lands are regraded, capped with topsoil and revegetated. Once this interim reclamation is completed and vegetation has been restored to 80% of pre-disturbance cover, the site is considered to be stabilized.

## **2.0 Interim Reclamation**

Per ECMC Rule 1003.e.(2), 'interim reclamation of all disturbed areas no longer in use shall be considered complete when all ground surface disturbing activities at the site have been completed, and all disturbed areas have been either built on, compacted, covered, paved, or otherwise stabilized in such a way as to minimize erosion to the extent practicable, or a uniform vegetative cover has been established that reflects pre-disturbance or reference area forbs, shrubs, and grasses with total percent plant cover of at least eighty percent (80%) of pre-disturbance levels or reference areas, excluding noxious weeds'.

### **2.1 Compaction Alleviation (ECMC Rule 1003.c)**

To de-compact soil layers, areas to be reclaimed will be ripped to a minimum depth of 8 inches unless restrictive features are encountered at a shallower depth. Decompaction will be used to improve the soil structure and to promote soil aeration, water infiltration, and microbial activity, which will promote plant growth.

### **2.2 Recontouring**

The reclaimed area will be blended with the surrounding surface to restore the natural grade and hydrology patterns.

### **2.3 Re-establish and Stabilize Drainage Features**

During interim reclamation, each facility will be recontoured to blend with the pre-disturbance surface and restore natural drainage patterns. Reclamation during the first growing season will stabilize the soils to avoid stormwater runoff. While vegetation is establishing, control measures will be placed, as needed, along perimeters of the pad

corresponding to surface flow direction to prevent erosion runnels and avoid soils or sediment from leaving the location. The segregated, stored soil horizons will be replaced in their original relative positions and contoured to support revegetation.

## 2.4 Establish Desired Plant Community (ECMC Rule 1003.e)

The anticipated seed mix will be identified as a site-specific seed mix in coordination with the Natural Resource Conservation Service District Conservationist (NRCS), Colorado Parks and Wildlife (CPW) and the surface owner. The previously planned seed mix is listed in Table 2 while CPW's recommended seed mix is provided in Appendix B.

<b>TABLE 2. ANTICIPATED SEED MIX Anticipated Species</b>	<b>MIX (PERCENTAGE)</b>
Blue Grama	20%
Sideoats Grama	25%
Western Wheatgrass	30%
Buffalo Grass	15%
Green Needlegrass	10%
TOTAL	100%

GMT will review the CPW recommended mixes with the landowner and establish a plan for future seeding. The seed weight (pounds/acre) and application rate will be provided to the operator by the seed mix provider. The seed mix will be certified weed-free.

## 2.5 Seedbed Preparation and Seeding (ECMC Rule 1003.e)

Salvaged topsoil will be replaced and contoured to maximize erosion control and soil stability. Soil amendments may be introduced at this stage to promote moisture retention and soil stabilization. The area will be tilled to re-establish a seedbed as applicable. Seedbed preparation will be conducted immediately before seeding to ensure that the seedbed provides the maximum benefit for revegetation success. The reclamation provider will confirm whether drill seeding will be performed to further promote vegetation. Drill seeding is typically conducted on slopes flatter than 3:1.

## 2.6 Fencing

Livestock fencing may be installed, as approved by the landowner, to restrict unauthorized access and discourage unnecessary surface disturbance, in accordance with ECMC Rules 603.h and 1002.a.(1).

## 2.7 Management of Invasive Plants (ECMC Rule 1003.f)

The site operator will be trained on noxious and invasive weeds to monitor at the location. Routine weed mitigation will be conducted, where needed, to prevent establishment and spread of noxious weeds. The weed treatment will be conducted according to Colorado Department of Agriculture recommendations by weed species. GMT has contracted with Jomax Construction, to provide routine weed spraying and mechanical removal. Facility contact information is provided in Appendix C.

### 2.7.1 Cereal Rye Identification and Management

Commonly referred to as feral rye, (*Secale cereale*) it is also known as annual rye or cereal rye. Cereal rye is widely distributed because it has been used as a cover crop and as forage in hay, pastures and range. It has been included in wildlife and soil conservation seed mixes. Cereal rye can readily become established on open rangeland, waste places, roadsides and crops lands. Cereal rye can easily form a monoculture that out competes and prevents other vegetation from establishing. Management methods include 1) the establishment of aggressive native grasses to control of Cereal rye; 2) implementation of good grazing management to stimulate grass growth and keep pastures healthy; 3) mechanical removal via mowing and tillage; and 4) the application of herbicides. The following are recommendations for herbicides that can be applied to range and pasture lands.

**Table 3**  
**Herbicides for Range and Pasture Lands**

Herbicide	Rate	Application Timing/Comments
Plateau or Panoramic 2SL	8 oz/acre	Fall application as an early post-emergent treatment prior to a hard freeze is optimum for control.
Glyphosate	16 to 24 oz/acre	Apply in fall or early spring when other grasses are dormant.
Rejuvra and Laramie 25DF	5 oz/acre and 4 oz/acre	An early post-emergent option around October
Esplanade Sure * 1-year grazing restriction.	4.5 oz/acre	An early post-emergent option around October.
Rejuvra or Esplanade 200SC	5 oz/acre	A pre-emergent chemical labeled. Apply from June to August depending on the year. Can be tank mixed with Plateau or Panoramic in the fall if rye has germinated.

### 2.7.2 Spring 2025 Weed Mitigation Plan

GMT has contracted with Jomax Construction to provide weed mitigation and management through the spring and summer of 2025. Jomax will also monitor and remove any cereal rye that migrates beyond the limits of construction of each pad and lease road.

## 2.8 Practices to Achieve Stabilization

Areas to be reclaimed will be reseeded using appropriate seed mixes as directed by NRCS, CPW, the surface owner, or contractors intimately familiar with local conditions. Seed mixes will be planted in the amount specified in pounds of pure live seed per acre. No primary or secondary noxious weeds will be in the seed mix.

Drill seeding will be conducted where topography and soil conditions enable operation of equipment to meet the seeding requirements of the species being planted. On terrain where drill seeding and/or thatch/mulch are effective, seed may be planted using a seed drill equipped with a depth regulator to ensure proper seed depths and will be evenly and uniformly planted across the area to be reclaimed.

Broadcast seeding will be conducted on steep terrain and areas where the cut vegetation and rocks from construction activities have been redistributed.

Hydraulic mulch is effective for stabilizing disturbed areas requiring temporary protection until permanent stabilization is established and/or for disturbed areas that will be re-disturbed following an extended period of inactivity. When appropriate, hydraulic mulch will be applied by deploying a mixture of shredded wood fiber or a hydraulic matrix and a stabilizing emulsion or tackifier with hydro-mulching equipment, to temporarily protect exposed soil from precipitation and wind erosion.

Seeding and re-seeding events will occur when seasonal and weather conditions are most favorable according to schedules identified by NRCS, CPW, reclamation contractor, or landowner. Whenever possible, seeding will be timed to take advantage of moisture, such as early spring or late fall, which will benefit from winter precipitation.

Mulch will be distributed during re-vegetation where appropriate. Cut vegetation and rocks will suffice as mulch in the areas where they have been redistributed. Where straw or hay mulch are applied, the mulch be broadcast and will be crimped into the soil, if necessary. The landowner and specialized contractors, having direct knowledge of local practices, will provide guidance as to the utility of soil amendments and fertilizers.

During reclamation, sediment control measures will remain in use, when necessary.

#### **2.8.1 Fall 2024 Seeding Schedule**

GMT has contracted with M&M Excavation to conduct fieldwide topsoil pile reseeding, cut/fill slope reseeding and spot seeding in late September and early October 2024.

### **2.9 Reclamation Monitoring, Inspection, Maintenance, and Reporting**

The site operator will be on location weekly to monitor the production operations. The vegetative success will be monitored as part of these routine site visits. Invasive weeds, evidence of erosion, and areas requiring reseeding will be identified and addressed through weed treatment, adapting stormwater controls, and application of additional seed and soil amendment or fertilizer. Vegetative success will be considered at least 80% of pre-disturbance reference area cover, consistent with ECMC Rule 1003.e.(2). A plant count for plant density will be conducted to assess percent cover. Documentation will include the operator's maintenance records for the location, stormwater inspections, and Change Management Checklist.

#### **2.10 Interim Reclamation Completion Notice, Form 4 [ECMC Rule 1003.e.(3)]**

Upon achieving sufficient plant coverage, GMT will submit a Form 4 Sundry Notice describing the reclamation procedures, any mitigation measures, any changes to the final land use, and the total vegetative cover. A minimum of four photos will be taken during the growing season showing each cardinal direction to document the success of interim reclamation. One photo will document the total cover of live perennial vegetation of adjacent or nearby undisturbed land or the reference area.

### **3.0 Final Reclamation (ECMC Rule 1004.a)**

When the oil and/or natural gas production of a well is exhausted, the well(s) will be plugged and abandoned and the associated production equipment will be removed. This is a ground disturbing activity and instances where more than one acre of ground is disturbed, the location will be reactivated in GMT's stormwater management program. This may entail installation of control measures, and it will entail reinstating inspections and monitoring until compliance with the stormwater permit approved.

After plugging and abandonment of the well and the removal of the production equipment the remaining pad area will be reclaimed by contouring disturbed soil to conform to the surrounding terrain. Crop land will be returned to agricultural use and all other lands will be revegetated with native grasses or a seed mix agreed upon with the landowner and through consultation with CPW. These activities will be monitored until uniform vegetation has been established that covers least eighty percent (80%) of pre-disturbance levels and the ECMC Director has notified the operator that final reclamation has been approved.



## APPENDIX A: SOIL SURVEY



United States  
Department of  
Agriculture

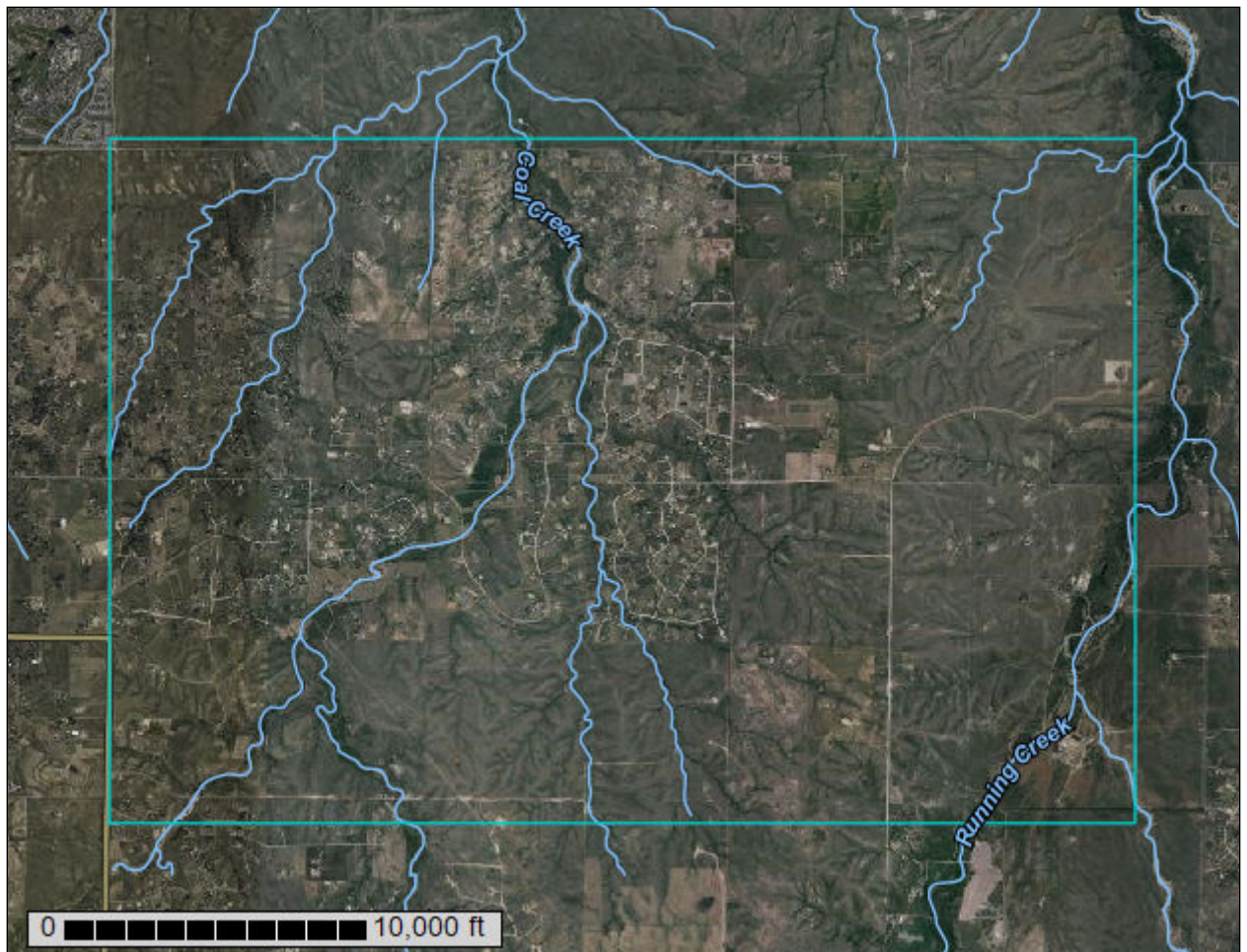
NRCS

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 Arapahoe County, Colorado; Castle Rock Area, Colorado; and Elbert County, Colorado, Western Part

## White Rock Field



# 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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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and



## Custom Soil Resource Report

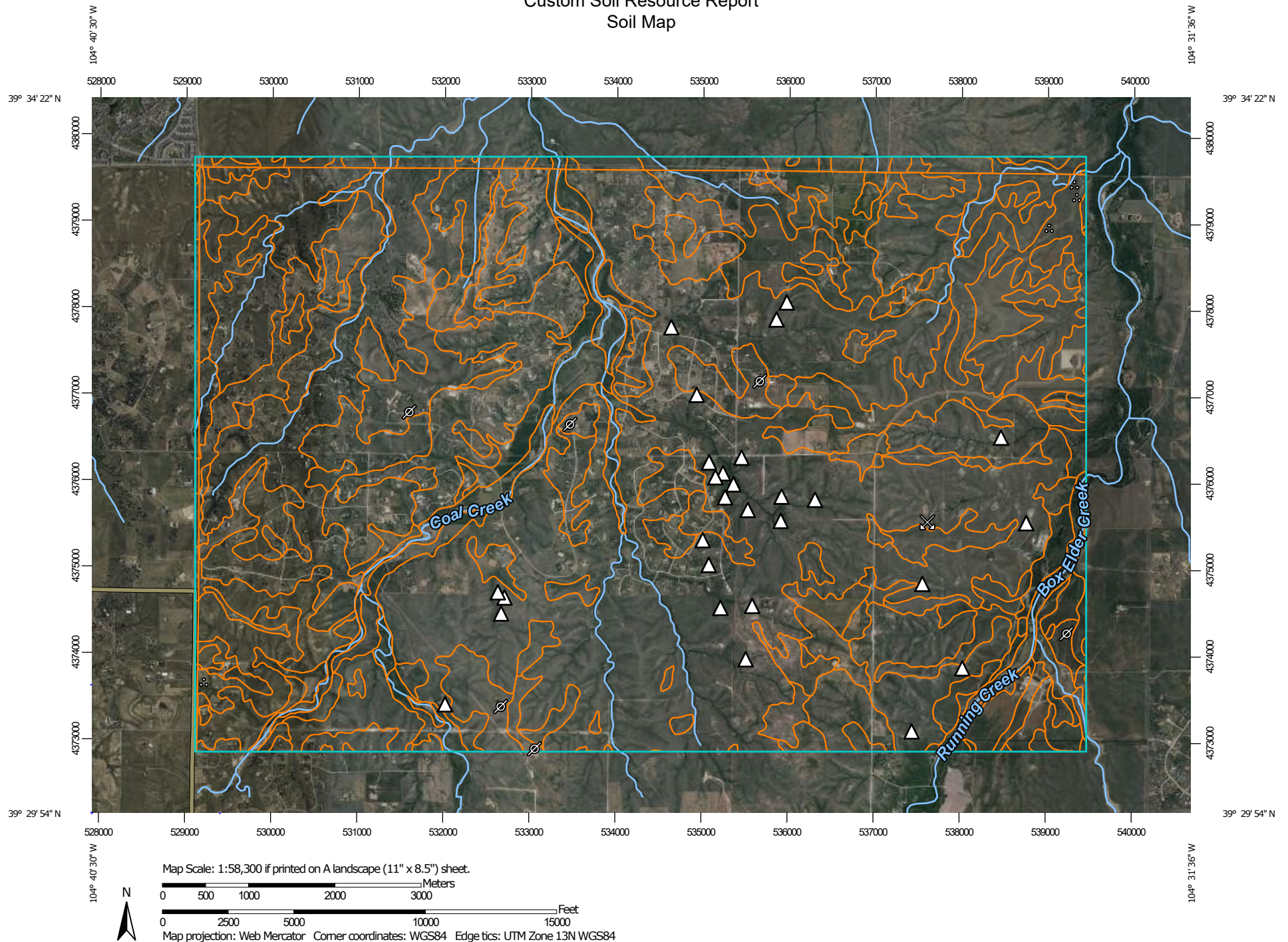
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# 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 scales ranging from 1:20,000 to 1:24,000.

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: Arapahoe County, Colorado

Survey Area Data: Version 19, Aug 24, 2023

Soil Survey Area: Castle Rock Area, Colorado

Survey Area Data: Version 16, Aug 24, 2023

Soil Survey Area: Elbert County, Colorado, Western Part

Survey Area Data: Version 19, Aug 24, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Jun 9, 2021—Sep 1, 2023

## MAP LEGEND

## MAP INFORMATION

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
BIB	Bijou sandy loam, 0 to 3 percent slopes	4.1	0.0%
BuD	Bresser-Stapleton sandy loams, 3 to 9 percent slopes	23.9	0.1%
BuE	Bresser-Stapleton sandy loams, 9 to 20 percent slopes	141.7	0.8%
BvE	Bresser-Truckton sandy loams, 5 to 20 percent slopes	28.4	0.2%
BxC	Buick loam, 3 to 5 percent slopes	9.1	0.1%
BxD	Buick loam, 5 to 9 percent slopes	24.0	0.1%
FdB	Fondis silt loam, 1 to 3 percent slopes	48.3	0.3%
FdC	Fondis silt loam, 3 to 5 percent slopes	8.5	0.0%
FoC	Fondis-Colby silt loams, 3 to 5 percent slopes	7.6	0.0%
Gr	Gravelly land	0.7	0.0%
Lv	Loamy alluvial land	0.9	0.0%
NIB	Nunn loam, 1 to 3 percent slopes	35.1	0.2%
RhD	Renohill-Buick loams, 3 to 9 percent slopes	13.5	0.1%
Su	Sandy alluvial land	14.7	0.1%
SwE	Stapleton sandy loam, 9 to 30 percent slopes	33.5	0.2%
WrB	Weld-Deertrail silt loams, 0 to 3 percent slopes	3.0	0.0%
Wt	Wet alluvial land	2.7	0.0%
<b>Subtotals for Soil Survey Area</b>		<b>399.7</b>	<b>2.3%</b>
<b>Totals for Area of Interest</b>		<b>17,677.0</b>	<b>100.0%</b>

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BrD	Bresser sandy loam, cool, 5 to 9 percent slopes	31.6	0.2%
BtE	Bresser-Truckton sandy loams, 5 to 25 percent slopes	19.7	0.1%
KuD	Kutch clay loam, 4 to 8 percent slopes	4.4	0.0%
St	Stapleton-Bresser association	12.5	0.1%
<b>Subtotals for Soil Survey Area</b>		<b>68.2</b>	<b>0.4%</b>

## Custom Soil Resource Report

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
<b>Totals for Area of Interest</b>		<b>17,677.0</b>	<b>100.0%</b>

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5	Bresser sandy loam, 0 to 4 percent slopes	396.4	2.2%
6	Bresser sandy loam, cool, 5 to 9 percent slopes	3,313.1	18.7%
8	Bresser-Stapleton sandy loams, 8 to 25 percent slopes	3,266.5	18.5%
9	Bresser-Truckton sandy loams, 8 to 25 percent slopes	6,425.9	36.4%
19	Ellicott loamy coarse sand, 0 to 4 percent slopes	163.0	0.9%
20	Englewood clay loam, 0 to 4 percent slopes	34.4	0.2%
22	Haplustolls, moderately coarse, nearly level*	484.0	2.7%
23	Haplustolls, loamy, nearly level*	632.4	3.6%
32	Nunn clay loam, 0 to 4 percent slopes	162.1	0.9%
38	Renohill clay loam, 4 to 8 percent slopes	138.9	0.8%
41	Truckton sandy loam, 3 to 9 percent slopes	94.0	0.5%
43	Weld loam, 0 to 4 percent slopes	873.2	4.9%
44	Weld loam, 4 to 8 percent slopes	1,222.1	6.9%
<b>Subtotals for Soil Survey Area</b>		<b>17,206.1</b>	<b>97.3%</b>
<b>Totals for Area of Interest</b>		<b>17,677.0</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.

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.



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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.

## Arapahoe County, Colorado

### BIB—Bijou sandy loam, 0 to 3 percent slopes

#### Map Unit Setting

*National map unit symbol:* 34xw

*Elevation:* 4,400 to 6,000 feet

*Mean annual precipitation:* 14 inches

*Mean annual air temperature:* 46 to 52 degrees F

*Frost-free period:* 140 to 180 days

*Farmland classification:* Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60

#### Map Unit Composition

*Bijou and similar soils:* 85 percent

*Minor components:* 15 percent

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

#### Description of Bijou

##### Setting

*Landform:* Stream terraces, streams

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* From the dawson formation alluvium

##### Typical profile

*H1 - 0 to 6 inches:* sandy loam

*H2 - 6 to 34 inches:* coarse sandy loam

*H3 - 34 to 60 inches:* loamy coarse sand

##### Properties and qualities

*Slope:* 0 to 3 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 5 percent

*Available water supply, 0 to 60 inches:* Low (about 5.2 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* A

*Ecological site:* R049XB210CO - Sandy Foothill

*Hydric soil rating:* No

#### Minor Components

##### Bresser

*Percent of map unit:* 9 percent

*Hydric soil rating:* No

**Blakeland**

*Percent of map unit:* 6 percent

*Hydric soil rating:* No

**BuD—Bresser-Stapleton sandy loams, 3 to 9 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 34y3

*Elevation:* 4,700 to 6,800 feet

*Mean annual precipitation:* 12 to 16 inches

*Mean annual air temperature:* 46 to 52 degrees F

*Frost-free period:* 135 to 170 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Bresser and similar soils:* 60 percent

*Stapleton and similar soils:* 30 percent

*Minor components:* 10 percent

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

**Description of Bresser**

**Setting**

*Landform:* Drainageways, stream terraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Noncalcareous sandy alluvium and/or noncalcareous sandy  
eolian deposits

**Typical profile**

*H1 - 0 to 10 inches:* sandy loam

*H2 - 10 to 34 inches:* sandy clay loam

*H3 - 34 to 44 inches:* gravelly sandy loam

*H4 - 44 to 60 inches:* gravelly loamy coarse sand

**Properties and qualities**

*Slope:* 3 to 9 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.57 to 2.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 10 percent

*Available water supply, 0 to 60 inches:* Moderate (about 7.5 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 6e  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Ecological site:* R049XB210CO - Sandy Foothill  
*Hydric soil rating:* No

**Description of Stapleton**

**Setting**

*Landform:* Hills, knobs  
*Landform position (two-dimensional):* Backslope, footslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Arkosic sandstone

**Typical profile**

*H1 - 0 to 8 inches:* sandy loam  
*H2 - 8 to 16 inches:* sandy loam  
*H3 - 16 to 25 inches:* sandy loam  
*H4 - 25 to 29 inches:* unweathered bedrock

**Properties and qualities**

*Slope:* 3 to 9 percent  
*Depth to restrictive feature:* 20 to 40 inches to lithic bedrock  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*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  
*Available water supply, 0 to 60 inches:* Very low (about 2.8 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* R049XB210CO - Sandy Foothill  
*Hydric soil rating:* No

**Minor Components**

**Buick**

*Percent of map unit:* 5 percent  
*Hydric soil rating:* No

**Renohill**

*Percent of map unit:* 5 percent  
*Hydric soil rating:* No

## **BuE—Bresser-Stapleton sandy loams, 9 to 20 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 34y4  
*Elevation:* 5,300 to 6,800 feet  
*Mean annual precipitation:* 12 to 16 inches  
*Mean annual air temperature:* 46 to 52 degrees F  
*Frost-free period:* 135 to 170 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Bresser and similar soils:* 41 percent  
*Stapleton and similar soils:* 39 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Bresser**

#### **Setting**

*Landform:* Drainageways, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Noncalcareous sandy alluvium and/or noncalcareous sandy eolian deposits

#### **Typical profile**

*H1 - 0 to 7 inches:* sandy loam  
*H2 - 7 to 18 inches:* sandy clay loam  
*H3 - 18 to 28 inches:* gravelly sandy loam  
*H4 - 28 to 60 inches:* gravelly loamy coarse sand

#### **Properties and qualities**

*Slope:* 9 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 2.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Available water supply, 0 to 60 inches:* Moderate (about 6.1 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 6e  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Ecological site:* R049XB210CO - Sandy Foothill

## Custom Soil Resource Report

*Hydric soil rating:* No

### Description of Stapleton

#### Setting

*Landform:* Hills, ridges

*Landform position (two-dimensional):* Summit, shoulder

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Arkosic sandstone

#### Typical profile

*H1 - 0 to 6 inches:* sandy loam

*H2 - 6 to 19 inches:* gravelly sandy loam

*H3 - 19 to 23 inches:* weathered bedrock

#### Properties and qualities

*Slope:* 9 to 20 percent

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

*Drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high  
(0.06 to 2.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*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):* 6e

*Hydrologic Soil Group:* D

*Ecological site:* R049XB210CO - Sandy Foothill

*Hydric soil rating:* No

### Minor Components

#### Buick

*Percent of map unit:* 10 percent

*Hydric soil rating:* No

#### Litle

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

#### Renohill

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

## **BvE—Bresser-Truckton sandy loams, 5 to 20 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 34y6  
*Elevation:* 4,500 to 6,800 feet  
*Mean annual precipitation:* 12 to 18 inches  
*Mean annual air temperature:* 46 to 52 degrees F  
*Frost-free period:* 125 to 180 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Bresser and similar soils:* 50 percent  
*Truckton and similar soils:* 35 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Bresser**

#### **Setting**

*Landform:* Drainageways, stream terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Noncalcareous sandy alluvium and/or noncalcareous sandy eolian deposits

#### **Typical profile**

*H1 - 0 to 5 inches:* sandy loam  
*H2 - 5 to 16 inches:* sandy clay loam  
*H3 - 16 to 28 inches:* gravelly sandy loam  
*H4 - 28 to 60 inches:* gravelly loamy coarse sand

#### **Properties and qualities**

*Slope:* 5 to 20 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 2.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Available water supply, 0 to 60 inches:* Moderate (about 6.1 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* 6e  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B

## Custom Soil Resource Report

*Ecological site:* R049XB210CO - Sandy Foothill

*Hydric soil rating:* No

### Description of Truckton

#### Setting

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Eolian deposits

#### Typical profile

*H1 - 0 to 5 inches:* sandy loam

*H2 - 5 to 17 inches:* sandy loam

*H3 - 17 to 60 inches:* sandy loam

#### Properties and qualities

*Slope:* 5 to 20 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):* High (1.98 to 6.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Low (about 5.9 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* A

*Ecological site:* R049XB210CO - Sandy Foothill

*Hydric soil rating:* No

### Minor Components

#### Ascalon

*Percent of map unit:* 10 percent

*Hydric soil rating:* No

#### Nunn

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

## BxC—Buick loam, 3 to 5 percent slopes

#### Map Unit Setting

*National map unit symbol:* 34y8

*Elevation:* 4,700 to 6,200 feet

*Mean annual precipitation:* 14 to 16 inches

*Mean annual air temperature:* 45 to 46 degrees F



## Custom Soil Resource Report

*Frost-free period:* 150 to 170 days

*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

*Buick and similar soils:* 85 percent

*Minor components:* 15 percent

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

### Description of Buick

#### Setting

*Landform:* Drainageways, hills

*Landform position (two-dimensional):* Summit

*Landform position (three-dimensional):* Head slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium and/or eolian deposits

#### Typical profile

*H1 - 0 to 6 inches:* loam

*H2 - 6 to 22 inches:* clay loam

*H3 - 22 to 60 inches:* sandy clay loam

#### Properties and qualities

*Slope:* 3 to 5 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 (0.20 to 0.60 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 15 percent

*Available water supply, 0 to 60 inches:* High (about 10.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3c

*Hydrologic Soil Group:* C

*Ecological site:* R049XB202CO - Loamy Foothill

*Hydric soil rating:* No

### Minor Components

#### Renohill

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

#### Weld

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

#### Colby

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

## **BxD—Buick loam, 5 to 9 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 34y9  
*Elevation:* 4,700 to 6,200 feet  
*Mean annual precipitation:* 14 to 16 inches  
*Mean annual air temperature:* 45 to 46 degrees F  
*Frost-free period:* 150 to 170 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Buick and similar soils:* 80 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Buick**

#### **Setting**

*Landform:* Drainageways, hills  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Head slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium and/or eolian deposits

#### **Typical profile**

*H1 - 0 to 5 inches:* loam  
*H2 - 5 to 19 inches:* clay loam  
*H3 - 19 to 60 inches:* sandy clay loam

#### **Properties and qualities**

*Slope:* 5 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Available water supply, 0 to 60 inches:* High (about 10.4 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4c  
*Hydrologic Soil Group:* C  
*Ecological site:* R049XB202CO - Loamy Foothill  
*Hydric soil rating:* No

**Minor Components**

**Colby**

*Percent of map unit:* 10 percent  
*Hydric soil rating:* No

**Renohill**

*Percent of map unit:* 10 percent  
*Hydric soil rating:* No

**FdB—Fondis silt loam, 1 to 3 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 34yh  
*Elevation:* 4,700 to 6,200 feet  
*Mean annual precipitation:* 14 to 16 inches  
*Mean annual air temperature:* 48 to 52 degrees F  
*Frost-free period:* 150 to 170 days  
*Farmland classification:* Prime farmland if irrigated

**Map Unit Composition**

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

**Description of Fondis**

**Setting**

*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Silty and/or loamy

**Typical profile**

*H1 - 0 to 7 inches:* silt loam  
*H2 - 7 to 27 inches:* clay  
*H3 - 27 to 60 inches:* clay loam

**Properties and qualities**

*Slope:* 1 to 3 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 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:* 15 percent  
*Available water supply, 0 to 60 inches:* High (about 10.5 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3c

*Hydrologic Soil Group:* C

*Ecological site:* R049XB202CO - Loamy Foothill

*Hydric soil rating:* No

**Minor Components**

**Weld**

*Percent of map unit:* 10 percent

*Hydric soil rating:* No

**Buick**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

**FdC—Fondis silt loam, 3 to 5 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 34yj

*Elevation:* 4,700 to 6,200 feet

*Mean annual precipitation:* 14 to 16 inches

*Mean annual air temperature:* 48 to 52 degrees F

*Frost-free period:* 150 to 170 days

*Farmland classification:* Prime farmland if irrigated

**Map Unit Composition**

*Fondis and similar soils:* 85 percent

*Minor components:* 15 percent

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

**Description of Fondis**

**Setting**

*Landform:* Drainageways

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Loamy and/or silty

**Typical profile**

*H1 - 0 to 6 inches:* silt loam

*H2 - 6 to 24 inches:* clay

*H3 - 24 to 32 inches:* silty clay loam

*H4 - 32 to 46 inches:* loam

*H5 - 46 to 84 inches:* clay loam

**Properties and qualities**

*Slope:* 3 to 5 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

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*Runoff class:* Low

*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:* 15 percent

*Available water supply, 0 to 60 inches:* High (about 10.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3c

*Hydrologic Soil Group:* C

*Ecological site:* R049XB202CO - Loamy Foothill

*Hydric soil rating:* No

### Minor Components

#### Weld

*Percent of map unit:* 8 percent

*Hydric soil rating:* No

#### Buick

*Percent of map unit:* 7 percent

*Hydric soil rating:* No

## FoC—Fondis-Colby silt loams, 3 to 5 percent slopes

### Map Unit Setting

*National map unit symbol:* 34yl

*Elevation:* 4,700 to 6,200 feet

*Mean annual precipitation:* 12 to 16 inches

*Mean annual air temperature:* 46 to 52 degrees F

*Frost-free period:* 150 to 170 days

*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

*Fondis and similar soils:* 65 percent

*Colby and similar soils:* 25 percent

*Minor components:* 10 percent

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

### Description of Fondis

#### Setting

*Landform:* Drainageways

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Silty and/or loamy

**Typical profile**

*H1 - 0 to 5 inches: silt loam*  
*H2 - 5 to 17 inches: clay*  
*H3 - 17 to 60 inches: clay loam*

**Properties and qualities**

*Slope: 3 to 5 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 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: 15 percent*  
*Available water supply, 0 to 60 inches: High (about 10.8 inches)*

**Interpretive groups**

*Land capability classification (irrigated): None specified*  
*Land capability classification (nonirrigated): 3c*  
*Hydrologic Soil Group: C*  
*Ecological site: R049XB202CO - Loamy Foothill*  
*Hydric soil rating: No*

**Description of Colby**

**Setting**

*Landform: Ridges*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Parent material: Fine-loamy eolian deposits and/or fine-silty eolian deposits*

**Typical profile**

*H1 - 0 to 4 inches: silt loam*  
*H2 - 4 to 60 inches: silt loam*

**Properties and qualities**

*Slope: 3 to 5 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 (0.57 to 2.00 in/hr)*  
*Depth to water table: More than 80 inches*  
*Frequency of flooding: None*  
*Frequency of ponding: None*  
*Calcium carbonate, maximum content: 20 percent*  
*Available water supply, 0 to 60 inches: High (about 10.2 inches)*

**Interpretive groups**

*Land capability classification (irrigated): None specified*  
*Land capability classification (nonirrigated): 3c*  
*Hydrologic Soil Group: B*  
*Ecological site: R049XB202CO - Loamy Foothill*  
*Hydric soil rating: No*

**Minor Components**

**Weld**

*Percent of map unit:* 6 percent  
*Hydric soil rating:* No

**Ft collins**

*Percent of map unit:* 4 percent  
*Hydric soil rating:* No

**Gr—Gravelly land**

**Map Unit Setting**

*National map unit symbol:* 34yn  
*Elevation:* 4,700 to 6,200 feet  
*Mean annual precipitation:* 12 to 14 inches  
*Mean annual air temperature:* 46 to 52 degrees F  
*Frost-free period:* 150 to 170 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Gravelly land:* 83 percent  
*Minor components:* 17 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Gravelly Land**

**Setting**

*Landform:* Drainageways, hills  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Sandy or gravelly loamy

**Typical profile**

*H1 - 0 to 4 inches:* very gravelly sandy loam  
*H2 - 4 to 60 inches:* very gravelly sand

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* A  
*Hydric soil rating:* No

**Minor Components**

**Thedalund**

*Percent of map unit:* 10 percent  
*Hydric soil rating:* No

**Ascalon**

*Percent of map unit: 7 percent*

*Hydric soil rating: No*

**Lv—Loamy alluvial land**

**Map Unit Setting**

*National map unit symbol: 34yt*

*Elevation: 4,000 to 6,000 feet*

*Mean annual precipitation: 11 to 15 inches*

*Mean annual air temperature: 48 to 52 degrees F*

*Frost-free period: 135 to 165 days*

*Farmland classification: Not prime farmland*

**Map Unit Composition**

*Loamy alluvial land: 85 percent*

*Minor components: 15 percent*

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

**Description of Loamy Alluvial Land**

**Setting**

*Landform: Flood plains, drainageways, streams*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Loamy alluvium*

**Typical profile**

*H1 - 0 to 6 inches: loam*

*H2 - 6 to 60 inches: stratified loam to clay loam*

**Properties and qualities**

*Slope: 0 to 3 percent*

*Drainage class: Well drained*

*Runoff class: Low*

*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high  
(0.20 to 2.00 in/hr)*

*Frequency of flooding: Occasional*

*Calcium carbonate, maximum content: 15 percent*

*Gypsum, maximum content: 1 percent*

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

*Available water supply, 0 to 60 inches: High (about 10.7 inches)*

**Interpretive groups**

*Land capability classification (irrigated): 2w*

*Land capability classification (nonirrigated): 6w*

*Hydrologic Soil Group: B*

*Ecological site: R067BY036CO - Overflow*

*Hydric soil rating: No*



### Minor Components

#### Nunn

*Percent of map unit:* 10 percent  
*Hydric soil rating:* No

#### Satanta

*Percent of map unit:* 5 percent  
*Landform:* Paleoterraces  
*Hydric soil rating:* No

### NIB—Nunn loam, 1 to 3 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2tln2  
*Elevation:* 3,900 to 6,250 feet  
*Mean annual precipitation:* 13 to 16 inches  
*Mean annual air temperature:* 46 to 54 degrees F  
*Frost-free period:* 135 to 160 days  
*Farmland classification:* Prime farmland if irrigated

#### Map Unit Composition

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

#### Description of Nunn

##### Setting

*Landform:* Terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Pleistocene aged alluvium and/or eolian deposits

##### Typical profile

*Ap - 0 to 6 inches:* loam  
*Bt1 - 6 to 10 inches:* clay loam  
*Bt2 - 10 to 26 inches:* clay loam  
*Btk - 26 to 31 inches:* clay loam  
*Bk1 - 31 to 47 inches:* loam  
*Bk2 - 47 to 80 inches:* loam

##### Properties and qualities

*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

## Custom Soil Resource Report

*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 7 percent  
*Maximum salinity:* Nonsaline (0.1 to 1.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 0.5  
*Available water supply, 0 to 60 inches:* High (about 9.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* R067BY002CO - Loamy Plains  
*Hydric soil rating:* No

### Minor Components

#### Wages

*Percent of map unit:* 8 percent  
*Landform:* Alluvial fans, terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R067BY002CO - Loamy Plains  
*Hydric soil rating:* No

#### Fort collins

*Percent of map unit:* 5 percent  
*Landform:* Terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R067BY002CO - Loamy Plains  
*Hydric soil rating:* No

#### Haverson, very rarely flooded

*Percent of map unit:* 2 percent  
*Landform:* Alluvial fans, drainageways, terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear, concave  
*Ecological site:* R067BY036CO - Overflow  
*Hydric soil rating:* No

## RhD—Renohill-Buick loams, 3 to 9 percent slopes

### Map Unit Setting

*National map unit symbol:* 34z0  
*Elevation:* 3,600 to 6,200 feet  
*Mean annual precipitation:* 11 to 16 inches  
*Mean annual air temperature:* 45 to 48 degrees F

## Custom Soil Resource Report

*Frost-free period:* 100 to 170 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Renohill and similar soils:* 65 percent

*Buick and similar soils:* 25 percent

*Minor components:* 10 percent

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

### Description of Renohill

#### Setting

*Landform:* Drainageways

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Loam silty and clayey alluvium

#### Typical profile

*H1 - 0 to 4 inches:* loam

*H2 - 4 to 18 inches:* clay

*H3 - 18 to 30 inches:* clay loam

*H4 - 30 to 34 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 3 to 9 percent

*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock

*Drainage class:* Well drained

*Runoff class:* Medium

*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:* 15 percent

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

*Available water supply, 0 to 60 inches:* Low (about 5.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* D

*Ecological site:* R067BY002CO - Loamy Plains

*Hydric soil rating:* No

### Description of Buick

#### Setting

*Landform:* Ridges

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium and/or eolian deposits

#### Typical profile

*H1 - 0 to 4 inches:* loam

*H2 - 4 to 20 inches:* clay loam

*H3 - 20 to 60 inches:* sandy clay loam

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 3 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Available water supply, 0 to 60 inches:* High (about 10.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4c  
*Hydrologic Soil Group:* C  
*Ecological site:* R067BY002CO - Loamy Plains  
*Hydric soil rating:* No

### Minor Components

#### Fondis

*Percent of map unit:* 5 percent  
*Hydric soil rating:* No

#### Litle

*Percent of map unit:* 5 percent  
*Hydric soil rating:* No

## Su—Sandy alluvial land

### Map Unit Setting

*National map unit symbol:* 34zc  
*Elevation:* 2,500 to 4,500 feet  
*Mean annual precipitation:* 10 to 14 inches  
*Mean annual air temperature:* 48 to 52 degrees F  
*Frost-free period:* 110 to 160 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Sandy alluvial land:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Sandy Alluvial Land

#### Setting

*Landform:* Streams, drainageways

## Custom Soil Resource Report

*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Sandy alluvium and/or loamy alluvium

### Typical profile

*H1 - 0 to 10 inches:* sand  
*H2 - 10 to 60 inches:* fine sand

### Properties and qualities

*Slope:* 0 to 2 percent  
*Drainage class:* Somewhat excessively drained  
*Runoff class:* Very low  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 19.98 in/hr)  
*Frequency of flooding:* Frequent  
*Calcium carbonate, maximum content:* 10 percent  
*Available water supply, 0 to 60 inches:* Low (about 4.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* A  
*Hydric soil rating:* No

### Minor Components

#### Bresser

*Percent of map unit:* 5 percent  
*Hydric soil rating:* No

## SwE—Stapleton sandy loam, 9 to 30 percent slopes

### Map Unit Setting

*National map unit symbol:* 34zf  
*Elevation:* 4,700 to 6,200 feet  
*Mean annual precipitation:* 15 to 16 inches  
*Mean annual air temperature:* 46 to 48 degrees F  
*Frost-free period:* 150 to 170 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Stapleton and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Stapleton

#### Setting

*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Arkosic sandstone

**Typical profile**

*H1 - 0 to 8 inches: sandy loam*  
*H2 - 8 to 16 inches: sandy loam*  
*H3 - 16 to 25 inches: sandy loam*  
*H4 - 25 to 29 inches: unweathered bedrock*

**Properties and qualities**

*Slope: 9 to 30 percent*  
*Depth to restrictive feature: 20 to 40 inches to lithic bedrock*  
*Drainage class: Well drained*  
*Runoff class: High*  
*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*  
*Available water supply, 0 to 60 inches: Very low (about 2.8 inches)*

**Interpretive groups**

*Land capability classification (irrigated): None specified*  
*Land capability classification (nonirrigated): 6e*  
*Hydrologic Soil Group: B*  
*Ecological site: R067BY056CO - Sandstone Breaks*  
*Hydric soil rating: No*

**Minor Components**

**Bresser**

*Percent of map unit: 5 percent*  
*Hydric soil rating: No*

**Truckton**

*Percent of map unit: 3 percent*  
*Hydric soil rating: No*

**Sandy alluvial land**

*Percent of map unit: 2 percent*  
*Hydric soil rating: No*

**WrB—Weld-Deertrail silt loams, 0 to 3 percent slopes**

**Map Unit Setting**

*National map unit symbol: 34zv*  
*Elevation: 3,600 to 6,200 feet*  
*Mean annual precipitation: 13 to 17 inches*  
*Mean annual air temperature: 46 to 55 degrees F*  
*Frost-free period: 100 to 170 days*  
*Farmland classification: Not prime farmland*

**Map Unit Composition**

*Weld and similar soils: 60 percent*

## Custom Soil Resource Report

*Deertrail and similar soils: 25 percent*

*Minor components: 15 percent*

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

### Description of Weld

#### Setting

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Loam silty and clayey eolian deposits*

#### Typical profile

*H1 - 0 to 5 inches: silt loam*

*H2 - 5 to 14 inches: silty clay*

*H3 - 14 to 26 inches: silty clay loam*

*H4 - 26 to 60 inches: silt loam*

#### Properties and qualities

*Slope: 0 to 3 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 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: 6 percent*

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

*Available water supply, 0 to 60 inches: High (about 9.7 inches)*

#### Interpretive groups

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 3c*

*Hydrologic Soil Group: C*

*Ecological site: R067BY002CO - Loamy Plains*

*Hydric soil rating: No*

### Description of Deertrail

#### Setting

*Landform: Depressions*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

#### Typical profile

*H1 - 0 to 2 inches: silt loam*

*H2 - 2 to 9 inches: clay*

*H3 - 9 to 12 inches: silty clay*

*H4 - 12 to 32 inches: silty clay loam*

*H5 - 32 to 60 inches: silt loam*

#### Properties and qualities

*Slope: 0 to 3 percent*

*Depth to restrictive feature: More than 80 inches*

*Drainage class: Well drained*

*Runoff class: Low*

## 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:* 15 percent

*Gypsum, maximum content:* 2 percent

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

*Sodium adsorption ratio, maximum:* 35.0

*Available water supply, 0 to 60 inches:* High (about 10.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4s

*Hydrologic Soil Group:* C

*Ecological site:* R067BY047CO - Alkaline Plains

*Hydric soil rating:* No

### Minor Components

#### Heldt

*Percent of map unit:* 7 percent

*Hydric soil rating:* No

#### Colby

*Percent of map unit:* 6 percent

*Hydric soil rating:* No

#### Adena

*Percent of map unit:* 2 percent

*Hydric soil rating:* No

## Wt—Wet alluvial land

### Map Unit Setting

*National map unit symbol:* 34zw

*Elevation:* 3,500 to 4,500 feet

*Mean annual precipitation:* 13 to 17 inches

*Mean annual air temperature:* 46 to 55 degrees F

*Frost-free period:* 110 to 165 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Wet alluvial land:* 75 percent

*Minor components:* 25 percent

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



## **Description of Wet Alluvial Land**

### **Setting**

*Landform:* Flood plains, streams

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Sandy alluvium and/or loamy alluvium

### **Typical profile**

*H1 - 0 to 60 inches:* variable

### **Properties and qualities**

*Slope:* 0 to 2 percent

*Drainage class:* Poorly drained

*Runoff class:* Very high

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.20 to 6.00 in/hr)

*Depth to water table:* About 0 to 24 inches

*Frequency of flooding:* Occasional

### **Interpretive groups**

*Land capability classification (irrigated):* 6w

*Land capability classification (nonirrigated):* 6w

*Hydrologic Soil Group:* D

*Ecological site:* R067BY038CO - Wet Meadow

*Hydric soil rating:* Yes

## **Minor Components**

### **Heldt**

*Percent of map unit:* 10 percent

*Hydric soil rating:* No

### **Edgewater**

*Percent of map unit:* 10 percent

*Hydric soil rating:* No

### **Loamy alluvial land**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

## Castle Rock Area, Colorado

### BrD—Bresser sandy loam, cool, 5 to 9 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2tlpk  
*Elevation:* 5,500 to 6,960 feet  
*Mean annual precipitation:* 15 to 19 inches  
*Mean annual air temperature:* 48 to 52 degrees F  
*Frost-free period:* 100 to 130 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

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

#### Description of Bresser, Cool

##### Setting

*Landform:* Interfluves  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Tertiary aged alluvium derived from arkose

##### Typical profile

*Ap - 0 to 5 inches:* sandy loam  
*Bt1 - 5 to 8 inches:* sandy loam  
*Bt2 - 8 to 27 inches:* sandy clay loam  
*Bt3 - 27 to 36 inches:* sandy loam  
*C - 36 to 80 inches:* loamy coarse sand

##### Properties and qualities

*Slope:* 5 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.60 to 6.00 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 (0.1 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 5.4 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* R049XB210CO - Sandy Foothill  
*Hydric soil rating:* No

## Minor Components

### Ascalon

*Percent of map unit:* 10 percent  
*Landform:* Interfluves  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R049XB210CO - Sandy Foothill  
*Hydric soil rating:* No

### Truckton

*Percent of map unit:* 5 percent  
*Landform:* Interfluves  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R049XB210CO - Sandy Foothill  
*Hydric soil rating:* No

## BtE—Bresser-Truckton sandy loams, 5 to 25 percent slopes

### Map Unit Setting

*National map unit symbol:* jqy9  
*Elevation:* 5,500 to 6,600 feet  
*Mean annual precipitation:* 15 to 19 inches  
*Mean annual air temperature:* 47 to 52 degrees F  
*Frost-free period:* 120 to 135 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Bresser and similar soils:* 50 percent  
*Truckton and similar soils:* 35 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Bresser

#### Setting

*Landform:* Terraces  
*Landform position (three-dimensional):* Riser, tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Sandy eolian deposits

#### Typical profile

*H1 - 0 to 8 inches:* sandy loam  
*H2 - 8 to 30 inches:* sandy clay loam

## Custom Soil Resource Report

*H3 - 30 to 60 inches: loamy sand*

### Properties and qualities

*Slope: 5 to 15 percent*

*Depth to restrictive feature: More than 80 inches*

*Drainage class: Well drained*

*Runoff class: Medium*

*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)*

*Depth to water table: More than 80 inches*

*Frequency of flooding: None*

*Frequency of ponding: None*

*Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)*

### Interpretive groups

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 6e*

*Hydrologic Soil Group: B*

*Ecological site: R049XB210CO - Sandy Foothill*

*Hydric soil rating: No*

## Description of Truckton

### Setting

*Landform: Terraces*

*Landform position (three-dimensional): Riser, tread*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Alluvium derived from arkosic sedimentary rock*

### Typical profile

*H1 - 0 to 4 inches: sandy loam*

*H2 - 4 to 19 inches: sandy loam*

*H3 - 19 to 60 inches: sandy loam*

### Properties and qualities

*Slope: 10 to 25 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): High (2.00 to 6.00 in/hr)*

*Depth to water table: More than 80 inches*

*Frequency of flooding: None*

*Frequency of ponding: None*

*Available water supply, 0 to 60 inches: Low (about 6.0 inches)*

### Interpretive groups

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 6e*

*Hydrologic Soil Group: A*

*Ecological site: R049XB210CO - Sandy Foothill*

*Hydric soil rating: No*

## Minor Components

### Newlin

*Percent of map unit: 5 percent*

*Hydric soil rating:* No

**Blakeland**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

**Stapleton**

*Percent of map unit:* 4 percent

*Hydric soil rating:* No

**Aquic haplustolls**

*Percent of map unit:* 1 percent

*Landform:* Swales

*Hydric soil rating:* Yes

**KuD—Kutch clay loam, 4 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol:* jqz6

*Elevation:* 5,500 to 6,800 feet

*Mean annual precipitation:* 15 to 19 inches

*Mean annual air temperature:* 47 to 50 degrees F

*Frost-free period:* 120 to 135 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Kutch and similar soils:* 85 percent

*Minor components:* 15 percent

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

**Description of Kutch**

**Setting**

*Landform:* Hills, mesas, erosion remnants

*Landform position (three-dimensional):* Crest

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Calcareous fine-loamy clayey shale

**Typical profile**

*H1 - 0 to 6 inches:* clay loam

*H2 - 6 to 32 inches:* clay

*H3 - 32 to 36 inches:* weathered bedrock

**Properties and qualities**

*Slope:* 4 to 8 percent

*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock

*Drainage class:* Well drained

*Runoff class:* High

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

## Custom Soil Resource Report

*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Gypsum, maximum content:* 2 percent  
*Maximum salinity:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Moderate (about 6.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* D  
*Ecological site:* R049XB208CO - Clayey Foothill  
*Hydric soil rating:* No

### Minor Components

#### Fondis

*Percent of map unit:* 7 percent  
*Hydric soil rating:* No

#### Loamy alluvial land

*Percent of map unit:* 7 percent  
*Hydric soil rating:* No

#### Aquic haplustolls

*Percent of map unit:* 1 percent  
*Landform:* Swales  
*Hydric soil rating:* Yes

## St—Stapleton-Bresser association

### Map Unit Setting

*National map unit symbol:* jr09  
*Elevation:* 5,500 to 6,600 feet  
*Mean annual precipitation:* 15 to 19 inches  
*Mean annual air temperature:* 49 to 51 degrees F  
*Frost-free period:* 120 to 135 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Stapleton and similar soils:* 60 percent  
*Bresser and similar soils:* 25 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Stapleton

#### Setting

*Landform:* Ridges, knobs, valley sides  
*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Linear

*Parent material:* Weathered alluvium derived from arkose

### Typical profile

*H1 - 0 to 7 inches:* sandy loam

*H2 - 7 to 16 inches:* sandy loam

*H3 - 16 to 60 inches:* gravelly sandy loam

### Properties and qualities

*Slope:* 8 to 30 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 6.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Low (about 5.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* A

*Ecological site:* R049XB210CO - Sandy Foothill

*Hydric soil rating:* No

## Description of Bresser

### Setting

*Landform:* Valley sides

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Sandy alluvium and/or sandy eolian deposits

### Typical profile

*H1 - 0 to 8 inches:* sandy loam

*H2 - 8 to 30 inches:* sandy clay loam

*H3 - 30 to 60 inches:* loamy sand

### Properties and qualities

*Slope:* 8 to 15 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.20 to 2.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 7.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* B

*Ecological site:* R049XB210CO - Sandy Foothill

*Hydric soil rating:* No

**Minor Components**

**Loamy alluvial land**

*Percent of map unit: 14 percent*

*Hydric soil rating: No*

**Aquic haplustolls**

*Percent of map unit: 1 percent*

*Landform: Swales*

*Hydric soil rating: Yes*



## Elbert County, Colorado, Western Part

### 5—Bresser sandy loam, 0 to 4 percent slopes

#### Map Unit Setting

*National map unit symbol:* jnl4  
*Elevation:* 5,300 to 6,400 feet  
*Mean annual precipitation:* 14 to 17 inches  
*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Bresser and similar soils:* 80 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Bresser

##### Setting

*Landform:* Ridges, hills  
*Landform position (three-dimensional):* Side slope, crest  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium and/or arkosic residuum weathered from sedimentary rock

##### Typical profile

*H1 - 0 to 7 inches:* sandy loam  
*H2 - 7 to 20 inches:* sandy clay loam  
*H3 - 20 to 29 inches:* sandy loam  
*H4 - 29 to 60 inches:* very gravelly loamy coarse sand

##### Properties and qualities

*Slope:* 0 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:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 10 percent  
*Available water supply, 0 to 60 inches:* Low (about 5.7 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Ecological site:* R049XB210CO - Sandy Foothill  
*Hydric soil rating:* No

#### Minor Components

##### Ascalon

*Percent of map unit:* 10 percent  
*Hydric soil rating:* No

**Truckton**

*Percent of map unit:* 5 percent  
*Hydric soil rating:* No

**Weld**

*Percent of map unit:* 4 percent  
*Hydric soil rating:* No

**Aquic haplustoll**

*Percent of map unit:* 1 percent  
*Landform:* Terraces  
*Hydric soil rating:* Yes

**6—Bresser sandy loam, cool, 5 to 9 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2tlpk  
*Elevation:* 5,500 to 6,960 feet  
*Mean annual precipitation:* 15 to 19 inches  
*Mean annual air temperature:* 48 to 52 degrees F  
*Frost-free period:* 100 to 130 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

**Description of Bresser, Cool**

**Setting**

*Landform:* Interfluves  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Tertiary aged alluvium derived from arkose

**Typical profile**

*Ap - 0 to 5 inches:* sandy loam  
*Bt1 - 5 to 8 inches:* sandy loam  
*Bt2 - 8 to 27 inches:* sandy clay loam  
*Bt3 - 27 to 36 inches:* sandy loam  
*C - 36 to 80 inches:* loamy coarse sand

**Properties and qualities**

*Slope:* 5 to 9 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium

## Custom Soil Resource Report

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
(0.60 to 6.00 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 (0.1 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Low (about 5.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* B

*Ecological site:* R049XB210CO - Sandy Foothill

*Hydric soil rating:* No

### Minor Components

#### Ascalon

*Percent of map unit:* 10 percent

*Landform:* Interfluves

*Landform position (two-dimensional):* Shoulder

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* R049XB210CO - Sandy Foothill

*Hydric soil rating:* No

#### Truckton

*Percent of map unit:* 5 percent

*Landform:* Interfluves

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* R049XB210CO - Sandy Foothill

*Hydric soil rating:* No

## 8—Bresser-Stapleton sandy loams, 8 to 25 percent slopes

### Map Unit Setting

*National map unit symbol:* jnl7

*Elevation:* 5,300 to 6,400 feet

*Mean annual precipitation:* 14 to 17 inches

*Frost-free period:* 120 to 155 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Bresser and similar soils:* 50 percent

*Stapleton and similar soils:* 25 percent

## Custom Soil Resource Report

*Minor components: 25 percent*

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

### Description of Bresser

#### Setting

*Landform:* Valley sides, ridges, hills

*Landform position (two-dimensional):* Backslope, footslope

*Landform position (three-dimensional):* Side slope, crest

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium and/or arkosic residuum weathered from sedimentary rock

#### Typical profile

*H1 - 0 to 7 inches:* sandy loam

*H2 - 7 to 20 inches:* sandy clay loam

*H3 - 20 to 29 inches:* sandy loam

*H4 - 29 to 60 inches:* very gravelly loamy coarse sand

#### Properties and qualities

*Slope:* 8 to 20 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Medium

*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:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 10 percent

*Available water supply, 0 to 60 inches:* Low (about 5.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 6e

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* B

*Ecological site:* R049XB210CO - Sandy Foothill

*Hydric soil rating:* No

### Description of Stapleton

#### Setting

*Landform:* Hills, ridges, valley sides

*Landform position (two-dimensional):* Backslope, footslope

*Landform position (three-dimensional):* Side slope, crest

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium and/or arkosic residuum weathered from sedimentary rock

#### Typical profile

*H1 - 0 to 37 inches:* sandy loam

*H2 - 37 to 60 inches:* gravelly loamy coarse sand

#### Properties and qualities

*Slope:* 8 to 25 percent

*Depth to restrictive feature:* More than 80 inches

## Custom Soil Resource Report

*Drainage class:* Well 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:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Low (about 5.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* B

*Ecological site:* R049XB210CO - Sandy Foothill

*Hydric soil rating:* No

### Minor Components

#### Other soils

*Percent of map unit:* 10 percent

*Hydric soil rating:* No

#### Cushman

*Percent of map unit:* 7 percent

*Hydric soil rating:* No

#### Weld

*Percent of map unit:* 6 percent

*Hydric soil rating:* No

#### Aquic haplustoll

*Percent of map unit:* 2 percent

*Landform:* Swales

*Hydric soil rating:* Yes

## 9—Bresser-Truckton sandy loams, 8 to 25 percent slopes

### Map Unit Setting

*National map unit symbol:* jnl8

*Elevation:* 5,300 to 6,400 feet

*Mean annual precipitation:* 14 to 17 inches

*Frost-free period:* 125 to 180 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Bresser and similar soils:* 45 percent

*Truckton and similar soils:* 35 percent

*Minor components:* 20 percent

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

## Description of Bresser

### Setting

*Landform:* Valley sides, ridges, hills

*Landform position (two-dimensional):* Backslope, footslope

*Landform position (three-dimensional):* Side slope, crest

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium and/or arkosic residuum weathered from sedimentary rock

### Typical profile

*H1 - 0 to 7 inches:* sandy loam

*H2 - 7 to 20 inches:* sandy clay loam

*H3 - 20 to 29 inches:* sandy loam

*H4 - 29 to 60 inches:* very gravelly loamy coarse sand

### Properties and qualities

*Slope:* 8 to 20 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Medium

*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:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 10 percent

*Available water supply, 0 to 60 inches:* Low (about 5.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* 6e

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* B

*Ecological site:* R049XB210CO - Sandy Foothill

*Hydric soil rating:* No

## Description of Truckton

### Setting

*Landform:* Hills, ridges, valley sides

*Landform position (two-dimensional):* Backslope, footslope

*Landform position (three-dimensional):* Side slope, crest

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium and/or arkosic residuum weathered from sedimentary rock

### Typical profile

*H1 - 0 to 5 inches:* sandy loam

*H2 - 5 to 15 inches:* sandy loam

*H3 - 15 to 60 inches:* sandy loam

### Properties and qualities

*Slope:* 8 to 25 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

## Custom Soil Resource Report

*Runoff class:* Low

*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Low (about 5.8 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* B

*Ecological site:* R049XB210CO - Sandy Foothill

*Hydric soil rating:* No

### **Minor Components**

#### **Ascalon**

*Percent of map unit:* 8 percent

*Hydric soil rating:* No

#### **Cushman**

*Percent of map unit:* 7 percent

*Hydric soil rating:* No

#### **Kutch**

*Percent of map unit:* 4 percent

*Hydric soil rating:* No

#### **Aquic haplustoll**

*Percent of map unit:* 1 percent

*Landform:* Swales

*Hydric soil rating:* Yes

## **19—Ellicott loamy coarse sand, 0 to 4 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* jnk5

*Elevation:* 5,300 to 6,800 feet

*Mean annual precipitation:* 14 to 19 inches

*Frost-free period:* 130 to 140 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Ellicott and similar soils:* 90 percent

*Minor components:* 10 percent

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

## Description of Ellicott

### Setting

*Landform:* Flood plains, stream terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Noncalcareous, arkosic sandy alluvium

### Typical profile

*H1 - 0 to 7 inches:* loamy coarse sand

*H2 - 7 to 60 inches:* stratified coarse sand to sandy loam

### Properties and qualities

*Slope:* 0 to 4 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Somewhat excessively drained

*Runoff class:* Very 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:* Frequent

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Low (about 4.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7w

*Hydrologic Soil Group:* A

*Ecological site:* R049XY031CO - Sandy Bottomland

*Hydric soil rating:* No

## Minor Components

### Haplustolls

*Percent of map unit:* 6 percent

*Hydric soil rating:* No

### Psammaquentic haplustoll

*Percent of map unit:* 4 percent

*Landform:* Terraces

*Hydric soil rating:* Yes

## 20—Englewood clay loam, 0 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* jnk7

*Elevation:* 6,000 to 6,800 feet

*Mean annual precipitation:* 14 to 17 inches

*Farmland classification:* Prime farmland if irrigated



**Map Unit Composition**

*Englewood and similar soils: 90 percent*

*Minor components: 10 percent*

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

**Description of Englewood**

**Setting**

*Landform: Valley sides, alluvial fans, hills*

*Landform position (two-dimensional): Toeslope*

*Landform position (three-dimensional): Side slope*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Clayey alluvium*

**Typical profile**

*H1 - 0 to 4 inches: clay loam*

*H2 - 4 to 40 inches: clay*

*H3 - 40 to 60 inches: clay loam*

**Properties and qualities**

*Slope: 0 to 4 percent*

*Depth to restrictive feature: More than 80 inches*

*Drainage class: Well drained*

*Runoff class: Medium*

*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: 15 percent*

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

*Available water supply, 0 to 60 inches: High (about 9.3 inches)*

**Interpretive groups**

*Land capability classification (irrigated): 2e*

*Land capability classification (nonirrigated): 3e*

*Hydrologic Soil Group: C*

*Ecological site: R049XB208CO - Clayey Foothill*

*Hydric soil rating: No*

**Minor Components**

**Bresser**

*Percent of map unit: 5 percent*

*Hydric soil rating: No*

**Fluvaquentic haplustoll**

*Percent of map unit: 4 percent*

*Landform: Terraces*

*Hydric soil rating: Yes*

**Other soils**

*Percent of map unit: 1 percent*

*Hydric soil rating: No*

## 22—Haplustolls, moderately coarse, nearly level\*

### Map Unit Setting

*National map unit symbol:* jnk9  
*Elevation:* 5,000 to 7,400 feet  
*Mean annual precipitation:* 8 to 17 inches  
*Mean annual air temperature:* 46 to 52 degrees F  
*Frost-free period:* 100 to 160 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Haplustolls, moderately coarse, nearly level, and similar soils:* 70 percent  
*Minor components:* 30 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Haplustolls, Moderately Coarse, Nearly Level

#### Setting

*Landform:* Flood plains, stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Noncalcareous alluvium

#### Typical profile

*H1 - 0 to 6 inches:* variable  
*H2 - 6 to 60 inches:* stratified sandy loam to very gravelly sand

#### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Somewhat excessively drained  
*Runoff class:* Very low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to very high (0.20 to 20.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Occasional  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 5 percent  
*Available water supply, 0 to 60 inches:* Very low (about 2.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* A  
*Ecological site:* R067BY031CO - Sandy Bottomland  
*Hydric soil rating:* No

### Minor Components

#### Bresser

*Percent of map unit:* 13 percent

*Hydric soil rating:* No

#### Fluvaquents

*Percent of map unit:* 7 percent

*Landform:* Terraces

*Hydric soil rating:* Yes

#### Ellicott

*Percent of map unit:* 7 percent

*Hydric soil rating:* No

#### Other soils

*Percent of map unit:* 3 percent

*Hydric soil rating:* No

## 23—Haplustolls, loamy, nearly level\*

### Map Unit Setting

*National map unit symbol:* jnkb

*Elevation:* 5,000 to 7,000 feet

*Mean annual precipitation:* 12 to 15 inches

*Mean annual air temperature:* 46 to 48 degrees F

*Frost-free period:* 90 to 120 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Haplustolls, loamy, nearly level, and similar soils:* 75 percent

*Minor components:* 25 percent

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

### Description of Haplustolls, Loamy, Nearly Level

#### Setting

*Landform:* Fans, stream terraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Nonclacareous loamy alluvium

#### Typical profile

*H1 - 0 to 6 inches:* clay loam

*H2 - 6 to 60 inches:* sand

#### Properties and qualities

*Slope:* 0 to 1 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Moderately well drained

*Runoff class:* High

## Custom Soil Resource Report

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)

*Depth to water table:* About 12 to 36 inches

*Frequency of flooding:* Occasional

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 5 percent

*Gypsum, maximum content:* 1 percent

*Maximum salinity:* Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 2.0

*Available water supply, 0 to 60 inches:* Low (about 3.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7w

*Hydrologic Soil Group:* D

*Ecological site:* R067BY036CO - Overflow

*Hydric soil rating:* No

### Minor Components

#### Nunn

*Percent of map unit:* 11 percent

*Hydric soil rating:* No

#### Fluvaquent

*Percent of map unit:* 9 percent

*Landform:* Terraces

*Hydric soil rating:* Yes

#### Bresser

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

## 32—Nunn clay loam, 0 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* 2tlpq

*Elevation:* 5,450 to 6,430 feet

*Mean annual precipitation:* 15 to 19 inches

*Mean annual air temperature:* 48 to 52 degrees F

*Frost-free period:* 100 to 130 days

*Farmland classification:* Prime farmland if irrigated

### Map Unit Composition

*Nunn and similar soils:* 85 percent

*Minor components:* 15 percent

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

## Description of Nunn

### Setting

*Landform:* Terraces, pediments  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*A - 0 to 6 inches:* clay loam  
*Bt - 6 to 18 inches:* clay  
*Btk - 18 to 30 inches:* clay  
*Bk - 30 to 47 inches:* clay loam  
*BCK - 47 to 80 inches:* clay loam

### Properties and qualities

*Slope:* 0 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*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:* 7 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.1 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 0.5  
*Available water supply, 0 to 60 inches:* High (about 9.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 3e  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C  
*Ecological site:* R049XB208CO - Clayey Foothill  
*Hydric soil rating:* No

## Minor Components

### Heldt

*Percent of map unit:* 10 percent  
*Landform:* Terraces, pediments  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R049XB208CO - Clayey Foothill  
*Hydric soil rating:* No

### Englewood

*Percent of map unit:* 5 percent  
*Landform:* Terraces, pediments  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* R049XB208CO - Clayey Foothill

*Hydric soil rating:* No

### **38—Renohill clay loam, 4 to 8 percent slopes**

#### **Map Unit Setting**

*National map unit symbol:* jnk<sub>v</sub>

*Elevation:* 5,300 to 6,400 feet

*Mean annual precipitation:* 14 to 17 inches

*Farmland classification:* Not prime farmland

#### **Map Unit Composition**

*Renohill and similar soils:* 80 percent

*Minor components:* 20 percent

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

#### **Description of Renohill**

##### **Setting**

*Landform:* Ridges, hills

*Landform position (three-dimensional):* Side slope, crest

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Residuum weathered from sandstone and shale

##### **Typical profile**

*H1 - 0 to 2 inches:* clay loam

*H2 - 2 to 14 inches:* clay

*H3 - 14 to 24 inches:* clay loam

*H4 - 24 to 28 inches:* unweathered bedrock

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

*Slope:* 4 to 8 percent

*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock

*Drainage class:* Well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* 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:* 15 percent

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

*Available water supply, 0 to 60 inches:* Low (about 4.2 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* 4e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* C

*Ecological site:* R049XB208CO - Clayey Foothill

*Hydric soil rating:* No

### Minor Components

#### Kutch

*Percent of map unit:* 6 percent

*Hydric soil rating:* No

#### Cushman

*Percent of map unit:* 6 percent

*Hydric soil rating:* No

#### Wiley

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

#### Baca

*Percent of map unit:* 3 percent

*Hydric soil rating:* No

## 41—Truckton sandy loam, 3 to 9 percent slopes

### Map Unit Setting

*National map unit symbol:* 2x0j2

*Elevation:* 5,300 to 6,850 feet

*Mean annual precipitation:* 14 to 19 inches

*Mean annual air temperature:* 48 to 52 degrees F

*Frost-free period:* 85 to 155 days

*Farmland classification:* Not prime farmland

### Map Unit Composition

*Truckton and similar soils:* 85 percent

*Minor components:* 15 percent

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

### Description of Truckton

#### Setting

*Landform:* Interfluves, hillslopes

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Re-worked alluvium derived from arkose

#### Typical profile

*A - 0 to 4 inches:* sandy loam

*Bt1 - 4 to 12 inches:* sandy loam

*Bt2 - 12 to 19 inches:* sandy loam

*C - 19 to 80 inches:* sandy loam

#### Properties and qualities

*Slope:* 3 to 9 percent

## Custom Soil Resource Report

*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):* High (2.00 to 6.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline (0.1 to 1.9 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Moderate (about 6.6 inches)

### Interpretive groups

*Land capability classification (irrigated):* 6e  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* A  
*Ecological site:* R049XB210CO - Sandy Foothill  
*Hydric soil rating:* No

### Minor Components

#### Blakeland

*Percent of map unit:* 8 percent  
*Landform:* Interfluves, hillslopes  
*Landform position (two-dimensional):* Summit, shoulder, backslope  
*Landform position (three-dimensional):* Side slope, crest  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Convex, linear  
*Ecological site:* R049XB210CO - Sandy Foothill  
*Hydric soil rating:* No

#### Bresser

*Percent of map unit:* 7 percent  
*Landform:* Interfluves, low hills  
*Landform position (two-dimensional):* Footslope, toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Concave, linear  
*Ecological site:* R049XB210CO - Sandy Foothill  
*Hydric soil rating:* No

## 43—Weld loam, 0 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* 2x0hz  
*Elevation:* 4,550 to 6,900 feet  
*Mean annual precipitation:* 13 to 20 inches  
*Mean annual air temperature:* 45 to 52 degrees F  
*Frost-free period:* 115 to 155 days  
*Farmland classification:* Prime farmland if irrigated



### Map Unit Composition

*Weld and similar soils:* 85 percent

*Minor components:* 15 percent

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

### Description of Weld

#### Setting

*Landform:* Interfluves

*Landform position (two-dimensional):* Summit

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Calcareous loess

#### Typical profile

*Ap - 0 to 8 inches:* loam

*Bt1 - 8 to 12 inches:* clay

*Bt2 - 12 to 15 inches:* clay loam

*Btk - 15 to 28 inches:* loam

*Bk - 28 to 60 inches:* silt loam

*C - 60 to 80 inches:* silt loam

#### Properties and qualities

*Slope:* 0 to 4 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Medium

*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:* 14 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.1 to 2.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 5.0

*Available water supply, 0 to 60 inches:* High (about 11.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 3c

*Land capability classification (nonirrigated):* 3c

*Hydrologic Soil Group:* C

*Ecological site:* R067BY002CO - Loamy Plains

*Hydric soil rating:* No

### Minor Components

#### Ascalon

*Percent of map unit:* 5 percent

*Landform:* Interfluves

*Landform position (two-dimensional):* Summit, shoulder

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* R067BY002CO - Loamy Plains

*Hydric soil rating:* No

**Wiley**

*Percent of map unit:* 5 percent  
*Landform:* Interfluves  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Ecological site:* R067BY002CO - Loamy Plains  
*Hydric soil rating:* No

**Baca**

*Percent of map unit:* 5 percent  
*Landform:* Interfluves  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Convex, linear  
*Ecological site:* R067BY002CO - Loamy Plains  
*Hydric soil rating:* No

**44—Weld loam, 4 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol:* jnl2  
*Elevation:* 5,300 to 6,400 feet  
*Mean annual precipitation:* 14 to 17 inches  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Weld and similar soils:* 80 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Weld**

**Setting**

*Landform:* Hills  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Silty eolian deposits

**Typical profile**

*H1 - 0 to 5 inches:* loam  
*H2 - 5 to 45 inches:* silty clay  
*H3 - 45 to 60 inches:* clay loam  
*H4 - 60 to 64 inches:* silt loam

**Properties and qualities**

*Slope:* 4 to 8 percent

## Custom Soil Resource Report

*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* High  
*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:* 6 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* High (about 10.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* C  
*Ecological site:* R049XC202CO - Loamy Foothill 14-19 PZ  
*Hydric soil rating:* No

### Minor Components

#### Baca

*Percent of map unit:* 10 percent  
*Hydric soil rating:* No

#### Wiley

*Percent of map unit:* 6 percent  
*Hydric soil rating:* No

#### Bresser

*Percent of map unit:* 3 percent  
*Hydric soil rating:* No

#### Aquic haplustoll

*Percent of map unit:* 1 percent  
*Landform:* Swales  
*Hydric soil rating:* Yes

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## APPENDIX B: CPW-RECOMMENDED SEED MIXES

## Seed Ordering and Mixing Sheet

Cooperator/Project Name CPW mitigation mix for deer, PSTG & GPC

Date 09/10/2024

Tract/Field No

Acres 1

**Requirements for Seed:**

All seed must be of USA or Canada origin. Seed must be mixed and bagged as shown below. Any substitutions for plant species or cultivars must be approved by NRCS. Bulk pounds for each species must be on the seed tag or provided on a separate sheet from the seed dealer.

Common Name	Genus, species	Cultivar	Pounds Pure Live Seed (PLS)
<b>Fluffy Seeds (Bag 1):</b>			
Little bluestem	Schizachyrium scoparium	Pastura, Camper, Cimm., Blaze	0.34
Yellow indiagrass	Sorghastrum nutans	Cheyenne, Holt Llano	0.51
Big bluestem	Andropogon gerardii	Bison, Champ, Kaw, Pawnee	0.44
Blanketflower	Gaillardia aristata		0.22
Fourwing Saltbush	Atriplex canescens		0.40
<b>Large Hard Seeds (Bag 2):</b>			
Green needlegrass	Nassella viridula	Lodorm	0.24
Indian ricegrass	Achnatherum hymenoides	Paloma	0.06
Purple prairie clover	Dalea purpurea purpurea	Kaneb	0.06
Small burnet	Sanguisorba minor	Delar	0.83
Sainfoin	Onobrychis vicifolia	Shoshone	0.70
Skunkbush Sumac	Rhus trilobata		0.70
Winterfat	Krascheninnikovia lanata		0.14
<b>Small Hard Seeds (Bag 3):</b>			
Switchgrass	Panicum virgatum	Blackwell, Neb28, Pathfinder	0.22
Maxmilian sunflower	Helianthus maximilianii	Prairie Gold	0.10
Prairie Coneflower	Ratibida columnifera		0.07
Annual sunflower	Helianthus annuus		0.15
Alfalfa	Medicago sativa	Ladak	0.12
Yellow sweetclover	Melilotus officinale		0.07
Blue flax	Linum perenne	Appar	0.21
Black-eyed Susan	Rudbeckia hirta		0.03
Western Yarrow	Achillea lanulosa		0.02
Rocky mtn. penstemon	Penstemon strictus	Bandera	0.02

## Seed Ordering and Mixing Sheet

Cooperator/Project Name CPW recommended mitigation mix for pronghorn  
Tract/Field No

Date 9/10/2024  
Acres 1

**Requirements for Seed:**

All seed must be of USA or Canada origin. Seed must be mixed and bagged as shown below. Any substitutions for plant species or cultivars must be approved by NRCS. Bulk pounds for each species must be on the seed tag or provided on a separate sheet from the seed dealer.

Common Name	Genus, species	Cultivar	Pounds Pure Live Seed (PLS)
<b>Fluffy Seeds (Bag 1):</b>			
Blanketflower	Gaillardia aristata		0.22
Fourwing Saltbush	Atriplex canescens		0.40
<b>Large Hard Seeds (Bag 2):</b>			
Green needlegrass	Nassella viridula	Lodorm	0.24
Needleandthread	Hesperostipa comata		0.27
Indian ricegrass	Achnatherum hymenoides	Paloma	0.31
Slim-leaf penstemon	Penstemon angustifolius		0.14
Dotted Gayfeather	Liatris punctata		0.14
Tahoka Daisy	Machaeranthera Tanacetifolia		0.11
Sainfoin	Onobrychis vicifolia	Shoshone	1.74
Rocky Mountain Beeplant	Cleome serrulata		0.68
Small burnet	Sanguisorba minor	Delar	1.04
Winterfat	Krascheninnikovia lanata		0.14
Rubber rabbitbrush	Ericameria nauseosa		0.04
<b>Small Hard Seeds (Bag 3):</b>			
Sandberg bluegrass	Poa secunda		0.05
Alfalfa	Medicago sativa	Ladak	0.20
Blue flax	Linum perenne	Appar	0.15
Cicer milkvetch	Astragalus cicer	Lutana, Monarch	0.22
Pale evening primrose	Oenothera pallida		0.07
Prairie Coneflower	Ratibida columnifera		0.05
Prickly poppy	Argemone polyanthemus		0.03
Rocky mtn. penstemon	Penstemon strictus	Bandera	0.09
Scarlet globemallow	Sphaeralcea coccinea		0.09



## APPENDIX C: FACILITY CONTACTS

### FACILITY CONTACTS

COMPANY	TITLE	EMAIL	TELEPHONE
<b>FACILITY OWNER</b>			
GMT EXPLORATION COMPANY	Production and Operations Manager	bjcox@gmtexploration.com	303-586-9274 307-354-8895
GMT EXPLORATION COMPANY	Regulatory Manager	mblair@gmtexploration.com	303-586-9291 720-862-4503
<b>CONSULTANT</b>			
CDH Consultants CDH Consultants	Reclamation Advisor Manager	krabida@cdhconsult.com cshephard@cdhconsult.com	720-391-1442 303-229-7233
<b>RECLAMATION CONTRACTOR</b>			
M&M Excavating	Reclamation Contractor		970-352-5220
JOMAX Construction	Reclamation Contractor		970-702-7540
Crossenergy	Reclamation Contractor		970-388-4032