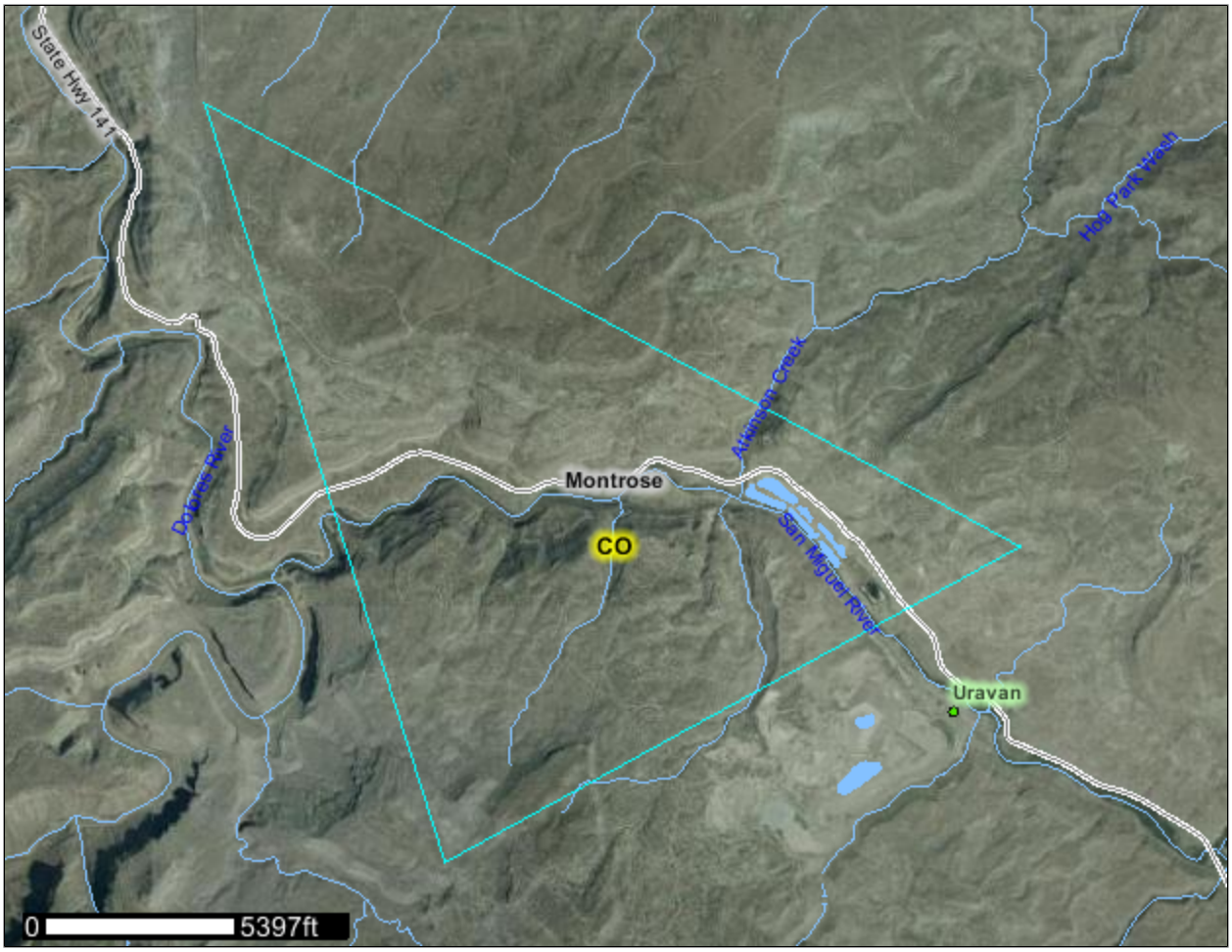
United States Department of Agriculture

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 San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties

Cross Section through Uravan Lease Tracts (Part 1)



January 10, 2012

Preface

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://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

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 Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

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.

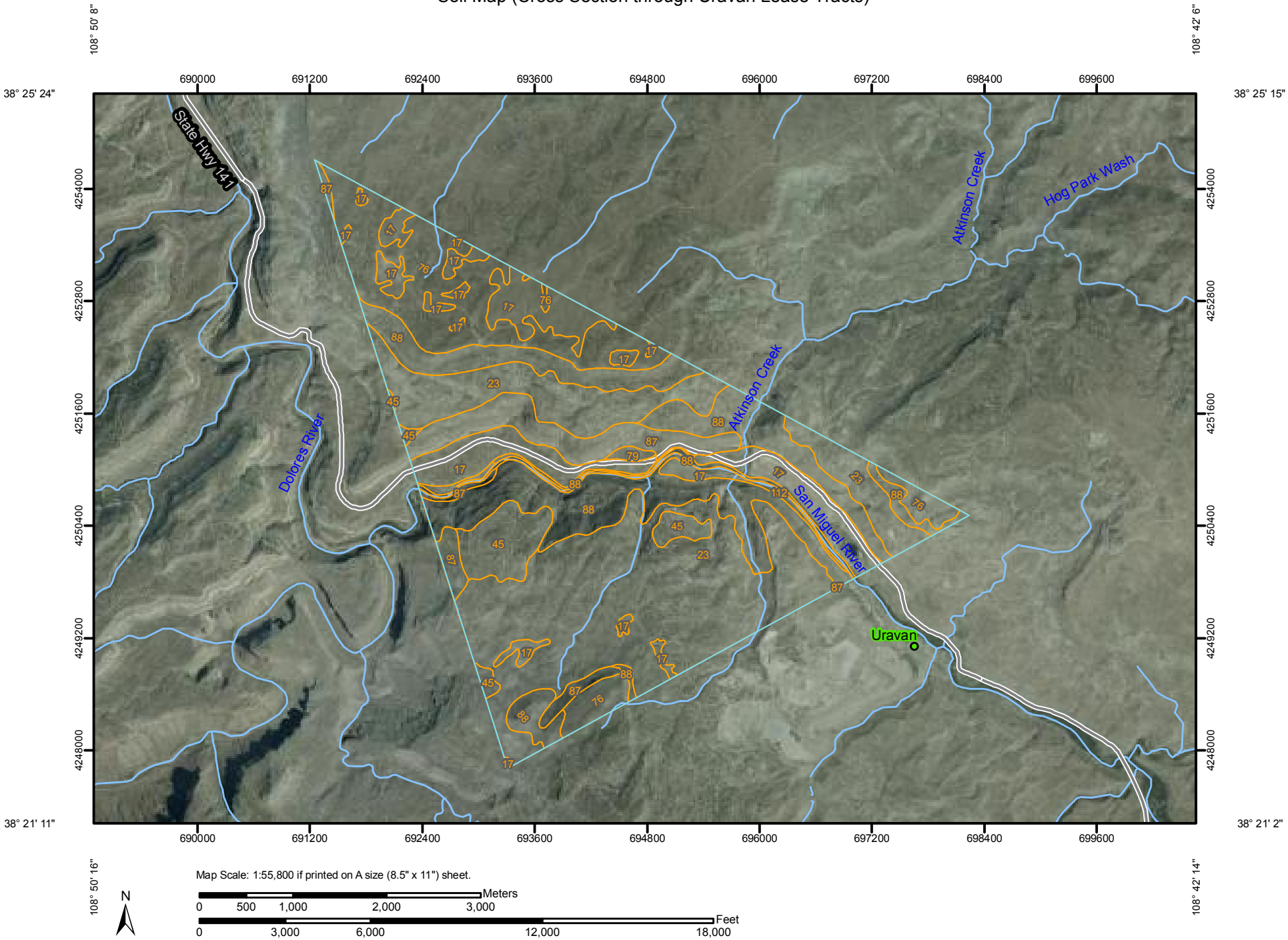
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree 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 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

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 (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

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

Gully

Short Steep Slope

Other

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

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 (Cross Section through Uravan Lease Tracts)

San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes	647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	13.6	0.3%
87	Rock outcrop	337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes	982.6	21.1%
112	Water	47.5	1.0%
Totals for Area of Interest		**4,646.6**	**100.0%**

Map Unit Descriptions (Cross Section through Uravan Lease Tracts)

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.

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.

San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties

17—Barx-Progresso complex, 3 to 12 percent slopes

Map Unit Setting

Elevation: 5,300 to 6,800 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Barx and similar soils: 45 percent
Progresso and similar soils: 40 percent
Minor components: 15 percent

Description of Barx

Setting

Landform: Mesas, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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: 45 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: High (about 9.5 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Ecological site: Semidesert Sandy Loam (R035XY326CO)

Typical profile

0 to 2 inches: Fine sandy loam
2 to 23 inches: Sandy clay loam
23 to 74 inches: Loam

Description of Progresso

Setting

Landform: Mesas, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Alluvium derived from sandstone

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
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: 35 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 5.3 inches)

Interpretive groups

Land capability (nonirrigated): 6c
Ecological site: Semidesert Loam (R035XY325CO)

Typical profile

0 to 7 inches: Loam
7 to 14 inches: Clay loam
14 to 24 inches: Clay loam
24 to 36 inches: Sandy loam
36 to 40 inches: Unweathered bedrock

Minor Components

Abra

Percent of map unit: 5 percent

Pinon

Percent of map unit: 5 percent

Bowdish

Percent of map unit: 3 percent

Rock outcrop

Percent of map unit: 2 percent

23—Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes

Map Unit Setting

Elevation: 5,400 to 6,800 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Bodot, dry, and similar soils: 45 percent
Ustic torriorthents and similar soils: 40 percent

Minor components: 15 percent

Description of Bodot, Dry

Setting

Landform: Terraces, structural benches, landslides
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from shale

Properties and qualities

Slope: 5 to 50 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 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: 10 percent
Maximum salinity: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Low (about 4.0 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: Basin Shale (R035XY408CO)

Typical profile

0 to 3 inches: Cobbly clay loam
3 to 30 inches: Cobbly silty clay
30 to 34 inches: Weathered bedrock

Description of Ustic Torriorthents

Setting

Landform: Structural benches, landslides, terraces
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone and shale

Properties and qualities

Slope: 5 to 50 percent
Depth to restrictive feature: 10 to 80 inches to lithic bedrock
Drainage class: Well drained
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 (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 3.7 inches)

Interpretive groups

Land capability (nonirrigated): 7e

Typical profile

0 to 4 inches: Very bouldery clay loam
4 to 31 inches: Cobbly clay loam
31 to 35 inches: Unweathered bedrock

Minor Components

Rock outcrop

Percent of map unit: 10 percent

Pinon

Percent of map unit: 3 percent

Bowdish

Percent of map unit: 2 percent

45—Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes

Map Unit Setting

Elevation: 5,500 to 6,800 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Gladel and similar soils: 35 percent
Rock outcrop: 30 percent
Bond and similar soils: 30 percent
Minor components: 5 percent

Description of Gladel

Setting

Landform: Structural benches, mesas, escarpments
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Properties and qualities

Slope: 1 to 50 percent
Depth to restrictive feature: 5 to 15 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very low (about 1.1 inches)

Interpretive groups
Land capability (nonirrigated): 7e

Typical profile
0 to 8 inches: Sandy loam
8 to 12 inches: Unweathered bedrock

Description of Bond

Setting
Landform: Escarpments, mesas, structural benches
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Properties and qualities
Slope: 1 to 50 percent
Depth to restrictive feature: 6 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Very low (about 2.6 inches)

Interpretive groups
Land capability (nonirrigated): 7s

Typical profile
0 to 3 inches: Fine sandy loam
3 to 16 inches: Clay loam
16 to 20 inches: Unweathered bedrock

Description of Rock Outcrop

Setting
Landform: Escarpments, mesas, structural benches
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Properties and qualities
Slope: 1 to 50 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.00 in/hr)

Interpretive groups
Land capability (nonirrigated): 8s

Typical profile

0 to 60 inches: Unweathered bedrock

Minor Components

Paradox

Percent of map unit: 5 percent
Landform: Alluvial fans

76—Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes

Map Unit Setting

Elevation: 5,400 to 6,800 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Pinon and similar soils: 30 percent
Rock outcrop: 25 percent
Bowdish and similar soils: 25 percent
Minor components: 20 percent

Description of Pinon

Setting

Landform: Escarpments, mesas, structural benches
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from interbedded sandstone and shale

Properties and qualities

Slope: 3 to 30 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
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: 40 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very low (about 2.0 inches)

Interpretive groups

Land capability (nonirrigated): 7e

Typical profile

0 to 5 inches: Loam
5 to 16 inches: Gravelly loam
16 to 20 inches: Unweathered bedrock

Description of Bowdish

Setting

Landform: Escarpments, mesas, structural benches
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from interbedded sandstone and shale

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 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: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability (nonirrigated): 6e

Typical profile

0 to 5 inches: Loam
5 to 12 inches: Loam
12 to 23 inches: Gravelly loam
23 to 27 inches: Weathered bedrock

Description of Rock Outcrop

Setting

Landform: Escarpments, mesas, structural benches
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone and shale

Properties and qualities

Slope: 3 to 30 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.00 in/hr)

Interpretive groups

Land capability (nonirrigated): 8s

Typical profile

0 to 60 inches: Unweathered bedrock

Minor Components

Progresso
Percent of map unit: 5 percent

Clapper
Percent of map unit: 5 percent

Barx
Percent of map unit: 5 percent

Ustic torriorthents
Percent of map unit: 5 percent

79—Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony

Map Unit Setting
Elevation: 5,400 to 5,900 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 47 to 49 degrees F
Frost-free period: 120 to 140 days

Map Unit Composition
Pojoaque and similar soils: 50 percent
Chilton and similar soils: 30 percent
Minor components: 20 percent

Description of Pojoaque

Setting
Landform: Alluvial fans, hills
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and colluvium derived from sandstone; alluvium and colluvium derived from sandstone

Properties and qualities
Slope: 5 to 15 percent
Surface area covered with cobbles, stones or boulders: 10.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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: 15 percent

Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 7.0 inches)

Interpretive groups
Land capability (nonirrigated): 7e

Typical profile
0 to 4 inches: Very stony loam
4 to 60 inches: Gravelly fine sandy loam

Description of Chilton

Setting
Landform: Alluvial fans, hills
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and colluvium derived from sandstone

Properties and qualities
Slope: 5 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
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: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 5.0 inches)

Interpretive groups
Land capability (nonirrigated): 7e

Typical profile
0 to 6 inches: Very stony fine sandy loam
6 to 60 inches: Very gravelly fine sandy loam

Minor Components

Rock outcrop
Percent of map unit: 10 percent

Begay
Percent of map unit: 5 percent

Ustic torriorthents
Percent of map unit: 5 percent

87—Rock outcrop

Map Unit Setting

Elevation: 4,700 to 10,000 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 40 to 49 degrees F
Frost-free period: 65 to 140 days

Map Unit Composition

Rock outcrop: 90 percent
Minor components: 10 percent

Description of Rock Outcrop

Setting

Landform: Canyons, mesas
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Properties and qualities

Slope: 40 to 120 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.00 in/hr)

Interpretive groups

Land capability (nonirrigated): 8s

Typical profile

0 to 60 inches: Unweathered bedrock

Minor Components

Orthents

Percent of map unit: 10 percent
Landform: Draws

88—Rock outcrop-Orthents complex, 40 to 90 percent slopes

Map Unit Setting

Elevation: 4,700 to 9,200 feet
Mean annual precipitation: 10 to 19 inches
Mean annual air temperature: 43 to 49 degrees F

Frost-free period: 70 to 140 days

Map Unit Composition

Rock outcrop: 50 percent
Orthents and similar soils: 45 percent
Minor components: 5 percent

Description of Rock Outcrop

Setting

Landform: Canyons, mesas, structural benches
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Properties and qualities

Slope: 40 to 90 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.00 in/hr)

Interpretive groups

Land capability (nonirrigated): 8s

Typical profile

0 to 60 inches: Unweathered bedrock

Description of Orthents

Setting

Landform: Structural benches, canyons, mesas
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum from sandstone and shale

Properties and qualities

Slope: 40 to 90 percent
Depth to restrictive feature: 10 to 80 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 6.2 inches)

Interpretive groups

Land capability (nonirrigated): 8e

Typical profile

0 to 1 inches: Stony loam
1 to 14 inches: Gravelly loam
14 to 24 inches: Very cobbly loam
24 to 60 inches: Very cobbly loam

Minor Components

Pinon

Percent of map unit: 5 percent

112—Water

Map Unit Composition

Water: 95 percent
Minor components: 5 percent

Minor Components

Aquolls

Percent of map unit: 5 percent
Landform: Marshes

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

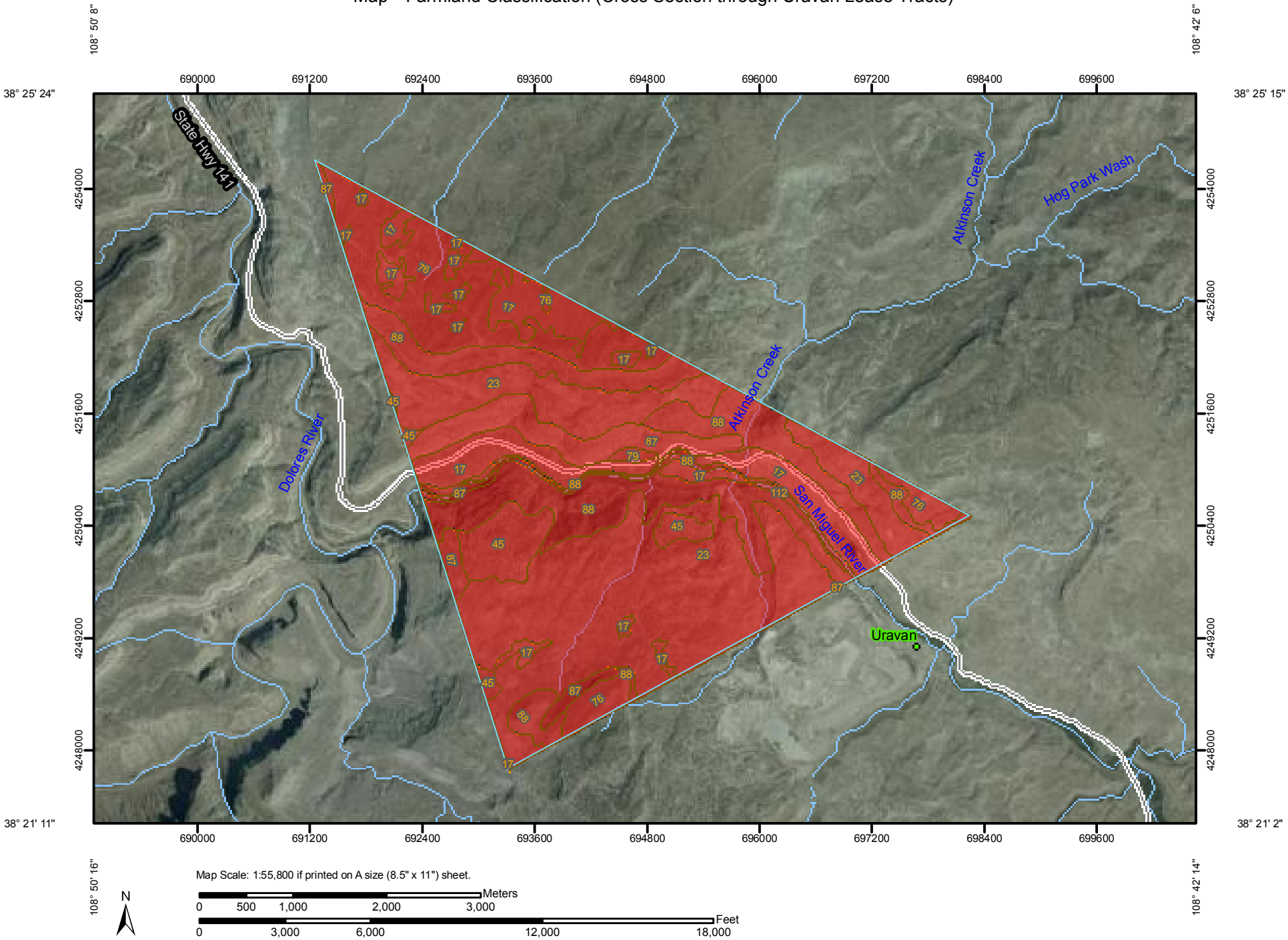
Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification (Cross Section through Uravan Lease Tracts)

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Custom Soil Resource Report
Map—Farmland Classification (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Farmland Classification (Cross Section through Uravan Lease Tracts)

Farmland Classification— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	Not prime farmland	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	Not prime farmland	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	Not prime farmland	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes	Not prime farmland	647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	Not prime farmland	13.6	0.3%
87	Rock outcrop	Not prime farmland	337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes	Not prime farmland	982.6	21.1%
112	Water	Not prime farmland	47.5	1.0%
Totals for Area of Interest			**4,646.6**	**100.0%**

Rating Options—Farmland Classification (Cross Section through Uravan Lease Tracts)

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Hydric Rating by Map Unit (Cross Section through Uravan Lease Tracts)

This rating indicates the proportion of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is designated as "all hydric," "partially hydric," "not hydric," or "unknown hydric," depending on the rating of its respective components.

"All hydric" means that all components listed for a given map unit are rated as being hydric, while "not hydric" means that all components are rated as not hydric. "Partially hydric" means that at least one component of the map unit is rated as hydric, and at least one component is rated as not hydric. "Unknown hydric" indicates that at least one component is not rated so a definitive rating for the map unit cannot be made.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

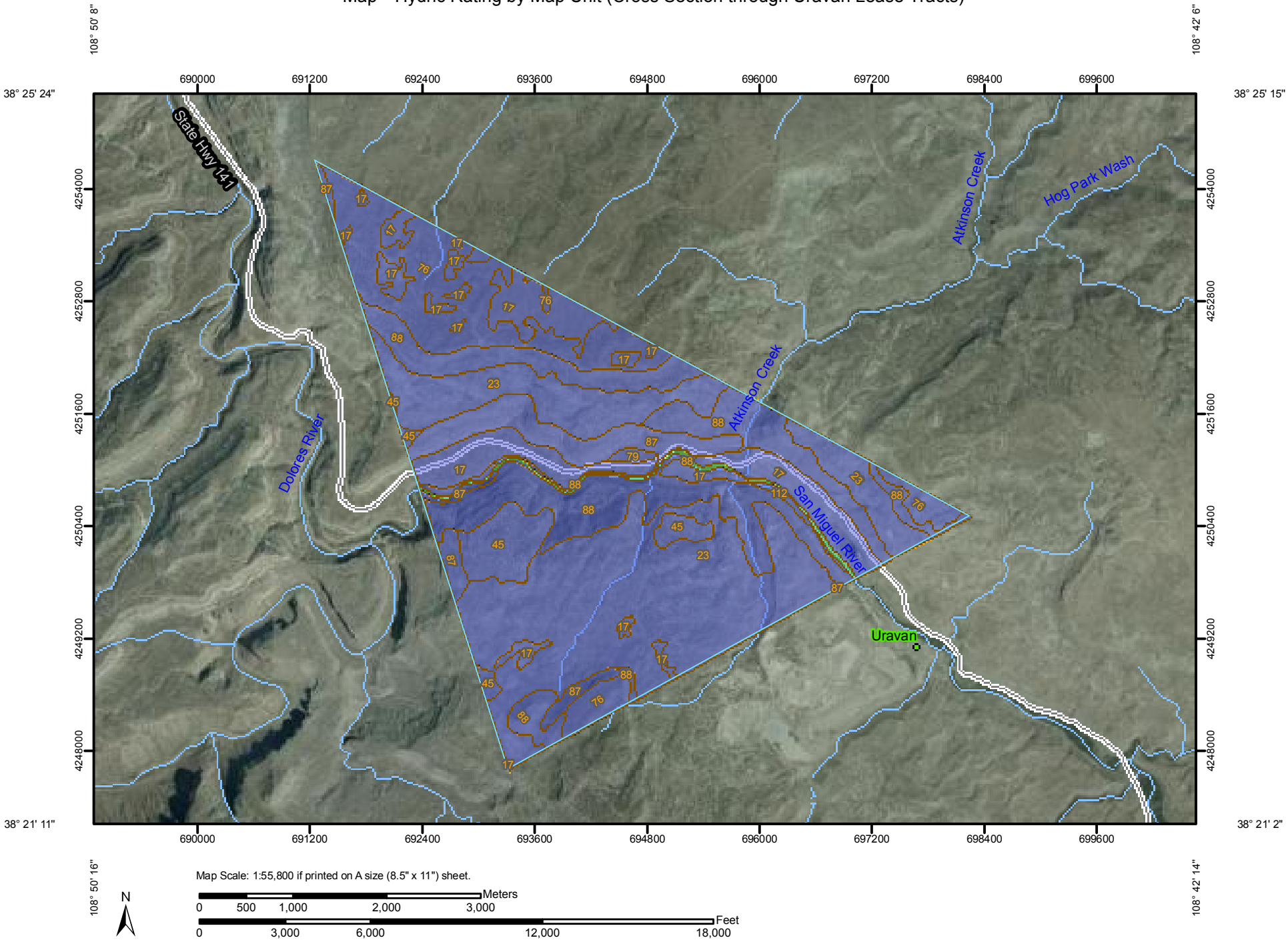
Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Custom Soil Resource Report
Map—Hydric Rating by Map Unit (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

All Hydric

Partially Hydric

Not Hydric

Unknown Hydric

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydric Rating by Map Unit (Cross Section through Uravan Lease Tracts)

Hydric Rating by Map Unit— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	Not Hydric	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	Not Hydric	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	Not Hydric	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes	Not Hydric	647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	Not Hydric	13.6	0.3%
87	Rock outcrop	Not Hydric	337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes	Not Hydric	982.6	21.1%
112	Water	Partially Hydric	47.5	1.0%
Totals for Area of Interest			**4,646.6**	**100.0%**

Rating Options—Hydric Rating by Map Unit (Cross Section through Uravan Lease Tracts)

Aggregation Method: Absence/Presence

Tie-break Rule: Lower

Soil Taxonomy Classification (Cross Section through Uravan Lease Tracts)

This rating presents the taxonomic classification based on Soil Taxonomy.

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2003). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. This table shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in sol. An example is Alfisols.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalfs (Ud, meaning humid, plus alfs, from Alfisols).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (Hapl, meaning minimal horizonation, plus udalfs, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective Typic identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, active, mesic Typic Hapludalfs.

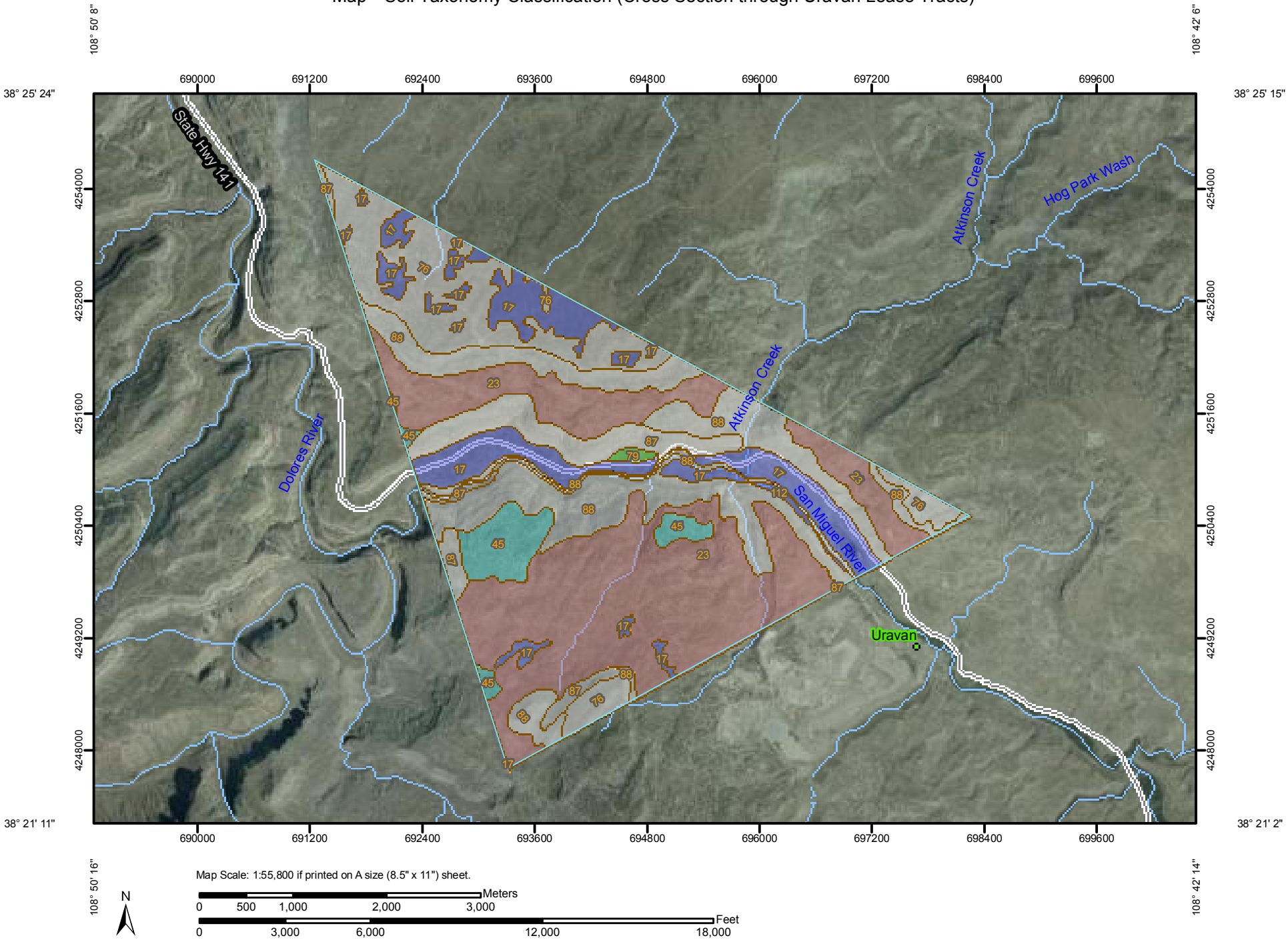
SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

References:

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. (The soils in a given survey area may have been classified according to earlier editions of this publication.)

Custom Soil Resource Report
Map—Soil Taxonomy Classification (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

Fine, montmorillonitic (calcareous), mesic Ustic Torriorthents

Fine-loamy, mixed (calcareous), mesic Ustic Torriorthents

Fine-loamy, mixed, mesic Ustollic Haplargids

Loamy, mixed (calcareous), mesic Lithic Ustic Torriorthents

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Soil Taxonomy Classification (Cross Section through Uravan Lease Tracts)

Soil Taxonomy Classification— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	Fine-loamy, mixed, mesic Ustollic Haplargids	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	Fine, montmorillonitic (calcareous), mesic Ustic Torriorthents	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	Loamy, mixed (calcareous), mesic Lithic Ustic Torriorthents	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes		647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	Fine-loamy, mixed (calcareous), mesic Ustic Torriorthents	13.6	0.3%
87	Rock outcrop		337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes		982.6	21.1%
112	Water		47.5	1.0%
Totals for Area of Interest			**4,646.6**	**100.0%**

Rating Options—Soil Taxonomy Classification (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Land Management

Land management interpretations are tools designed to guide the user in evaluating existing conditions in planning and predicting the soil response to various land management practices, for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture, and rangeland. Example interpretations include suitability for a variety of irrigation practices, log landings, haul roads and major skid trails, equipment operability, site preparation, suitability for hand and mechanical planting, potential erosion hazard associated with various practices, and ratings for fencing and waterline installation.

Erosion Hazard (Off-Road, Off-Trail) (Cross Section through Uravan Lease Tracts)

The ratings in this interpretation indicate the hazard of soil loss from off-road and off-trail areas after disturbance activities that expose the soil surface. The ratings are based on slope and soil erosion factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance.

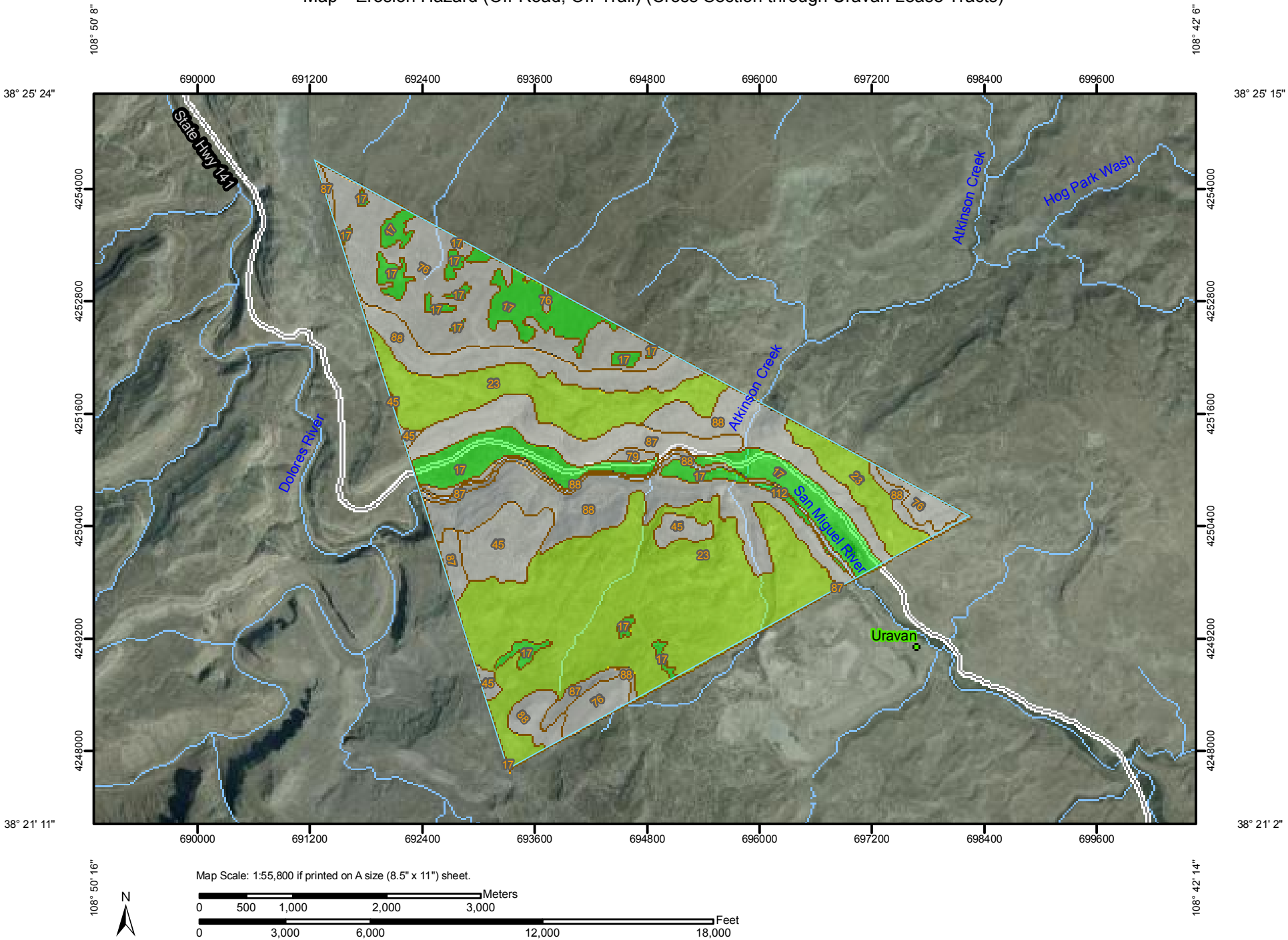
The ratings are both verbal and numerical. The hazard is described as "slight," "moderate," "severe," or "very severe." A rating of "slight" indicates that erosion is unlikely under ordinary climatic conditions; "moderate" indicates that some erosion is likely and that erosion-control measures may be needed; "severe" indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and "very severe" indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—Erosion Hazard (Off-Road, Off-Trail) (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

Very severe

Severe

Moderate

Slight

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

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.

Tables—Erosion Hazard (Off-Road, Off-Trail) (Cross Section through Uravan Lease Tracts)

Erosion Hazard (Off-Road, Off-Trail)— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	Slight	Barx (45%)		630.9	13.6%
			Progresso (40%)			
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	Moderate	Bodot, dry (45%)	Slope/erodibility (0.50)	1,784.9	38.4%
			Ustic Torriorthents (40%)	Slope/erodibility (0.50)		
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes				201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes				647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony				13.6	0.3%
87	Rock outcrop				337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes				982.6	21.1%
112	Water				47.5	1.0%
Totals for Area of Interest					**4,646.6**	**100.0%**

Erosion Hazard (Off-Road, Off-Trail)— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Moderate	1,784.9	38.4%
Slight	630.9	13.6%
Null or Not Rated	2,230.3	48.0%
Totals for Area of Interest	**4,646.6**	**100.0%**

Rating Options—Erosion Hazard (Off-Road, Off-Trail) (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Erosion Hazard (Road, Trail) (Cross Section through Uravan Lease Tracts)

The ratings in this interpretation indicate the hazard of soil loss from unsurfaced roads and trails. The ratings are based on soil erosion factor K, slope, and content of rock fragments.

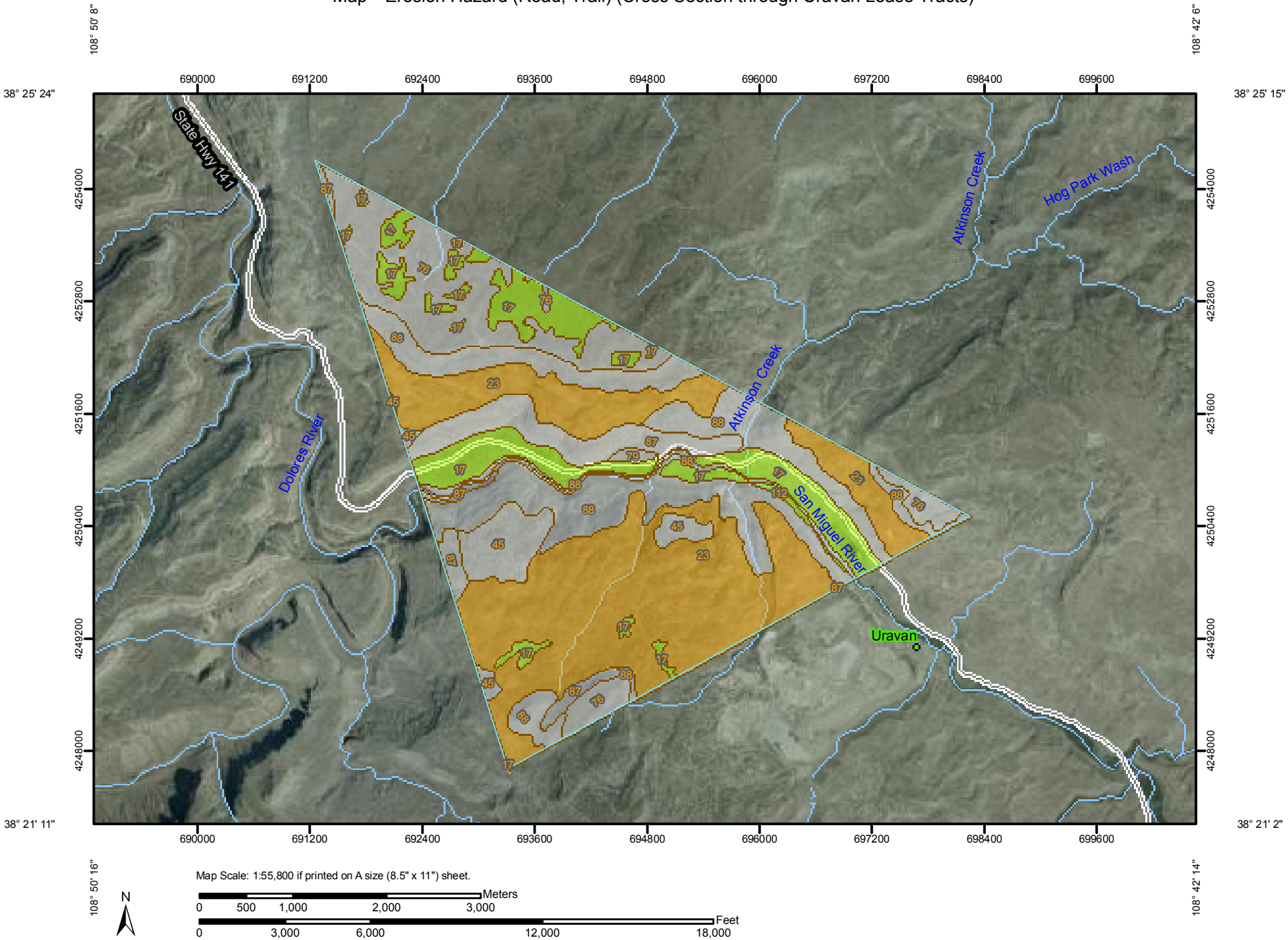
The ratings are both verbal and numerical. The hazard is described as "slight," "moderate," or "severe." A rating of "slight" indicates that little or no erosion is likely; "moderate" indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and "severe" indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—Erosion Hazard (Road, Trail) (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

Very severe

Severe

Moderate

Slight

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

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.

Tables—Erosion Hazard (Road, Trail) (Cross Section through Uravan Lease Tracts)

Erosion Hazard (Road, Trail)— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	Moderate	Barx (45%)	Slope/erodibility (0.50)	630.9	13.6%
			Progresso (40%)	Slope/erodibility (0.50)		
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	Severe	Bodot, dry (45%)	Slope/erodibility (0.95)	1,784.9	38.4%
			Ustic Torriorthents (40%)	Slope/erodibility (0.95)		
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes				201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes				647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony				13.6	0.3%
87	Rock outcrop				337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes				982.6	21.1%
112	Water				47.5	1.0%
Totals for Area of Interest					**4,646.6**	**100.0%**

Erosion Hazard (Road, Trail)— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Severe	1,784.9	38.4%
Moderate	630.9	13.6%
Null or Not Rated	2,230.3	48.0%
Totals for Area of Interest	**4,646.6**	**100.0%**

Rating Options—Erosion Hazard (Road, Trail) (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Fugitive Dust Resistance (Cross Section through Uravan Lease Tracts)

This interpretation rates the vulnerability of a soil for eroded soil particles to go into suspension during a windstorm. Fugitive dust can create extreme visibility reductions during severe windstorms creating traffic hazards and closing airports. Power outages, expensive cleanup costs, damage to computers and communications equipment from dust, transport of potentially harmful chemicals adhering to the soil particles, and loss of soil nutrients are some of the potential effects of fugitive dust. A positive impact is that nutrient enrichment can occur where fugitive dust is deposited.

Fugitive dust is a source of PM10 which is one of the seven air pollutants the Environmental Protection Agency regulates under the National Ambient Air Quality Standards (NAAQS). To a lesser extent, fugitive dust is a source of PM2.5 which has proposed regulations pending under NAAQS. PM10 and PM2.5 are defined as particulate matter with a mean diameter less than 10 microns and 2.5 microns respectively. These soil particles are very small, can remain suspended in the air for long periods of time, and are easily inhaled into the deep lungs. Increased risks of death and disease have been linked to periods of high outdoor PM10 and PM2.5 concentrations. These fine particles can potentially be lifted thousands of feet into the atmosphere and transported across continents and oceans creating global health, ecological, and climate change impacts.

The soil properties and qualities that affect fugitive dust are size of surface soil particles, rock fragment content, organic matter content, calcium carbonate equivalent, aggregate stability and presence of a stable soil crust. Clay particles have a strong propensity to form relatively large, durable soil aggregates and not contribute appreciably to fugitive dust unless these aggregates are broken down by intensive surface disturbance. Soil moisture and the presence of frozen soil also influence fugitive dust. Activities which break down soil aggregates and crusts increase wind erosion and production of fugitive dust.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which all of the soil features affect the formation of dust. "Low resistance" indicates that the soil has features that are very favorable for the formation of dust. "Moderate resistance" indicates that the soil has features that are favorable for dust formation. "High resistance" indicates that the soil has features that are unfavorable for dust formation.

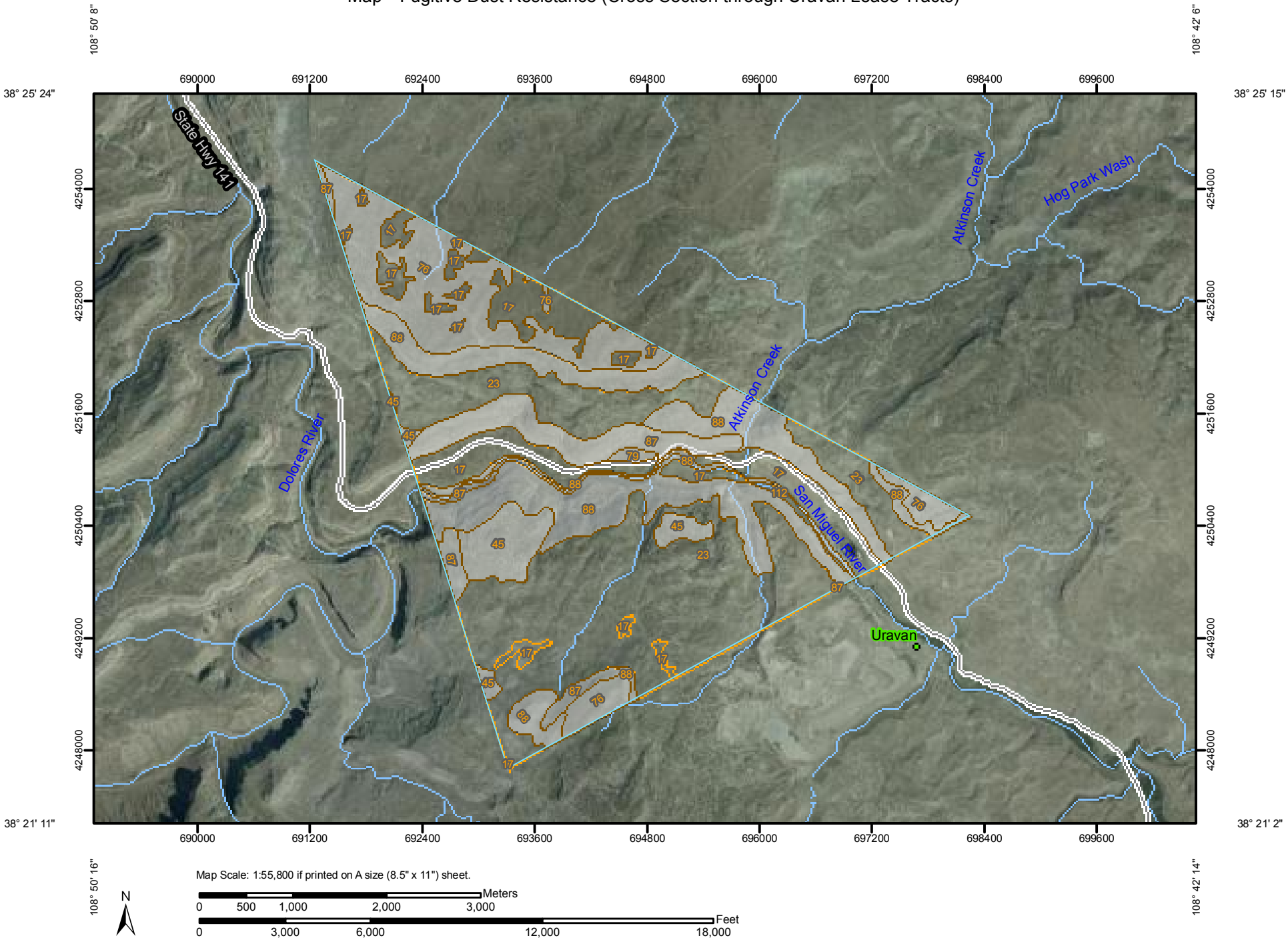
Numerical ratings indicate the level of vulnerability of the soil for dust formation. The ratings are shown in decimal fractions ranging from 1.00 to 0.01. They indicate gradations between the point at which a soil feature resists dust formation (1.00) and the point at which the soil feature is favorable to the formation of dust (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each

component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—Fugitive Dust Resistance (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

Low resistance

Moderate resistance

High resistance

not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

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.

Tables—Fugitive Dust Resistance (Cross Section through Uravan Lease Tracts)

Fugitive Dust Resistance— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	Moderate resistance to dust propagation	Barx (45%)	Component interpretable (0.00)	630.9	13.6%
				No reduction of fugitive dust by rock fragments (0.00)		
				Surface texture dust propagation (0.88)		
				Carbonate-related aggravation of fugitive dust (0.97)		
			Progresso (40%)	Component interpretable (0.00)		
				No reduction of fugitive dust by rock fragments (0.00)		
				Surface texture dust propagation (0.89)		
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	Not rated	Ustic Torriorthents (40%)		1,784.9	38.4%
			Rock outcrop (10%)			
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes				201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes				647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony				13.6	0.3%
87	Rock outcrop				337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes				982.6	21.1%
112	Water				47.5	1.0%
Totals for Area of Interest					**4,646.6**	**100.0%**

Fugitive Dust Resistance— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Moderate resistance to dust propagation	630.9	13.6%
Null or Not Rated	4,015.3	86.4%
Totals for Area of Interest	**4,646.6**	**100.0%**

Rating Options—Fugitive Dust Resistance (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Soil Rutting Hazard (Cross Section through Uravan Lease Tracts)

The ratings in this interpretation indicate the hazard of surface rut formation through the operation of forestland equipment. Soil displacement and puddling (soil deformation and compaction) may occur simultaneously with rutting.

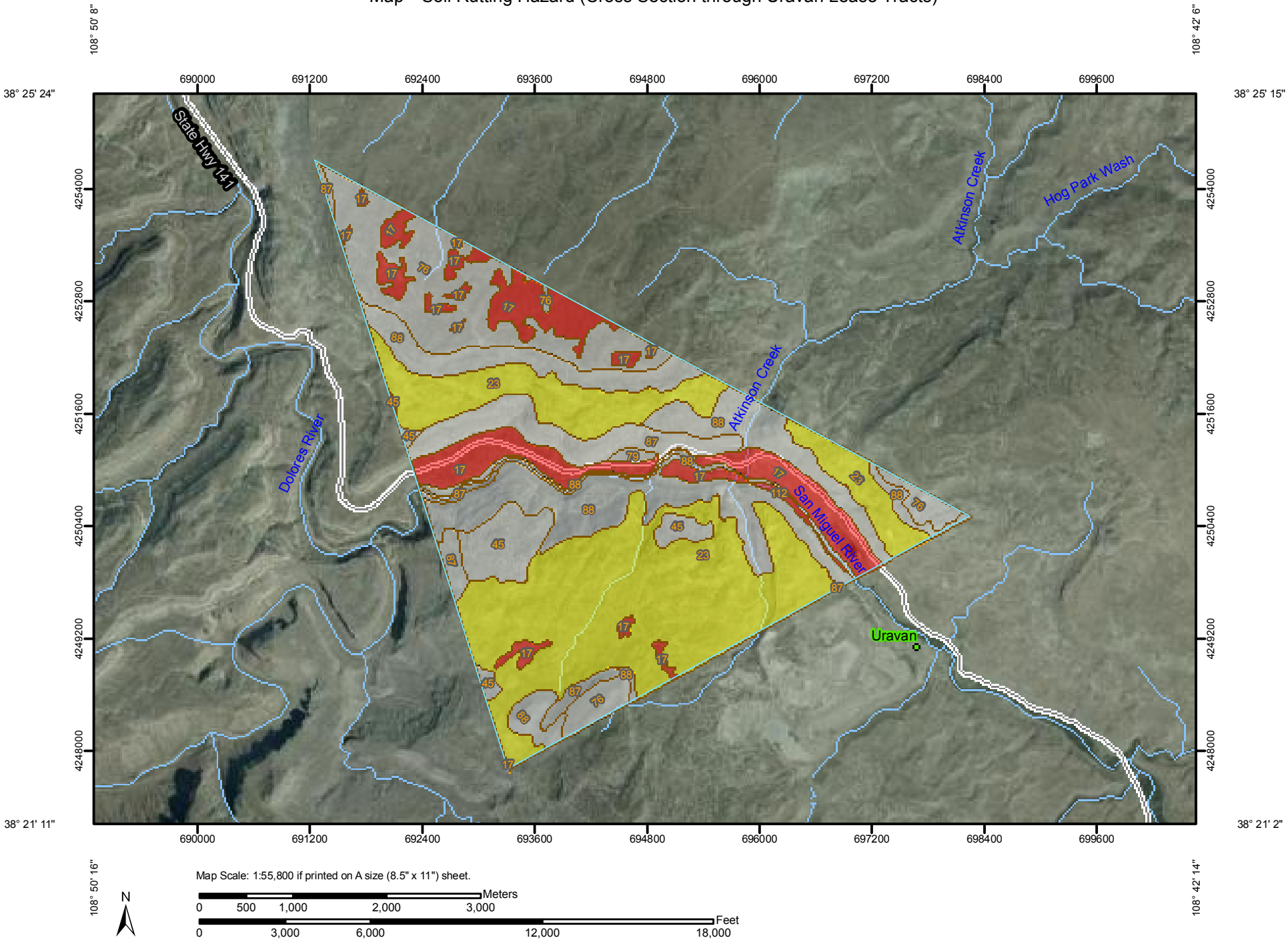
Ratings are based on depth to a water table, rock fragments on or below the surface, the Unified classification of the soil, depth to a restrictive layer, and slope. The hazard is described as slight, moderate, or severe. A rating of "slight" indicates that the soil is subject to little or no rutting. "Moderate" indicates that rutting is likely. "Severe" indicates that ruts form readily.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—Soil Rutting Hazard (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

Severe

Moderate

Slight

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

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.

Tables—Soil Rutting Hazard (Cross Section through Uravan Lease Tracts)

Soil Rutting Hazard— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	Severe	Barx (45%)	Low strength (1.00)	630.9	13.6%
			Progresso (40%)	Low strength (1.00)		
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	Moderate	Bodot, dry (45%)	Low strength (0.50)	1,784.9	38.4%
			Ustic Torriorthents (40%)	Low strength (0.50)		
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes				201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes				647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony				13.6	0.3%
87	Rock outcrop				337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes				982.6	21.1%
112	Water				47.5	1.0%
Totals for Area of Interest					**4,646.6**	**100.0%**

Soil Rutting Hazard— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Moderate	1,784.9	38.4%
Severe	630.9	13.6%
Null or Not Rated	2,230.3	48.0%
Totals for Area of Interest	**4,646.6**	**100.0%**

Rating Options—Soil Rutting Hazard (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Suitability for Roads (Natural Surface) (Cross Section through Uravan Lease Tracts)

The ratings in this interpretation indicate the suitability for using the natural surface of the soil for roads. The ratings are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification of the soil, depth to a water table, ponding, flooding, and the hazard of soil slippage.

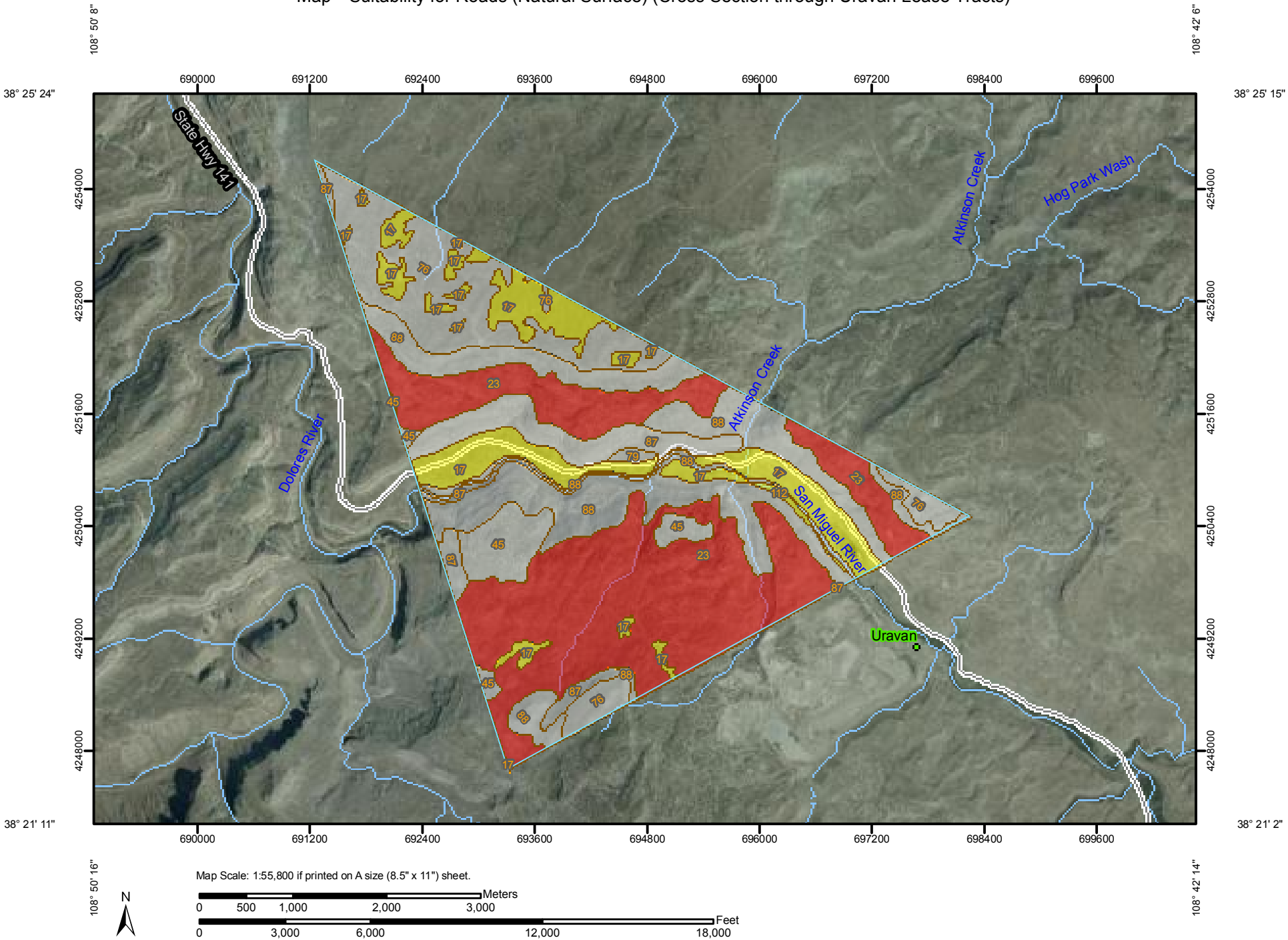
The ratings are both verbal and numerical. The soils are described as "well suited," "moderately suited," or "poorly suited" to this use. "Well suited" indicates that the soil has features that are favorable for the specified kind of roads and has no limitations. Good performance can be expected, and little or no maintenance is needed. "Moderately suited" indicates that the soil has features that are moderately favorable for the specified kind of roads. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. "Poorly suited" indicates that the soil has one or more properties that are unfavorable for the specified kind of roads. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—Suitability for Roads (Natural Surface) (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

Poorly suited

Moderately suited

Well suited

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

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.

Tables—Suitability for Roads (Natural Surface) (Cross Section through Uravan Lease Tracts)

Suitability for Roads (Natural Surface)— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	Moderately suited	Barx (45%)	Low strength (0.50)	630.9	13.6%
				Slope (0.50)		
			Progresso (40%)	Low strength (0.50)		
				Slope (0.50)		
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	Poorly suited	Bodot, dry (45%)	Slope (1.00)	1,784.9	38.4%
				Rock fragments (1.00)		
				Low strength (0.50)		
			Ustic Torriorthents (40%)	Slope (1.00)		
				Low strength (0.50)		
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes				201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes				647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony				13.6	0.3%
87	Rock outcrop				337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes				982.6	21.1%
112	Water				47.5	1.0%
Totals for Area of Interest					**4,646.6**	**100.0%**

Suitability for Roads (Natural Surface)— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Poorly suited	1,784.9	38.4%
Moderately suited	630.9	13.6%
Null or Not Rated	2,230.3	48.0%
Totals for Area of Interest	**4,646.6**	**100.0%**

Rating Options—Suitability for Roads (Natural Surface) (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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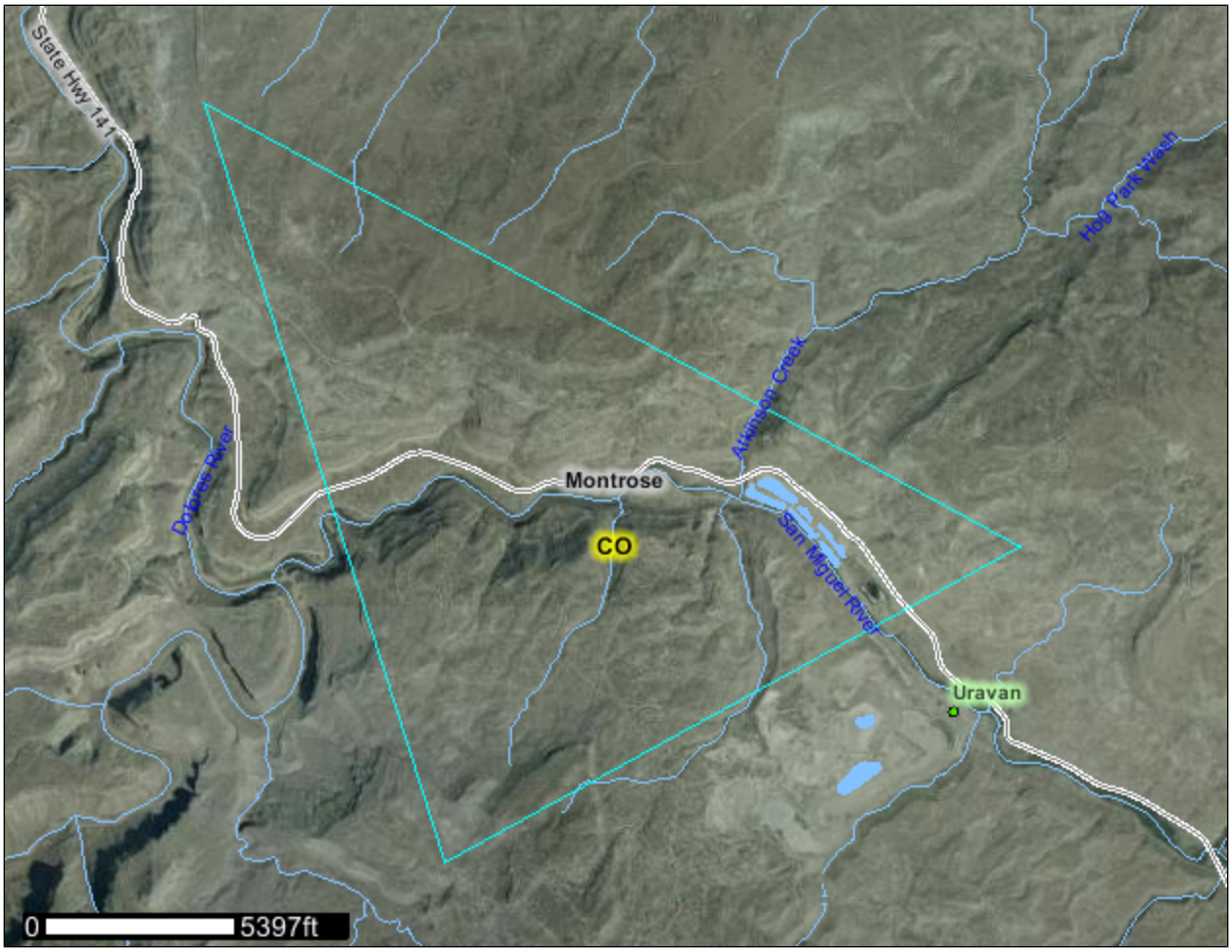
United States Department of Agriculture

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 San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties

Cross Section through Uravan Lease Tracts (Part 2)



January 9, 2012

Preface

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://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

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 Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

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.

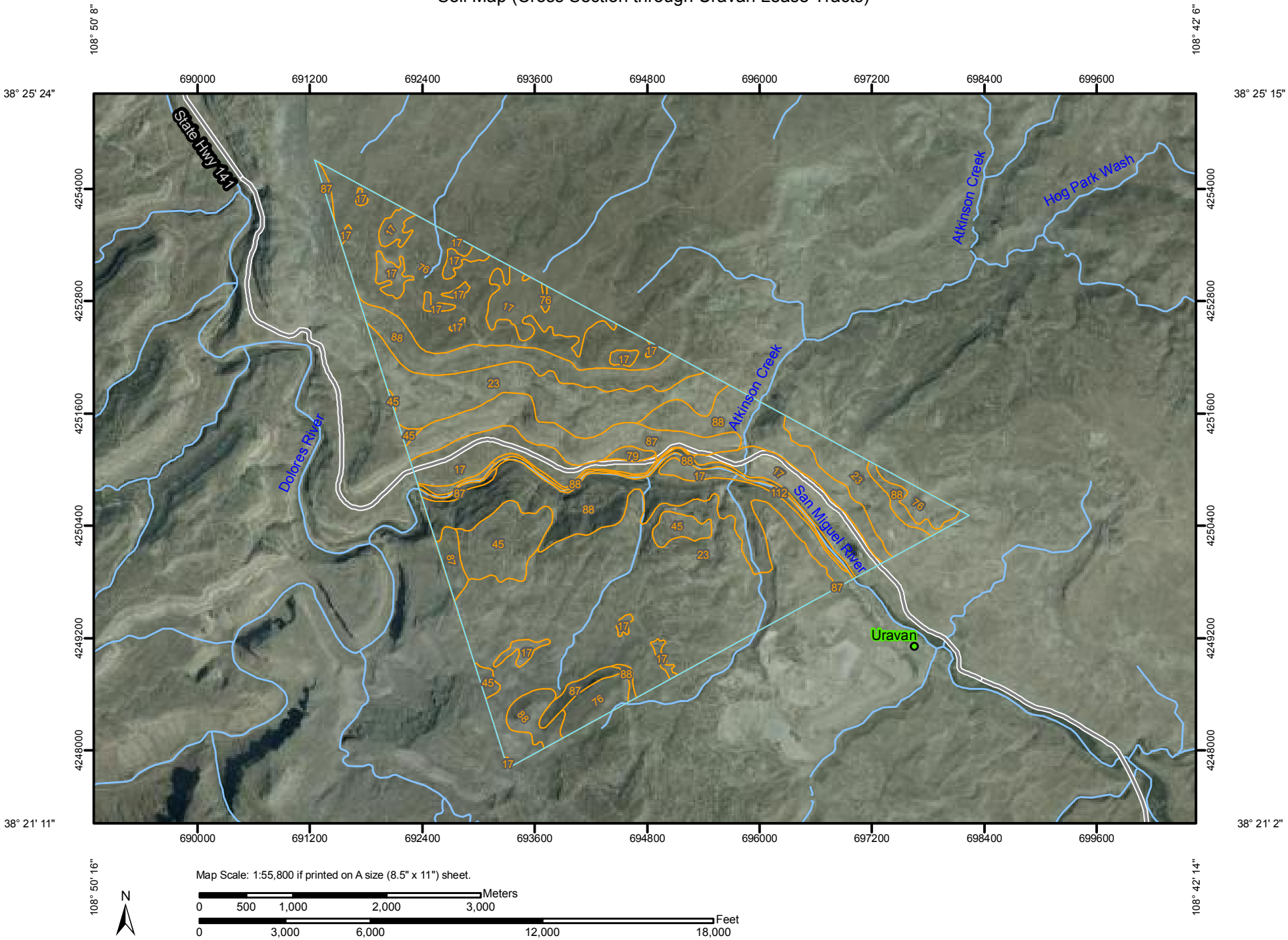
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree 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 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

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 (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

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

Gully

Short Steep Slope

Other

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

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 (Cross Section through Uravan Lease Tracts)

San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes	647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	13.6	0.3%
87	Rock outcrop	337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes	982.6	21.1%
112	Water	47.5	1.0%
Totals for Area of Interest		**4,646.6**	**100.0%**

Map Unit Descriptions (Cross Section through Uravan Lease Tracts)

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.

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.

San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties

17—Barx-Progresso complex, 3 to 12 percent slopes

Map Unit Setting

Elevation: 5,300 to 6,800 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Barx and similar soils: 45 percent
Progresso and similar soils: 40 percent
Minor components: 15 percent

Description of Barx

Setting

Landform: Mesas, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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: 45 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: High (about 9.5 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Ecological site: Semidesert Sandy Loam (R035XY326CO)

Typical profile

0 to 2 inches: Fine sandy loam
2 to 23 inches: Sandy clay loam
23 to 74 inches: Loam

Description of Progresso

Setting

Landform: Mesas, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Alluvium derived from sandstone

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
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: 35 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 5.3 inches)

Interpretive groups

Land capability (nonirrigated): 6c
Ecological site: Semidesert Loam (R035XY325CO)

Typical profile

0 to 7 inches: Loam
7 to 14 inches: Clay loam
14 to 24 inches: Clay loam
24 to 36 inches: Sandy loam
36 to 40 inches: Unweathered bedrock

Minor Components

Abra

Percent of map unit: 5 percent

Pinon

Percent of map unit: 5 percent

Bowdish

Percent of map unit: 3 percent

Rock outcrop

Percent of map unit: 2 percent

23—Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes

Map Unit Setting

Elevation: 5,400 to 6,800 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Bodot, dry, and similar soils: 45 percent
Ustic torriorthents and similar soils: 40 percent

Minor components: 15 percent

Description of Bodot, Dry

Setting

Landform: Terraces, structural benches, landslides
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from shale

Properties and qualities

Slope: 5 to 50 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 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: 10 percent
Maximum salinity: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Low (about 4.0 inches)

Interpretive groups

Land capability (nonirrigated): 7e
Ecological site: Basin Shale (R035XY408CO)

Typical profile

0 to 3 inches: Cobbly clay loam
3 to 30 inches: Cobbly silty clay
30 to 34 inches: Weathered bedrock

Description of Ustic Torriorthents

Setting

Landform: Structural benches, landslides, terraces
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone and shale

Properties and qualities

Slope: 5 to 50 percent
Depth to restrictive feature: 10 to 80 inches to lithic bedrock
Drainage class: Well drained
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 (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 3.7 inches)

Interpretive groups

Land capability (nonirrigated): 7e

Typical profile

0 to 4 inches: Very bouldery clay loam
4 to 31 inches: Cobbly clay loam
31 to 35 inches: Unweathered bedrock

Minor Components

Rock outcrop

Percent of map unit: 10 percent

Pinon

Percent of map unit: 3 percent

Bowdish

Percent of map unit: 2 percent

45—Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes

Map Unit Setting

Elevation: 5,500 to 6,800 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Gladel and similar soils: 35 percent
Rock outcrop: 30 percent
Bond and similar soils: 30 percent
Minor components: 5 percent

Description of Gladel

Setting

Landform: Structural benches, mesas, escarpments
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Properties and qualities

Slope: 1 to 50 percent
Depth to restrictive feature: 5 to 15 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very low (about 1.1 inches)

Interpretive groups
Land capability (nonirrigated): 7e

Typical profile
0 to 8 inches: Sandy loam
8 to 12 inches: Unweathered bedrock

Description of Bond

Setting
Landform: Escarpments, mesas, structural benches
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Properties and qualities
Slope: 1 to 50 percent
Depth to restrictive feature: 6 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Very low (about 2.6 inches)

Interpretive groups
Land capability (nonirrigated): 7s

Typical profile
0 to 3 inches: Fine sandy loam
3 to 16 inches: Clay loam
16 to 20 inches: Unweathered bedrock

Description of Rock Outcrop

Setting
Landform: Escarpments, mesas, structural benches
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Properties and qualities
Slope: 1 to 50 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.00 in/hr)

Interpretive groups
Land capability (nonirrigated): 8s

Typical profile

0 to 60 inches: Unweathered bedrock

Minor Components

Paradox

Percent of map unit: 5 percent
Landform: Alluvial fans

76—Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes

Map Unit Setting

Elevation: 5,400 to 6,800 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Pinon and similar soils: 30 percent
Rock outcrop: 25 percent
Bowdish and similar soils: 25 percent
Minor components: 20 percent

Description of Pinon

Setting

Landform: Escarpments, mesas, structural benches
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from interbedded sandstone and shale

Properties and qualities

Slope: 3 to 30 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
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: 40 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very low (about 2.0 inches)

Interpretive groups

Land capability (nonirrigated): 7e

Typical profile

0 to 5 inches: Loam
5 to 16 inches: Gravelly loam
16 to 20 inches: Unweathered bedrock

Description of Bowdish

Setting

Landform: Escarpments, mesas, structural benches
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from interbedded sandstone and shale

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 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: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability (nonirrigated): 6e

Typical profile

0 to 5 inches: Loam
5 to 12 inches: Loam
12 to 23 inches: Gravelly loam
23 to 27 inches: Weathered bedrock

Description of Rock Outcrop

Setting

Landform: Escarpments, mesas, structural benches
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone and shale

Properties and qualities

Slope: 3 to 30 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.00 in/hr)

Interpretive groups

Land capability (nonirrigated): 8s

Typical profile

0 to 60 inches: Unweathered bedrock

Minor Components

Progresso
Percent of map unit: 5 percent

Clapper
Percent of map unit: 5 percent

Barx
Percent of map unit: 5 percent

Ustic torriorthents
Percent of map unit: 5 percent

79—Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony

Map Unit Setting
Elevation: 5,400 to 5,900 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 47 to 49 degrees F
Frost-free period: 120 to 140 days

Map Unit Composition
Pojoaque and similar soils: 50 percent
Chilton and similar soils: 30 percent
Minor components: 20 percent

Description of Pojoaque

Setting
Landform: Alluvial fans, hills
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and colluvium derived from sandstone; alluvium and colluvium derived from sandstone

Properties and qualities
Slope: 5 to 15 percent
Surface area covered with cobbles, stones or boulders: 10.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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: 15 percent

Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 7.0 inches)

Interpretive groups
Land capability (nonirrigated): 7e

Typical profile
0 to 4 inches: Very stony loam
4 to 60 inches: Gravelly fine sandy loam

Description of Chilton

Setting
Landform: Alluvial fans, hills
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and colluvium derived from sandstone

Properties and qualities
Slope: 5 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
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: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 5.0 inches)

Interpretive groups
Land capability (nonirrigated): 7e

Typical profile
0 to 6 inches: Very stony fine sandy loam
6 to 60 inches: Very gravelly fine sandy loam

Minor Components

Rock outcrop
Percent of map unit: 10 percent

Begay
Percent of map unit: 5 percent

Ustic torriorthents
Percent of map unit: 5 percent

87—Rock outcrop

Map Unit Setting

Elevation: 4,700 to 10,000 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 40 to 49 degrees F
Frost-free period: 65 to 140 days

Map Unit Composition

Rock outcrop: 90 percent
Minor components: 10 percent

Description of Rock Outcrop

Setting

Landform: Canyons, mesas
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Properties and qualities

Slope: 40 to 120 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.00 in/hr)

Interpretive groups

Land capability (nonirrigated): 8s

Typical profile

0 to 60 inches: Unweathered bedrock

Minor Components

Orthents

Percent of map unit: 10 percent
Landform: Draws

88—Rock outcrop-Orthents complex, 40 to 90 percent slopes

Map Unit Setting

Elevation: 4,700 to 9,200 feet
Mean annual precipitation: 10 to 19 inches
Mean annual air temperature: 43 to 49 degrees F

Frost-free period: 70 to 140 days

Map Unit Composition

Rock outcrop: 50 percent
Orthents and similar soils: 45 percent
Minor components: 5 percent

Description of Rock Outcrop

Setting

Landform: Canyons, mesas, structural benches
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Properties and qualities

Slope: 40 to 90 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.00 in/hr)

Interpretive groups

Land capability (nonirrigated): 8s

Typical profile

0 to 60 inches: Unweathered bedrock

Description of Orthents

Setting

Landform: Structural benches, canyons, mesas
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum from sandstone and shale

Properties and qualities

Slope: 40 to 90 percent
Depth to restrictive feature: 10 to 80 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 6.2 inches)

Interpretive groups

Land capability (nonirrigated): 8e

Typical profile

0 to 1 inches: Stony loam
1 to 14 inches: Gravelly loam
14 to 24 inches: Very cobbly loam
24 to 60 inches: Very cobbly loam

Minor Components

Pinon

Percent of map unit: 5 percent

112—Water

Map Unit Composition

Water: 95 percent
Minor components: 5 percent

Minor Components

Aquolls

Percent of map unit: 5 percent
Landform: Marshes

Soil Information for All Uses

Soil Properties and Qualities

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

Soil Erosion Factors

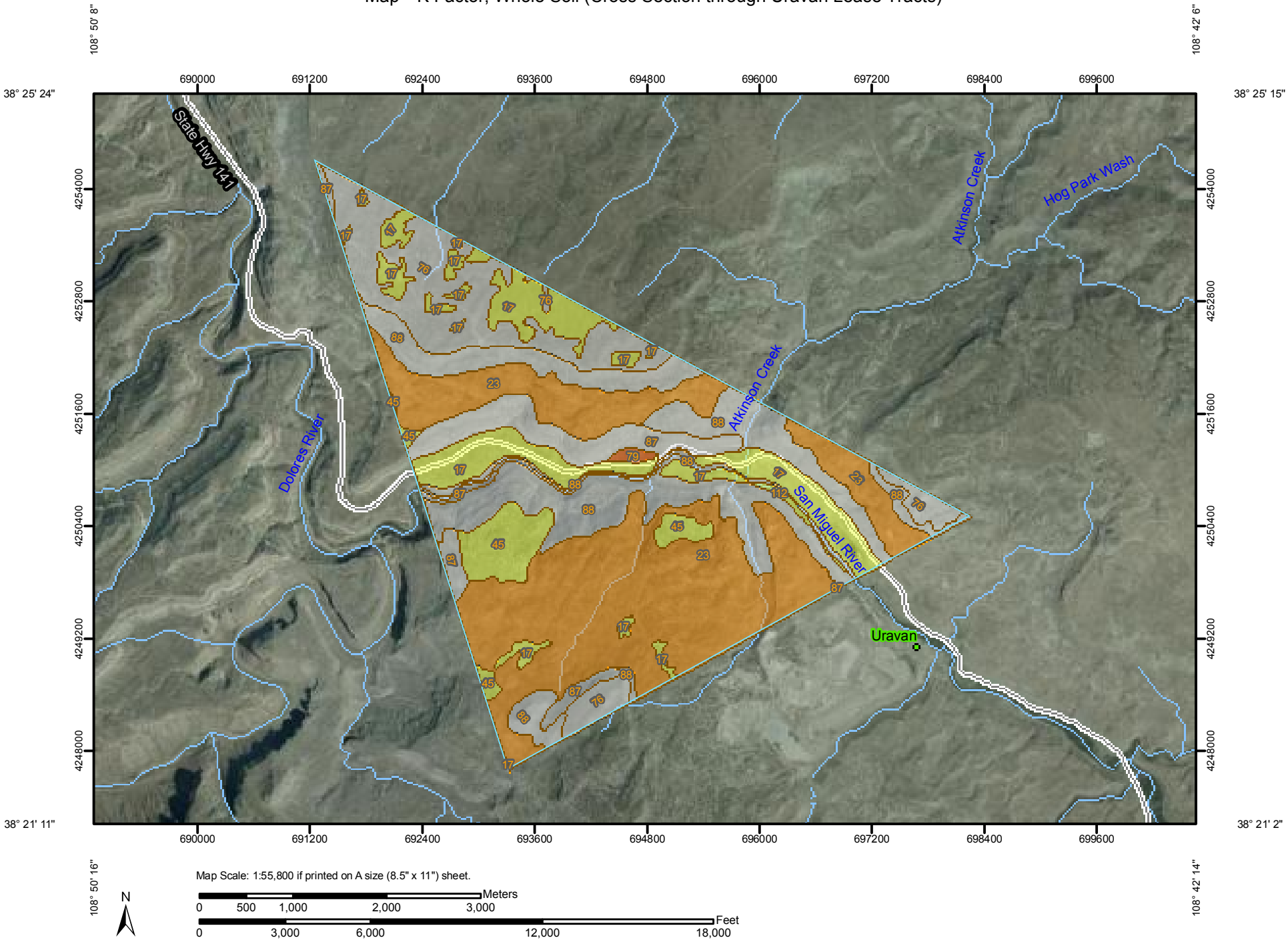
Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

K Factor, Whole Soil (Cross Section through Uravan Lease Tracts)

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

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

Custom Soil Resource Report
Map—K Factor, Whole Soil (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

.02

.05

.10

.15

.17

.20

.24

.28

.32

.37

.43

.49

.55

.64

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—K Factor, Whole Soil (Cross Section through Uravan Lease Tracts)

K Factor, Whole Soil— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	.20	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	.10	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	.20	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes		647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	.05	13.6	0.3%
87	Rock outcrop		337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes		982.6	21.1%
112	Water		47.5	1.0%
Totals for Area of Interest			**4,646.6**	**100.0%**

Rating Options—K Factor, Whole Soil (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

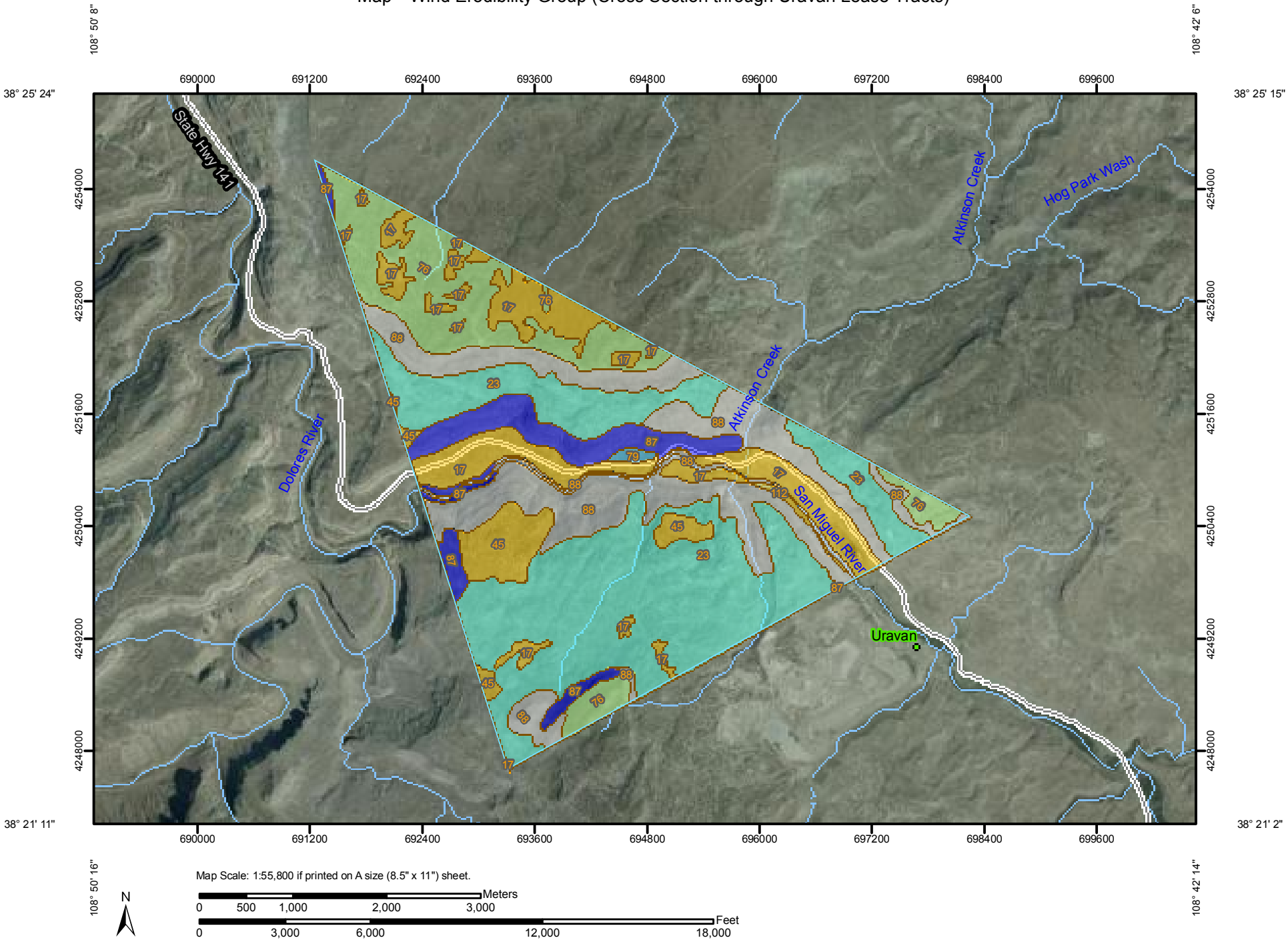
Tie-break Rule: Higher

Layer Options: Surface Layer

Wind Erodibility Group (Cross Section through Uravan Lease Tracts)

A wind erodibility group (WEG) consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

Custom Soil Resource Report
Map—Wind Erodibility Group (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

1

2

3

4

4L

5

6

7

8

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Wind Erodibility Group (Cross Section through Uravan Lease Tracts)

Wind Erodibility Group— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	3	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	5	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	3	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes	4L	647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	6	13.6	0.3%
87	Rock outcrop	8	337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes		982.6	21.1%
112	Water		47.5	1.0%
Totals for Area of Interest			**4,646.6**	**100.0%**

Rating Options—Wind Erodibility Group (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Available Water Capacity (Cross Section through Uravan Lease Tracts)

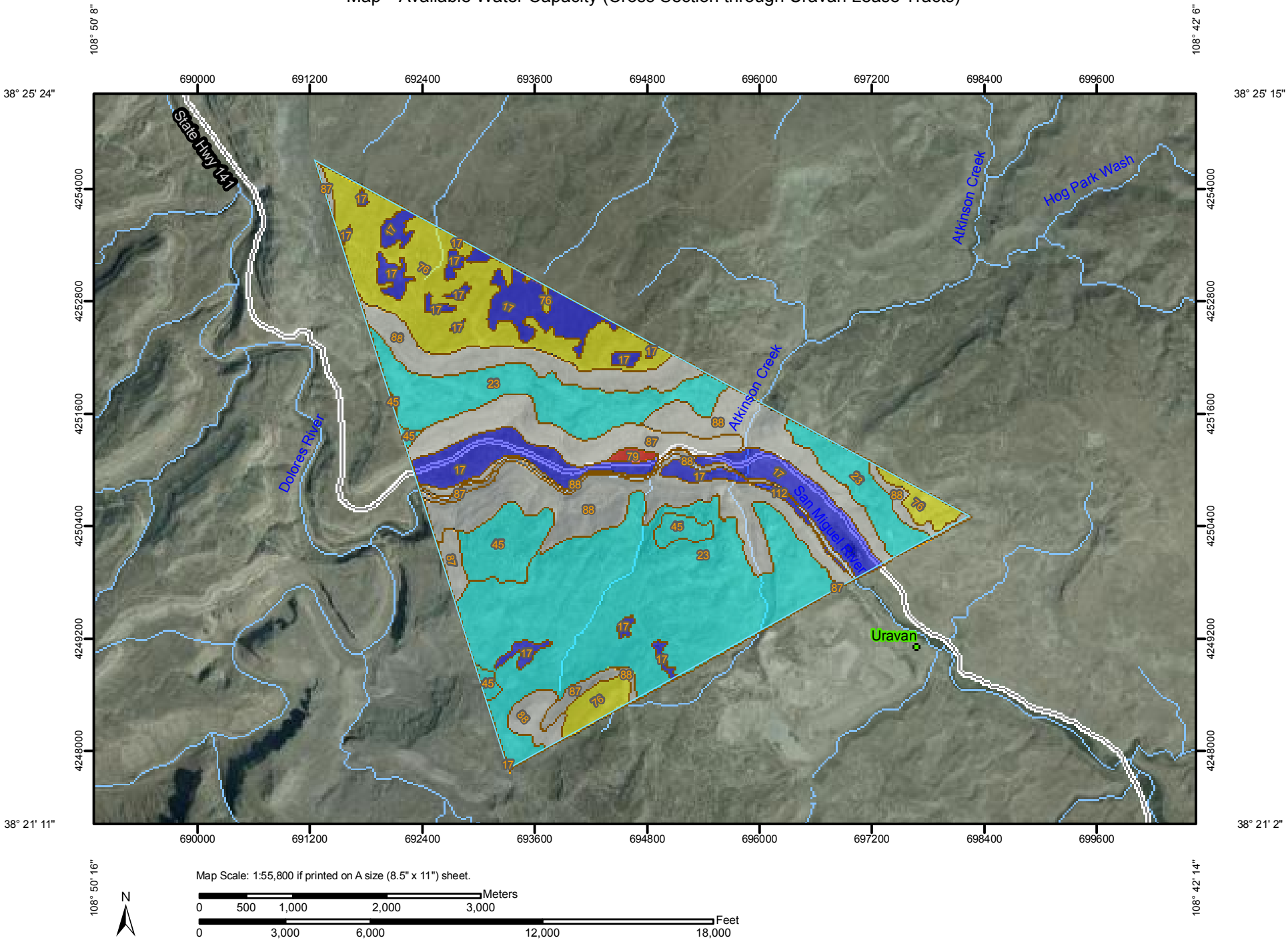
Available water capacity (AWC) refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in centimeters of water per centimeter of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure, with corrections for salinity and rock fragments. Available water capacity is an important factor in the

choice of plants or crops to be grown and in the design and management of irrigation systems. It is not an estimate of the quantity of water actually available to plants at any given time.

Available water supply (AWS) is computed as AWC times the thickness of the soil. For example, if AWC is 0.15 cm/cm, the available water supply for 25 centimeters of soil would be 0.15 x 25, or 3.75 centimeters of water.

For each soil layer, AWC is recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Available Water Capacity (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

<= 0.11

> 0.11 AND <= 0.12

> 0.12 AND <= 0.14

> 0.14 AND <= 0.16

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Available Water Capacity (Cross Section through Uravan Lease Tracts)

Available Water Capacity— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)				
Map unit symbol	**Map unit name**	**Rating (centimeters per centimeter)**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	0.16	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	0.14	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	0.14	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes	0.12	647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	0.11	13.6	0.3%
87	Rock outcrop		337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes		982.6	21.1%
112	Water		47.5	1.0%
Totals for Area of Interest			**4,646.6**	**100.0%**

Rating Options—Available Water Capacity (Cross Section through Uravan Lease Tracts)

Units of Measure: centimeters per centimeter

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options: Depth Range

Top Depth: 0

Bottom Depth: 12

Units of Measure: Inches

Soil Qualities and Features

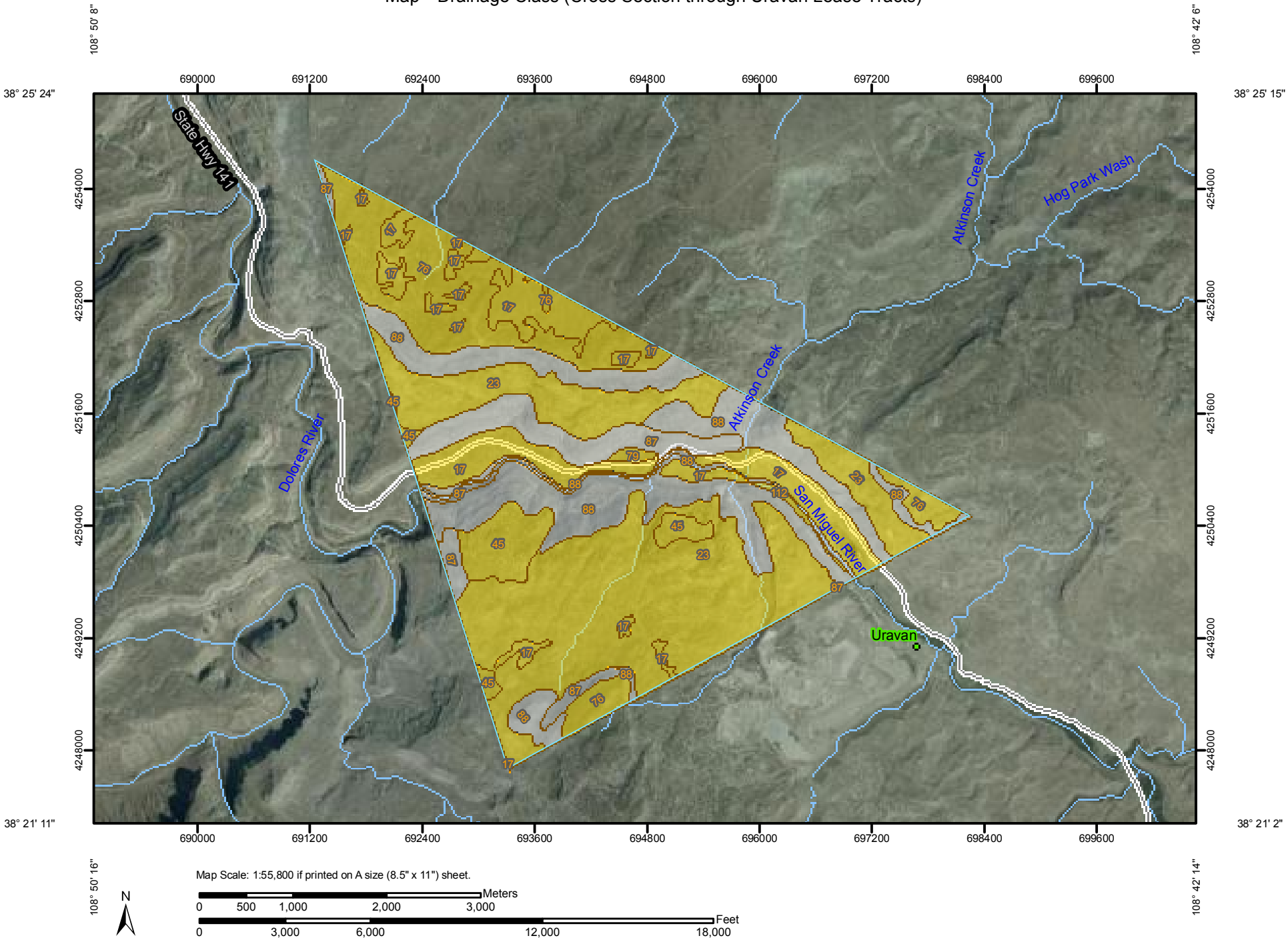
Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and

depth to restrictive layer. These features can greatly impact the use and management of the soil.

Drainage Class (Cross Section through Uravan Lease Tracts)

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Custom Soil Resource Report
Map—Drainage Class (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

Excessively drained

Somewhat excessively drained

Well drained

Moderately well drained

Somewhat poorly drained

Poorly drained

Very poorly drained

Subaqueous

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Drainage Class (Cross Section through Uravan Lease Tracts)

Drainage Class— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	Well drained	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	Well drained	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	Well drained	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes	Well drained	647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	Well drained	13.6	0.3%
87	Rock outcrop		337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes		982.6	21.1%
112	Water		47.5	1.0%
Totals for Area of Interest			**4,646.6**	**100.0%**

Rating Options—Drainage Class (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

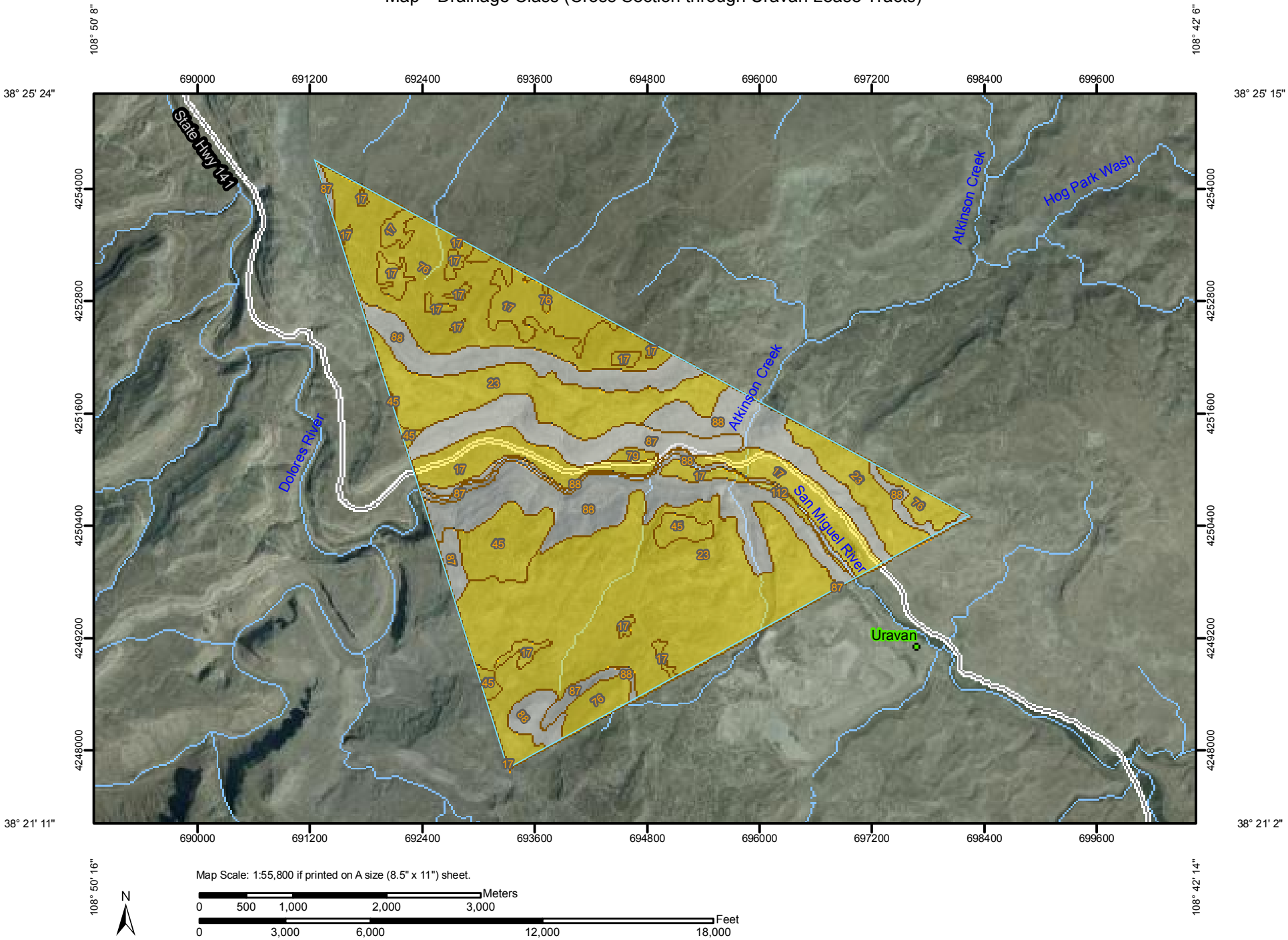
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Drainage Class (Cross Section through Uravan Lease Tracts)

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Custom Soil Resource Report
Map—Drainage Class (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

Excessively drained

Somewhat excessively drained

Well drained

Moderately well drained

Somewhat poorly drained

Poorly drained

Very poorly drained

Subaqueous

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Drainage Class (Cross Section through Uravan Lease Tracts)

Drainage Class— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	Well drained	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	Well drained	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	Well drained	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes	Well drained	647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	Well drained	13.6	0.3%
87	Rock outcrop		337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes		982.6	21.1%
112	Water		47.5	1.0%
Totals for Area of Interest			**4,646.6**	**100.0%**

Rating Options—Drainage Class (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group (Cross Section through Uravan Lease Tracts)

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

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

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

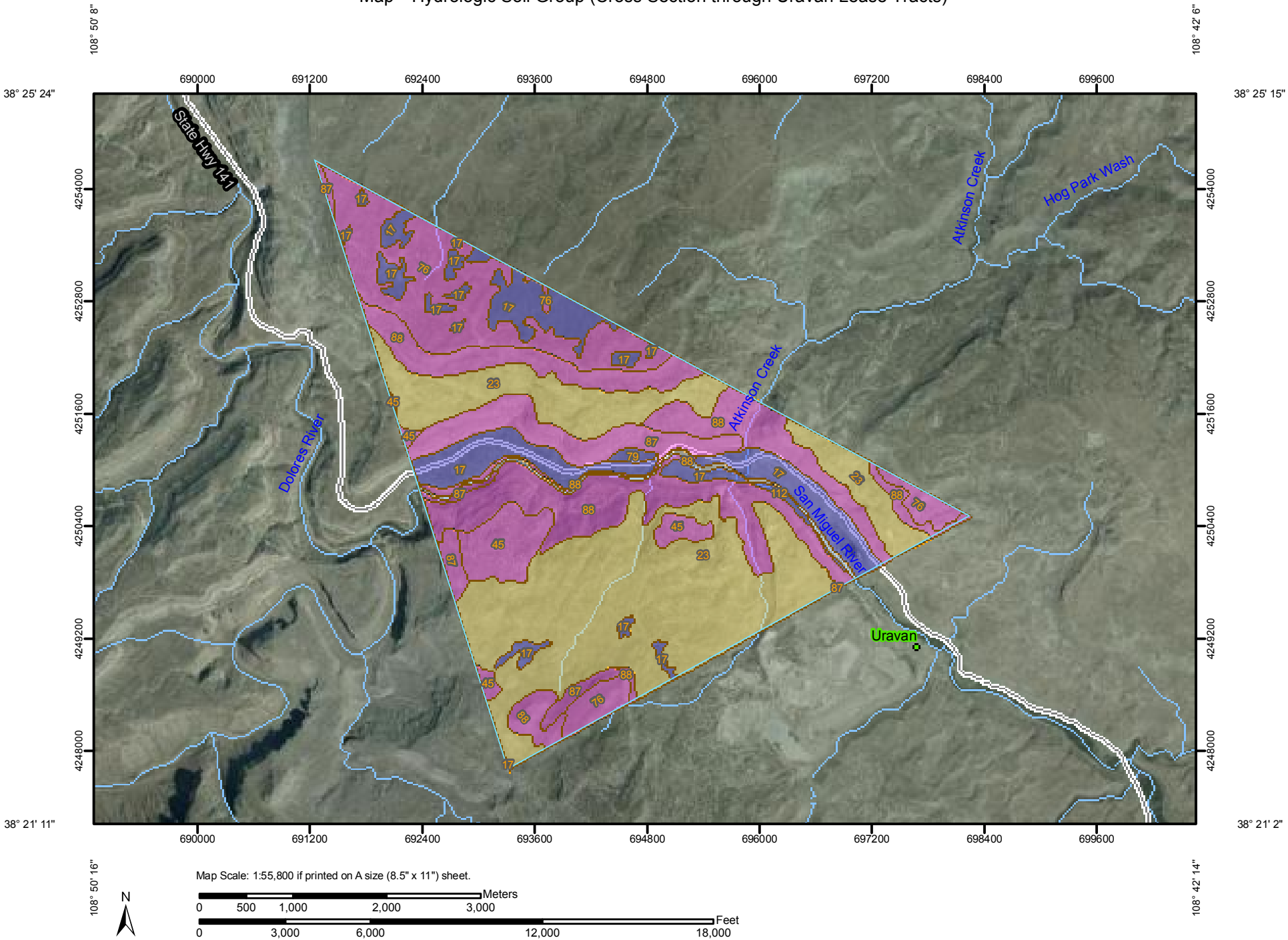
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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

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

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

Custom Soil Resource Report
Map—Hydrologic Soil Group (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties
Survey Area Data: Version 7, May 3, 2011

Date(s) aerial images were photographed: 8/28/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group (Cross Section through Uravan Lease Tracts)

Hydrologic Soil Group— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	B	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	C	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	D	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes	D	647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	B	13.6	0.3%
87	Rock outcrop	D	337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes	D	982.6	21.1%
112	Water		47.5	1.0%
Totals for Area of Interest			**4,646.6**	**100.0%**

Rating Options—Hydrologic Soil Group (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

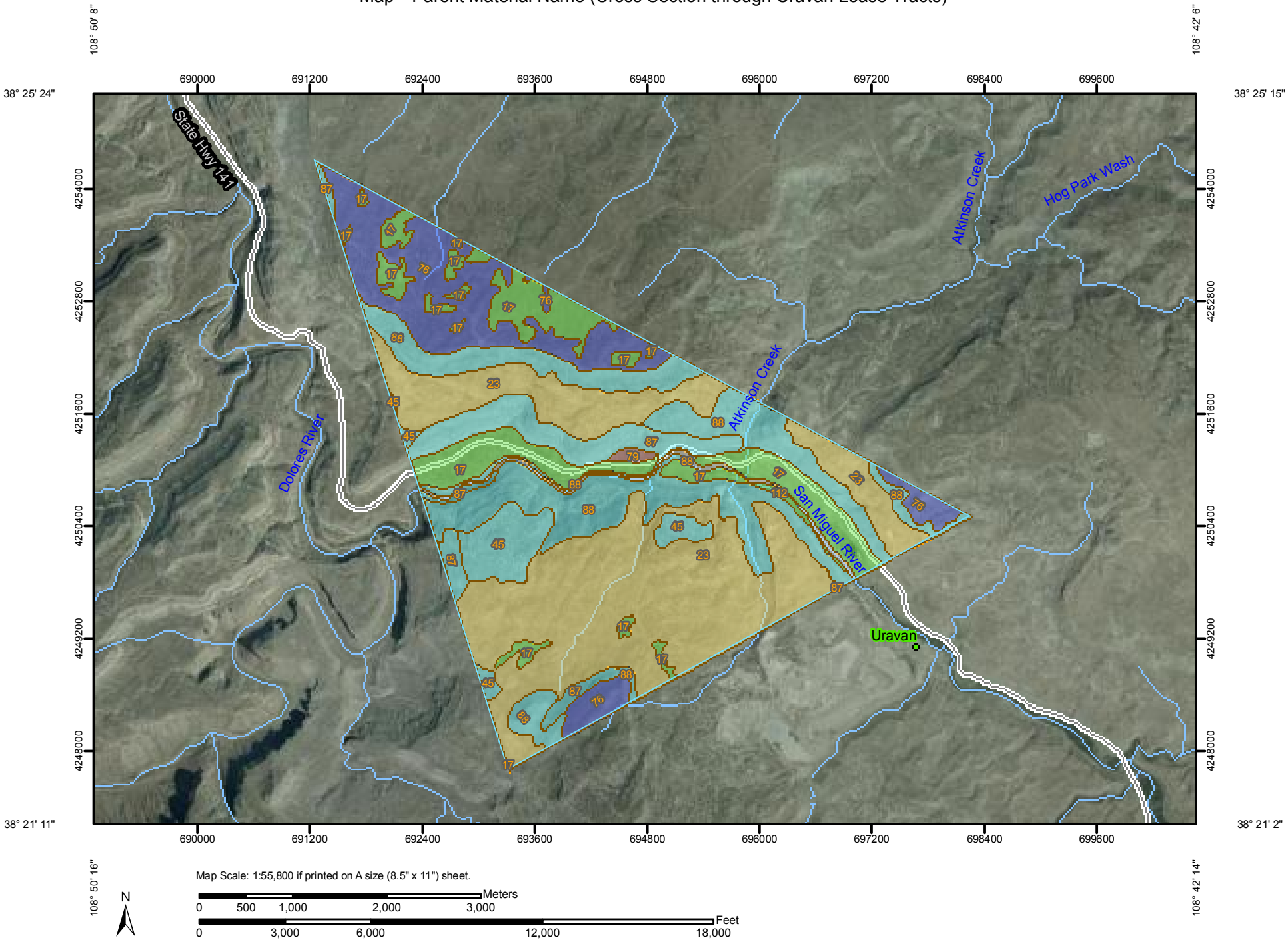
Parent Material Name (Cross Section through Uravan Lease Tracts)

Parent material name is a term for the general physical, chemical, and mineralogical composition of the unconsolidated material, mineral or organic, in which the soil forms. Mode of deposition and/or weathering may be implied by the name.

The soil surveyor uses parent material to develop a model used for soil mapping. Soil scientists and specialists in other disciplines use parent material to help interpret soil boundaries and project performance of the material below the soil. Many soil properties relate to parent material. Among these properties are proportions of sand, silt, and clay; chemical content; bulk density; structure; and the kinds and amounts of rock fragments. These properties affect interpretations and may be criteria used to separate soil series. Soil properties and landscape information may imply the kind of parent material.

For each soil in the database, one or more parent materials may be identified. One is marked as the representative or most commonly occurring. The representative parent material name is presented here.

Custom Soil Resource Report
Map—Parent Material Name (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

alluvium and colluvium derived from sandstone

alluvium derived from sandstone

residuum weathered from interbedded sandstone and shale

residuum weathered from sandstone

residuum weathered from shale

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

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Table—Parent Material Name (Cross Section through Uravan Lease Tracts)

Parent Material Name— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	alluvium derived from sandstone	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	residuum weathered from shale	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	residuum weathered from sandstone	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes	residuum weathered from interbedded sandstone and shale	647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	alluvium and colluvium derived from sandstone	13.6	0.3%
87	Rock outcrop	residuum weathered from sandstone	337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes	residuum weathered from sandstone	982.6	21.1%
112	Water		47.5	1.0%
Totals for Area of Interest			**4,646.6**	**100.0%**

Rating Options—Parent Material Name (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Water Features

Water Features include ponding frequency, flooding frequency, and depth to water table.

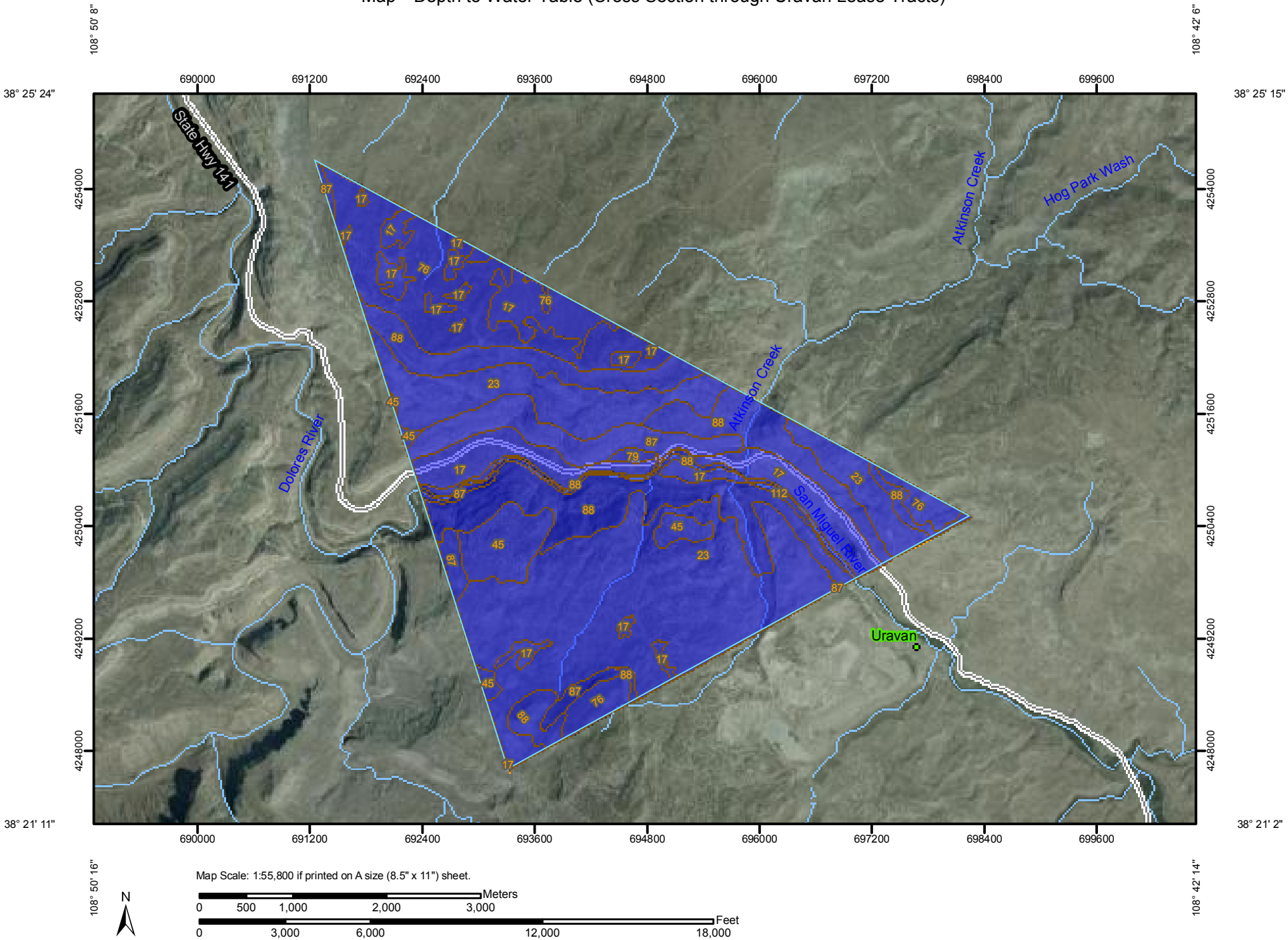
Depth to Water Table (Cross Section through Uravan Lease Tracts)

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors

(redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Depth to Water Table (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

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Table—Depth to Water Table (Cross Section through Uravan Lease Tracts)

Depth to Water Table— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)				
Map unit symbol	**Map unit name**	**Rating (centimeters)**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	>200	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	>200	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	>200	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes	>200	647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	>200	13.6	0.3%
87	Rock outcrop	>200	337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes	>200	982.6	21.1%
112	Water	>200	47.5	1.0%
Totals for Area of Interest			**4,646.6**	**100.0%**

Rating Options—Depth to Water Table (Cross Section through Uravan Lease Tracts)

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: *None Specified*

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

Flooding Frequency Class (Cross Section through Uravan Lease Tracts)

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.

"None" means that flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.

"Very rare" means that flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.

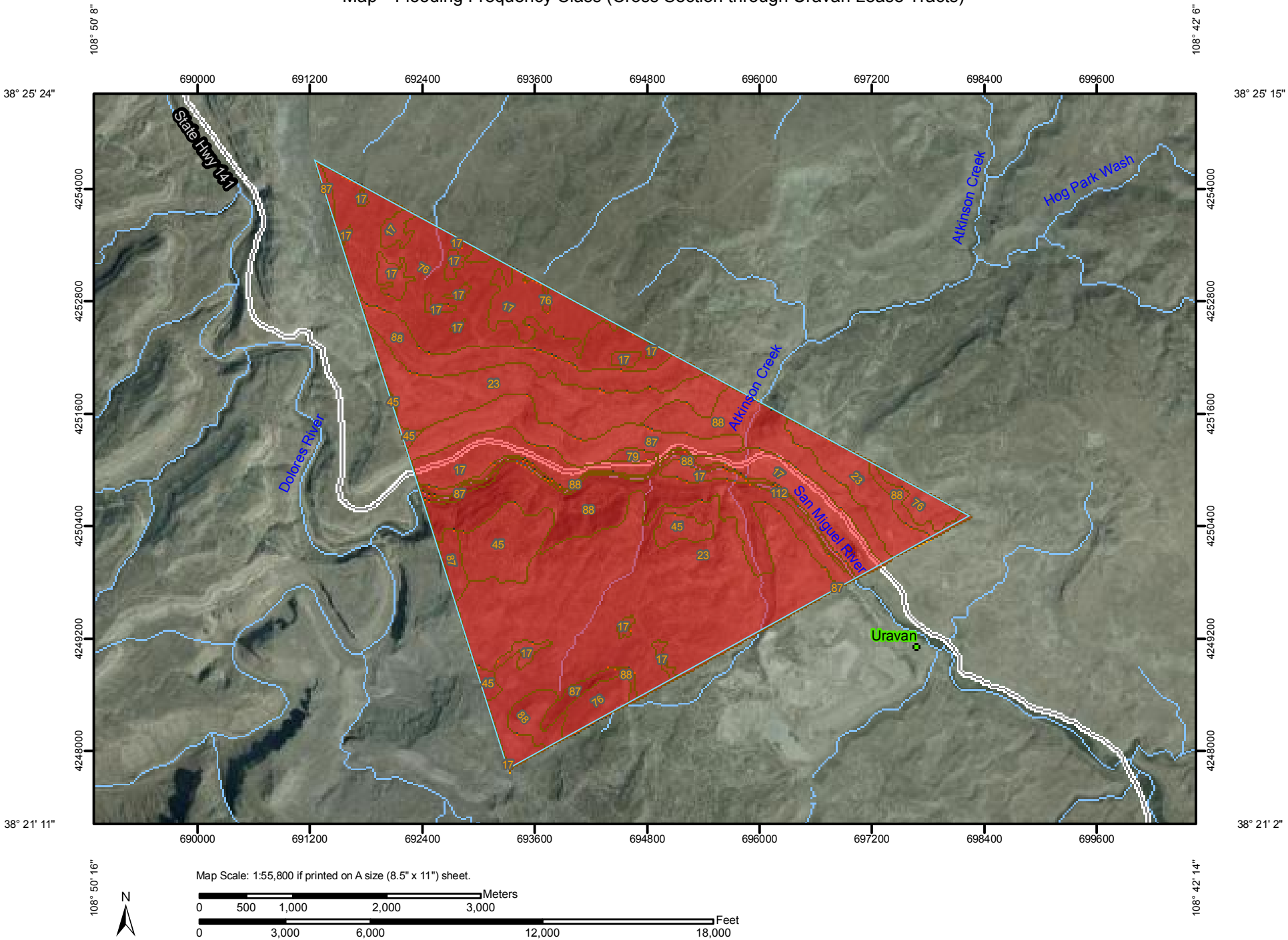
"Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.

"Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.

"Frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.

"Very frequent" means that flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

Custom Soil Resource Report
Map—Flooding Frequency Class (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

None

Very Rare

Rare

Occasional

Frequent

Very Frequent

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:55,800 if printed on A size (8.5" × 11") sheet.

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Table—Flooding Frequency Class (Cross Section through Uravan Lease Tracts)

Flooding Frequency Class— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
17	Barx-Progresso complex, 3 to 12 percent slopes	None	630.9	13.6%
23	Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	None	1,784.9	38.4%
45	Gladel-Bond-Rock outcrop complex, 1 to 50 percent slopes	None	201.4	4.3%
76	Pinon-Bowdish-Rock outcrop complex, 3 to 30 percent slopes	None	647.7	13.9%
79	Pojoaque-Chilton complex, 5 to 30 percent slopes, extremely stony	None	13.6	0.3%
87	Rock outcrop	None	337.6	7.3%
88	Rock outcrop-Orthents complex, 40 to 90 percent slopes	None	982.6	21.1%
112	Water	None	47.5	1.0%
Totals for Area of Interest			**4,646.6**	**100.0%**

Rating Options—Flooding Frequency Class (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: More Frequent

Beginning Month: January

Ending Month: December

Ponding Frequency Class (Cross Section through Uravan Lease Tracts)

Ponding is standing water in a closed depression. The water is removed only by deep percolation, transpiration, or evaporation or by a combination of these processes. Ponding frequency classes are based on the number of times that ponding occurs over a given period. Frequency is expressed as none, rare, occasional, and frequent.

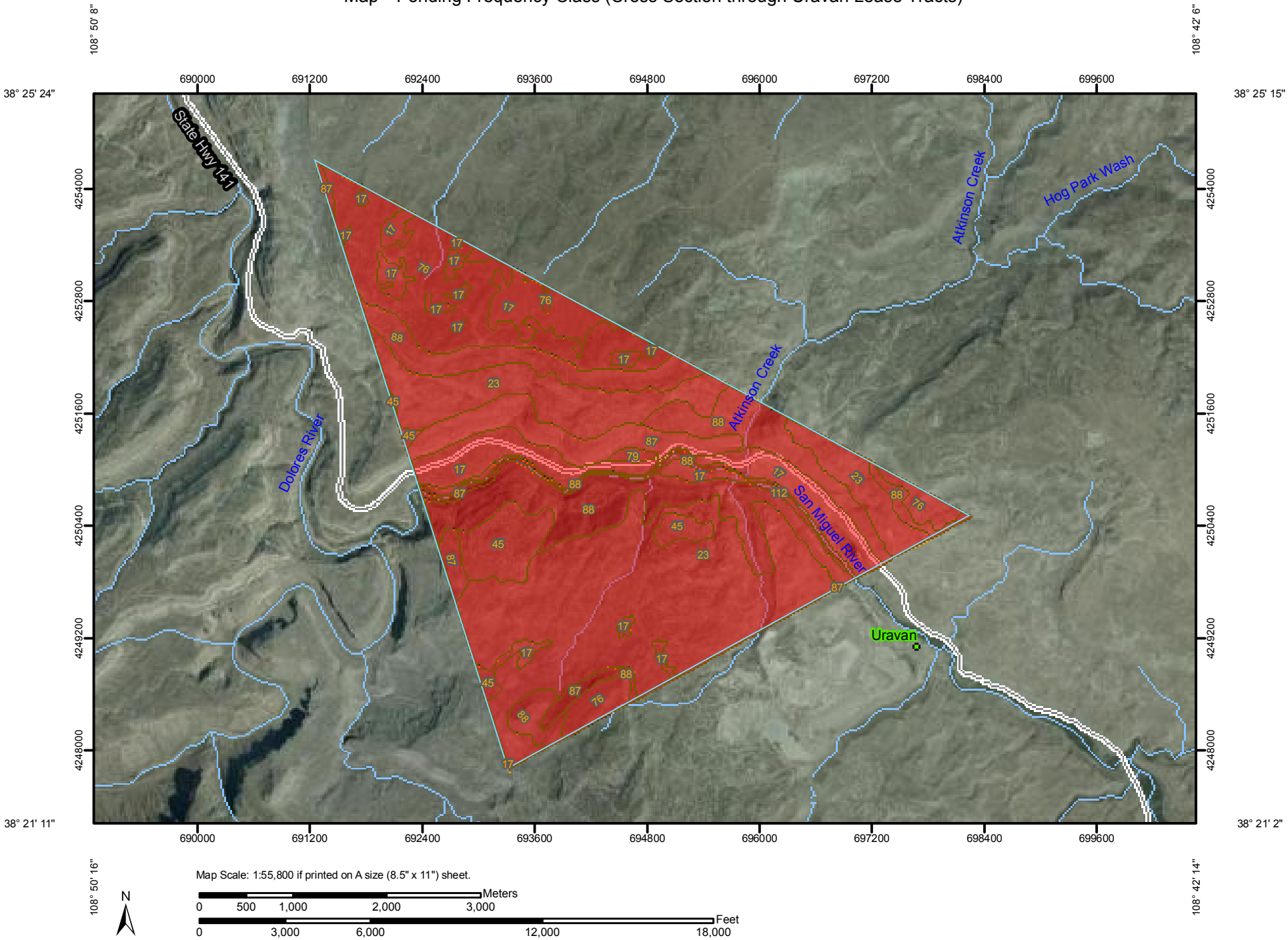
"None" means that ponding is not probable. The chance of ponding is nearly 0 percent in any year.

"Rare" means that ponding is unlikely but possible under unusual weather conditions. The chance of ponding is nearly 0 percent to 5 percent in any year.

"Occasional" means that ponding occurs, on the average, once or less in 2 years. The chance of ponding is 5 to 50 percent in any year.

"Frequent" means that ponding occurs, on the average, more than once in 2 years. The chance of ponding is more than 50 percent in any year.

Custom Soil Resource Report
Map—Ponding Frequency Class (Cross Section through Uravan Lease Tracts)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

None

Rare

Occasional

Frequent

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

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Ponding Frequency Class— Summary by Map Unit — San Miguel Area, Colorado, Parts of Dolores, Montrose, and San Miguel Counties (CO675)				
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112	Water	None	47.5	1.0%
Totals for Area of Interest			**4,646.6**	**100.0%**

Rating Options—Ponding Frequency Class (Cross Section through Uravan Lease Tracts)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: More Frequent

Beginning Month: January

Ending Month: December

References

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