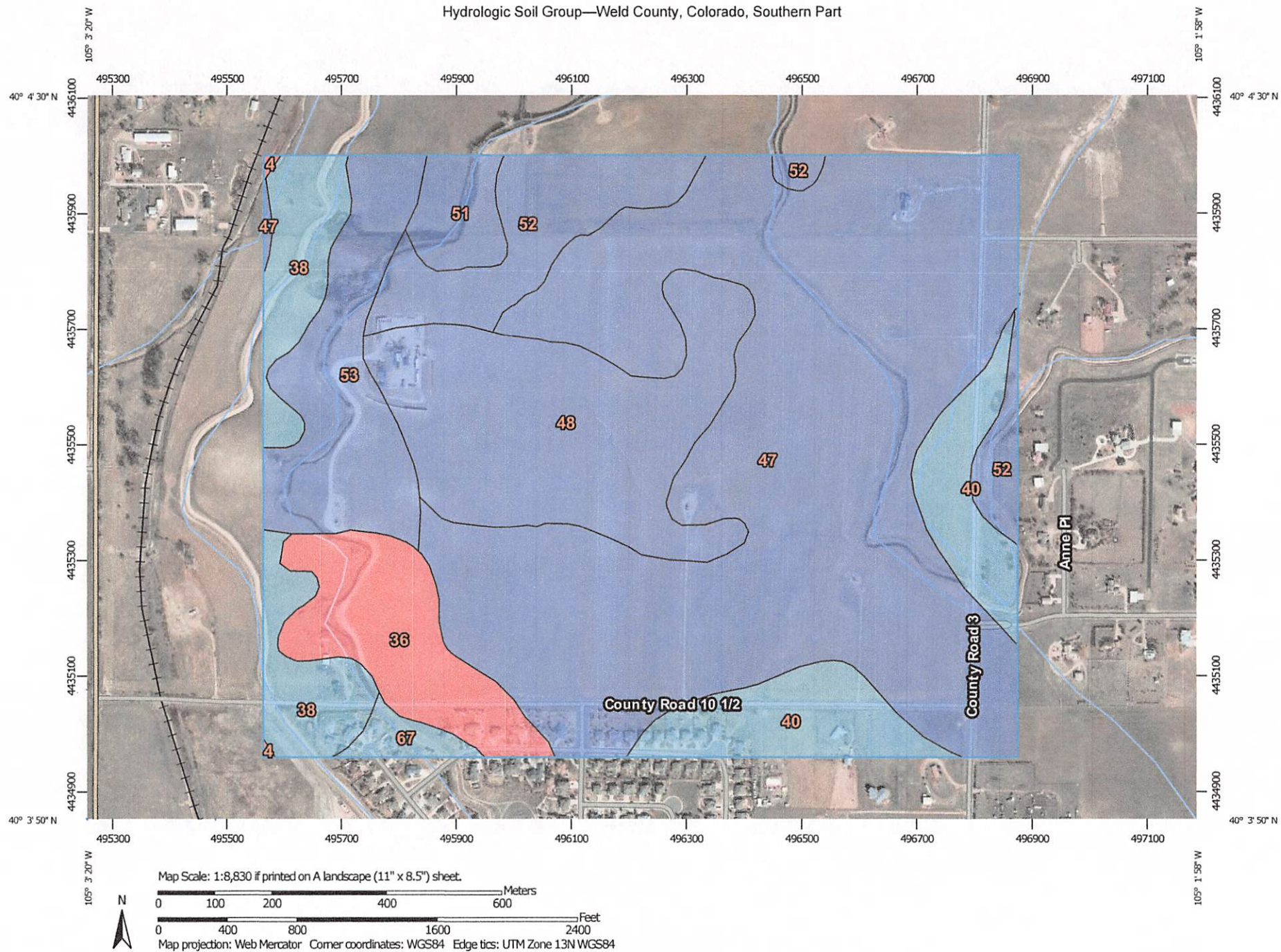



APPENDIX D – SOILS INFORMATION

Hydrologic Soil Group—Weld County, Colorado, Southern Part











MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





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

Soil Rating Lines

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

Soil Rating Points






 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: Weld County, Colorado, Southern Part
 Survey Area Data: Version 12, Jan 3, 2014

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

Date(s) aerial images were photographed: Apr 22, 2011—Apr 13, 2012

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.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Weld County, Colorado, Southern Part (CO618)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
4	Aquolls and Aquepts, flooded	D	0.3	0.1%
36	Midway-Shingle complex, 5 to 20 percent slopes	D	21.2	6.3%
38	Nelson fine sandy loam, 3 to 9 percent slopes	C	21.2	6.3%
40	Nunn loam, 1 to 3 percent slopes	C	25.8	7.6%
47	Olney fine sandy loam, 1 to 3 percent slopes	B	162.4	47.9%
48	Olney fine sandy loam, 3 to 5 percent slopes	B	48.0	14.2%
51	Otero sandy loam, 1 to 3 percent slopes	B	7.0	2.1%
52	Otero sandy loam, 3 to 5 percent slopes	B	23.4	6.9%
53	Otero sandy loam, 5 to 9 percent slopes	B	26.3	7.8%
67	Ulm clay loam, 3 to 5 percent slopes	C	3.2	0.9%
Totals for Area of Interest			338.8	100.0%

Description

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.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

RUSLE2 Related Attributes

This report summarizes those soil attributes used by the Revised Universal Soil Loss Equation Version 2 (RUSLE2) for the map units in the selected area. The report includes the map unit symbol, the component name, and the percent of the component in the map unit. Soil property data for each map unit component include the hydrologic soil group, erosion factors Kf for the surface horizon, erosion factor T, and the representative percentage of sand, silt, and clay in the surface horizon.

Report—RUSLE2 Related Attributes

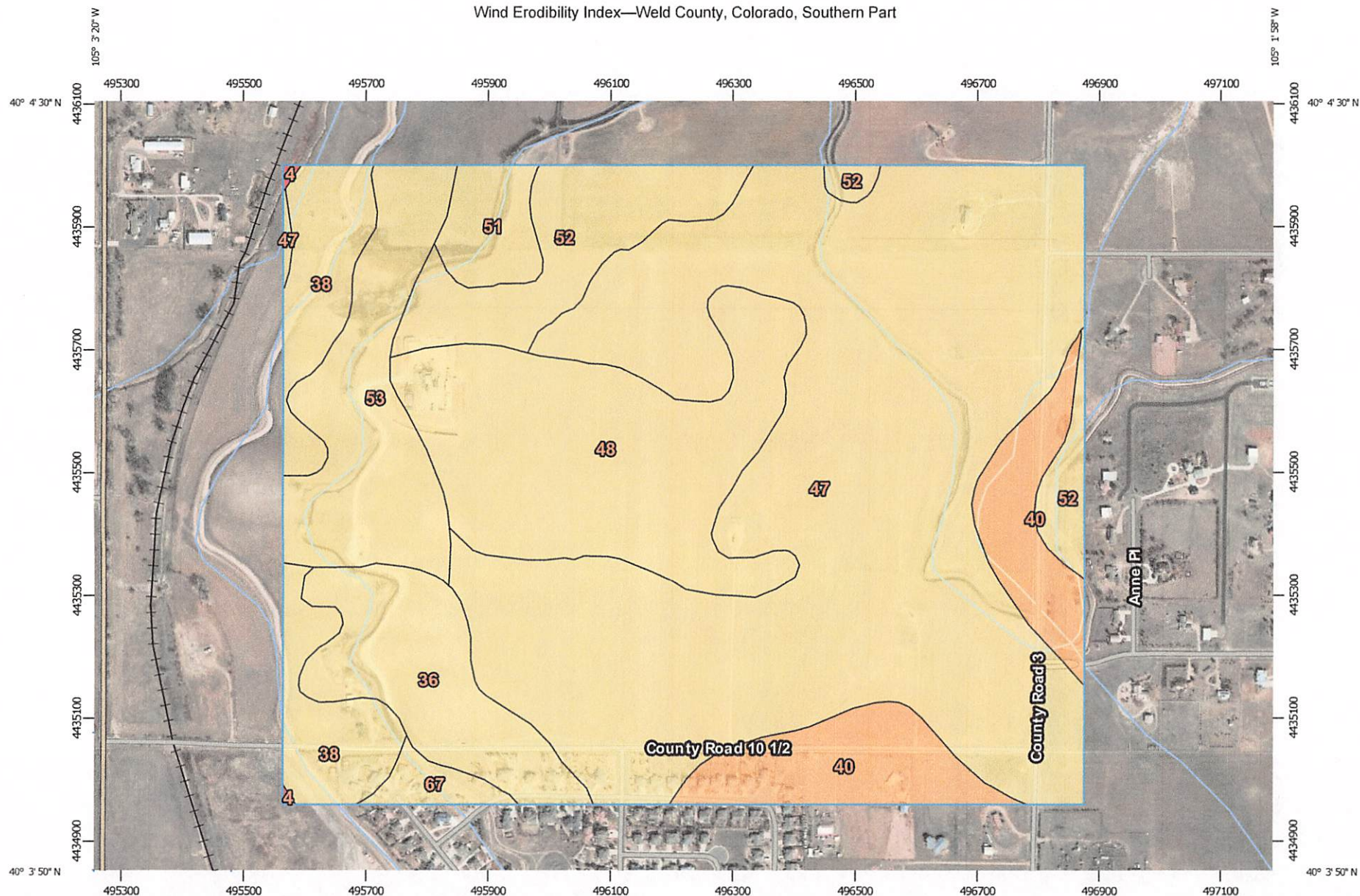
RUSLE2 Related Attributes—Weld County, Colorado, Southern Part								
Map symbol and soil name	Pct. of map unit	Slope length (ft)	Hydrologic group	Kf	T factor	Representative value		
						% Sand	% Silt	% Clay
4—Aquolls and Aquepts, flooded								
Aquolls	55	—	D	—	5	—	—	—
Aquepts, flooded	25	—	D	—	5	—	—	—
36—Midway-Shingle complex, 5 to 20 percent slopes								
Midway	50	—	D	.17	2	22.1	27.9	50.0
Shingle	35	—	D	.37	2	43.2	38.8	18.0
38—Nelson fine sandy loam, 3 to 9 percent slopes								
Nelson	85	—	C	.24	3	65.2	27.3	7.5
40—Nunn loam, 1 to 3 percent slopes								
Nunn	85	—	C	.24	5	39.2	37.3	23.5
47—Olney fine sandy loam, 1 to 3 percent slopes								
Olney	85	—	B	.28	5	65.4	19.6	15.0
48—Olney fine sandy loam, 3 to 5 percent slopes								
Olney	85	—	B	.28	5	65.4	19.6	15.0
51—Otero sandy loam, 1 to 3 percent slopes								
Otero	85	—	B	.28	5	65.9	19.1	15.0
52—Otero sandy loam, 3 to 5 percent slopes								
Otero	85	—	B	.28	5	65.9	19.1	15.0
53—Otero sandy loam, 5 to 9 percent slopes								
Otero	85	—	B	.28	5	65.9	19.1	15.0

RUSLE2 Related Attributes—Weld County, Colorado, Southern Part								
Map symbol and soil name	Pct. of map unit	Slope length (ft)	Hydrologic group	Kf	T factor	Representative value		
						% Sand	% Silt	% Clay
67—Ulm clay loam, 3 to 5 percent slopes								
Ulm	85	—	C	.20	5	33.2	36.3	30.5

Data Source Information

Soil Survey Area: Weld County, Colorado, Southern Part
 Survey Area Data: Version 12, Jan 3, 2014

Wind Erodibility Index—Weld County, Colorado, Southern Part



Map Scale: 1:8,830 if printed on A landscape (11" x 8.5") sheet.

0 100 200 400 600 Meters

0 400 800 1600 2400 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84




Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

7/22/2014
Page 1













MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




Soils

Soil Rating Polygons













	0
	38
	48
	56
	86
	134
	160
	180
	220
	250
	310
	Not rated or not available

Soil Rating Lines


	0
	38
	48
	56
	86
	134
	160
	180
	220

	250
	310
	Not rated or not available






Soil Rating Points

	0
	38
	48
	56
	86
	134
	160
	180
	220
	250
	310
	Not rated or not available

Water Features

 Streams and Canals

Transportation

	Rails
	Interstate Highways
	US Routes
	Major Roads
	Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Weld County, Colorado, Southern Part
Survey Area Data: Version 12, Jan 3, 2014

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

Date(s) aerial images were photographed: Apr 22, 2011—Apr 13, 2012

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.

Wind Erodibility Index

Wind Erodibility Index— Summary by Map Unit — Weld County, Colorado, Southern Part (CO618)				
Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
4	Aquolls and Aquepts, flooded	0	0.3	0.1%
36	Midway-Shingle complex, 5 to 20 percent slopes	86	21.2	6.3%
38	Nelson fine sandy loam, 3 to 9 percent slopes	86	21.2	6.3%
40	Nunn loam, 1 to 3 percent slopes	48	25.8	7.6%
47	Olney fine sandy loam, 1 to 3 percent slopes	86	162.4	47.9%
48	Olney fine sandy loam, 3 to 5 percent slopes	86	48.0	14.2%
51	Otero sandy loam, 1 to 3 percent slopes	86	7.0	2.1%
52	Otero sandy loam, 3 to 5 percent slopes	86	23.4	6.9%
53	Otero sandy loam, 5 to 9 percent slopes	86	26.3	7.8%
67	Ulm clay loam, 3 to 5 percent slopes	86	3.2	0.9%
Totals for Area of Interest			338.8	100.0%

Description

The wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Rating Options

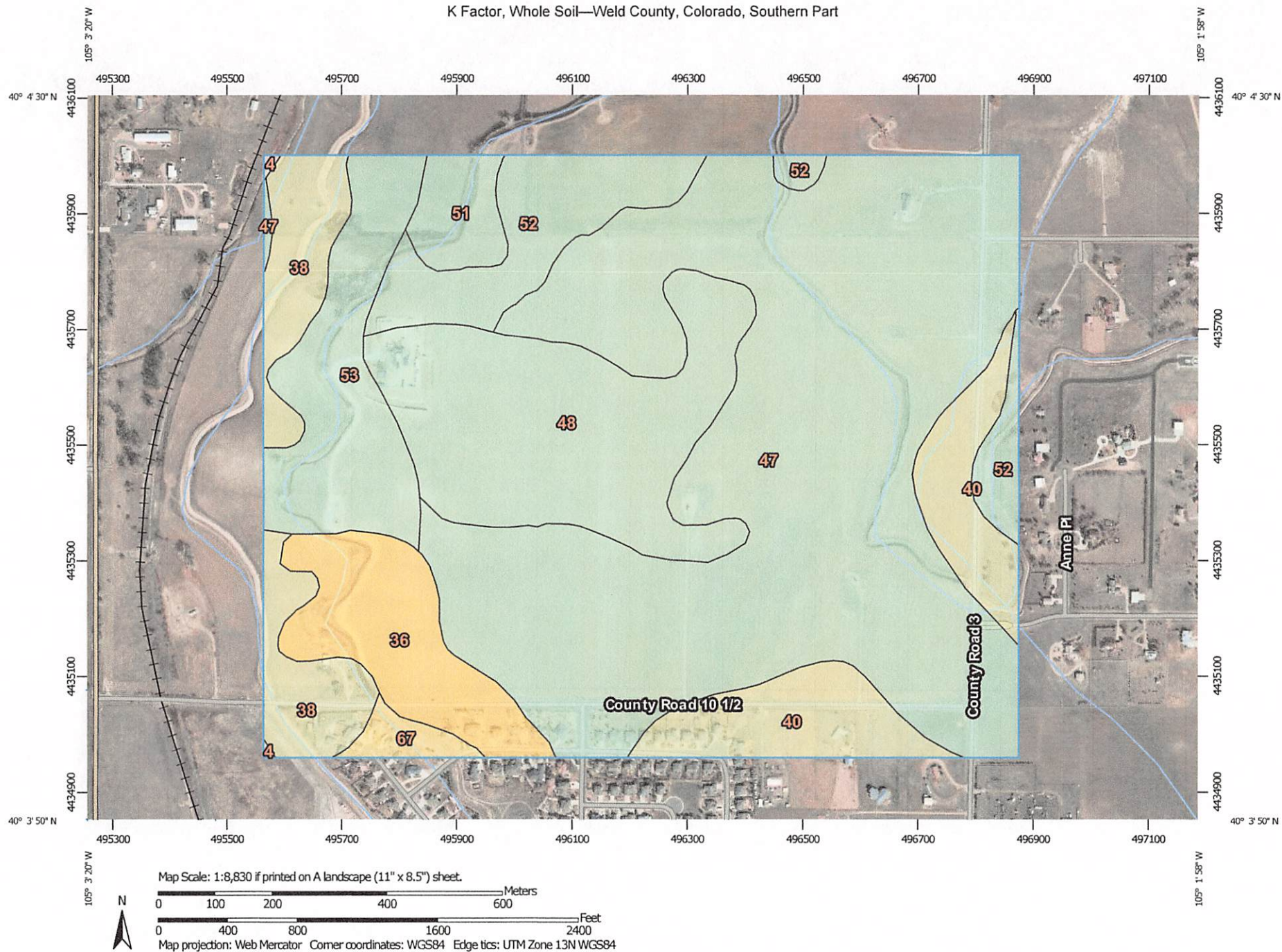
Units of Measure: tons per acre per year

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

K Factor, Whole Soil—Weld County, Colorado, Southern Part




Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

7/22/2014
Page 1 of 4
















MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

 .24

 .28

 .32

 .37

 .43
















 .49

 .55


 .64

 Not rated or not available






Soil Rating Points

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

Water Features

 Streams and Canals

Transportation

	Rails
	Interstate Highways
	US Routes
	Major Roads
	Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

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Survey Area Data: Version 12, Jan 3, 2014

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Date(s) aerial images were photographed: Apr 22, 2011—Apr 13, 2012

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K Factor, Whole Soil

K Factor, Whole Soil— Summary by Map Unit — Weld County, Colorado, Southern Part (CO618)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
4	Aquolls and Aquepts, flooded		0.3	0.1%
36	Midway-Shingle complex, 5 to 20 percent slopes	.17	21.2	6.3%
38	Nelson fine sandy loam, 3 to 9 percent slopes	.24	21.2	6.3%
40	Nunn loam, 1 to 3 percent slopes	.24	25.8	7.6%
47	Olney fine sandy loam, 1 to 3 percent slopes	.28	162.4	47.9%
48	Olney fine sandy loam, 3 to 5 percent slopes	.28	48.0	14.2%
51	Otero sandy loam, 1 to 3 percent slopes	.28	7.0	2.1%
52	Otero sandy loam, 3 to 5 percent slopes	.28	23.4	6.9%
53	Otero sandy loam, 5 to 9 percent slopes	.28	26.3	7.8%
67	Ulm clay loam, 3 to 5 percent slopes	.20	3.2	0.9%
Totals for Area of Interest			338.8	100.0%

Description

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.

Rating Options

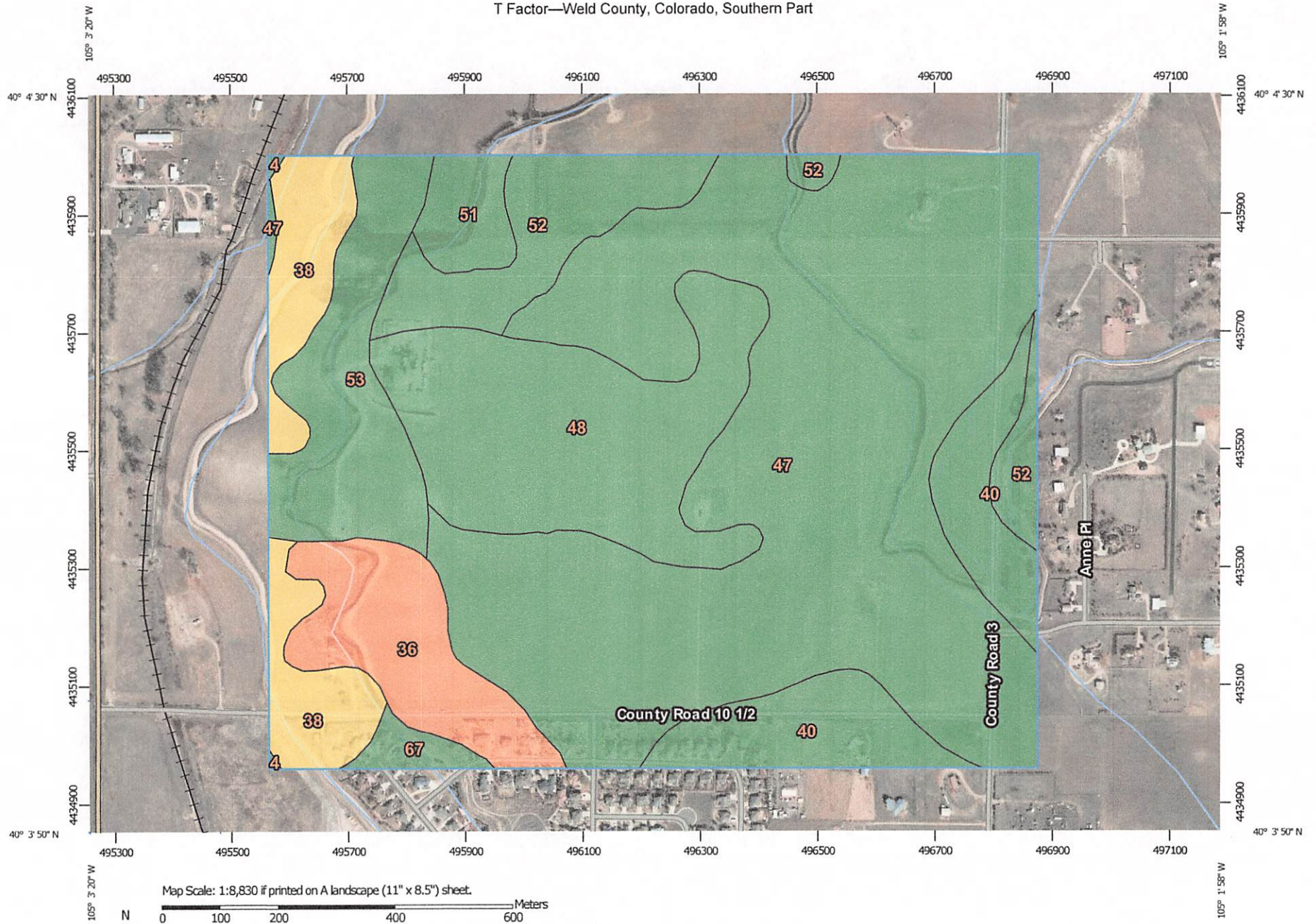
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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

T Factor—Weld County, Colorado, Southern Part



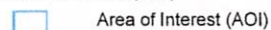
Natural Resources
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Web Soil Survey
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7/22/2014
Page 1 of 3

MAP LEGEND

Area of Interest (AOI)



Area of Interest (AOI)

Soils

Soil Rating Polygons



1



2



3



4



5



Not rated or not available

Soil Rating Lines



1



2



3



4



5



Not rated or not available

Soil Rating Points



1



2



3



4



5



Not rated or not available

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

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Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
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Date(s) aerial images were photographed: Apr 22, 2011—Apr 13, 2012

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T Factor

T Factor— Summary by Map Unit — Weld County, Colorado, Southern Part (CO618)				
Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
4	Aquolls and Aquepts, flooded	5	0.3	0.1%
36	Midway-Shingle complex, 5 to 20 percent slopes	2	21.2	6.3%
38	Nelson fine sandy loam, 3 to 9 percent slopes	3	21.2	6.3%
40	Nunn loam, 1 to 3 percent slopes	5	25.8	7.6%
47	Olney fine sandy loam, 1 to 3 percent slopes	5	162.4	47.9%
48	Olney fine sandy loam, 3 to 5 percent slopes	5	48.0	14.2%
51	Otero sandy loam, 1 to 3 percent slopes	5	7.0	2.1%
52	Otero sandy loam, 3 to 5 percent slopes	5	23.4	6.9%
53	Otero sandy loam, 5 to 9 percent slopes	5	26.3	7.8%
67	Ulm clay loam, 3 to 5 percent slopes	5	3.2	0.9%
Totals for Area of Interest			338.8	100.0%

Description

The T factor is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Rating Options

Units of Measure: tons per acre per year

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No