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of Agriculture



Natural Resources
Conservation Service

Lakewood, Colorado

RWA 10190018

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Lower South Platte Watershed

Hydrologic Unit Code 10190018

Rapid Assessment



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Introduction

Background Information

The Natural Resources Conservation Service (NRCS) is encouraging the development of rapid watershed assessments in order to increase the speed and efficiency generating information to guide conservation implementation, as well as the speed and efficiency of putting it into the hands of local decision makers.

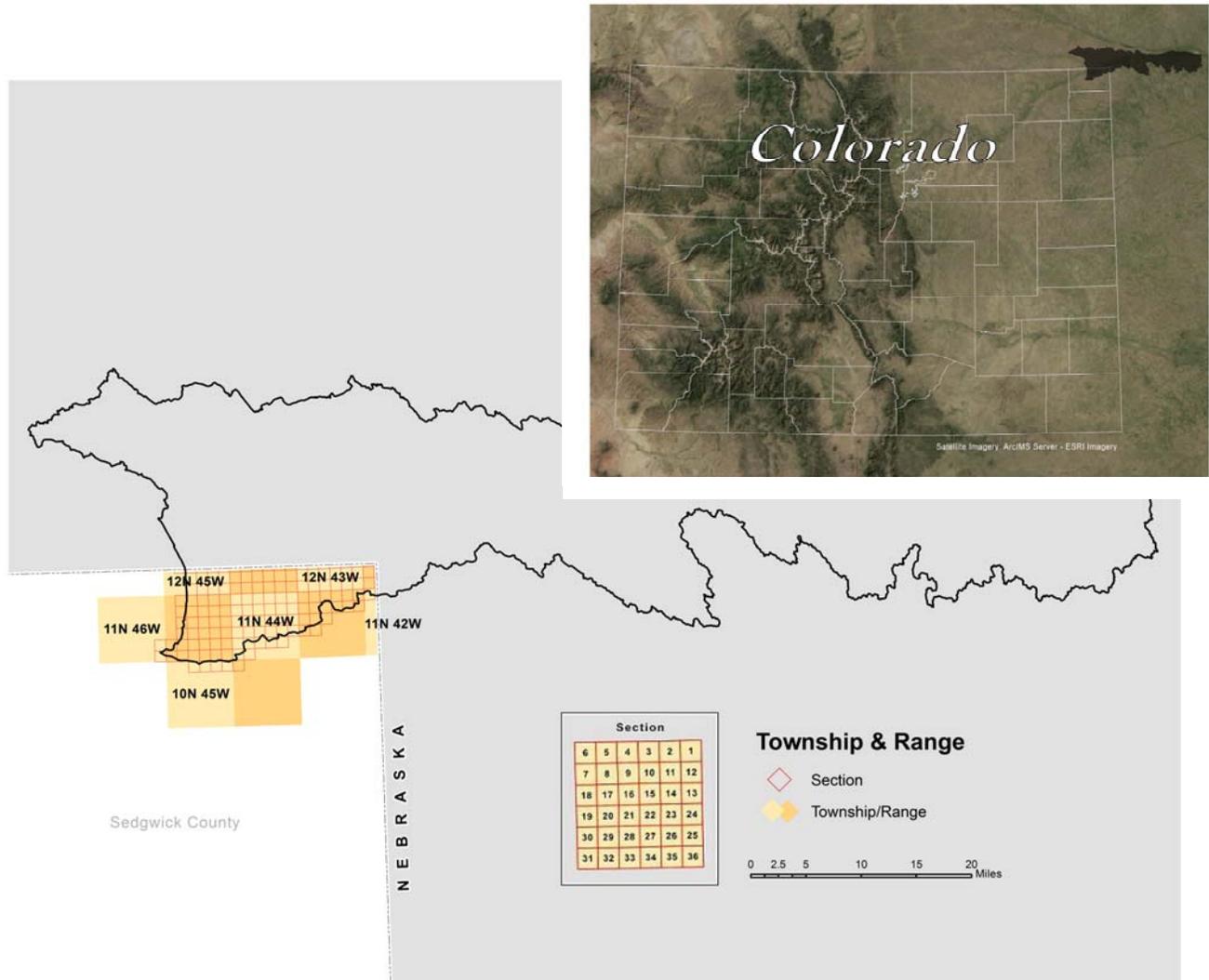
Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help landowners and local leaders set priorities and determine the best actions to achieve their goals.

Benefits of these Activities

While rapid assessments provide less detail and analysis than full-blown studies and plans, they do provide the benefits of NRCS locally-led planning in less time and at a reduced cost. The benefits include:

- Quick and inexpensive tools for setting priorities and taking action
- Providing a level of detail that is sufficient for identifying actions that can be taken with no further watershed-level studies or analyses
- Actions to be taken may require further Federal or State permits or ESA or NEPA analysis but these activities are part of standard requirements for use of best management practices (BMPs) and conservation systems
- Identifying where further detailed analyses or watershed studies are needed
- Plans address multiple objectives and concerns of landowners and communities
- Plans are based on established partnerships at the local and state levels
- Plans enable landowners and communities to decide on the best mix of NRCS programs that will meet their goals
- Plans include the full array of conservation program tools (i.e. cost-share practices, easements, technical assistance)

Rapid Watershed Assessments provide information that helps land-owners and local leaders set conservation priorities.



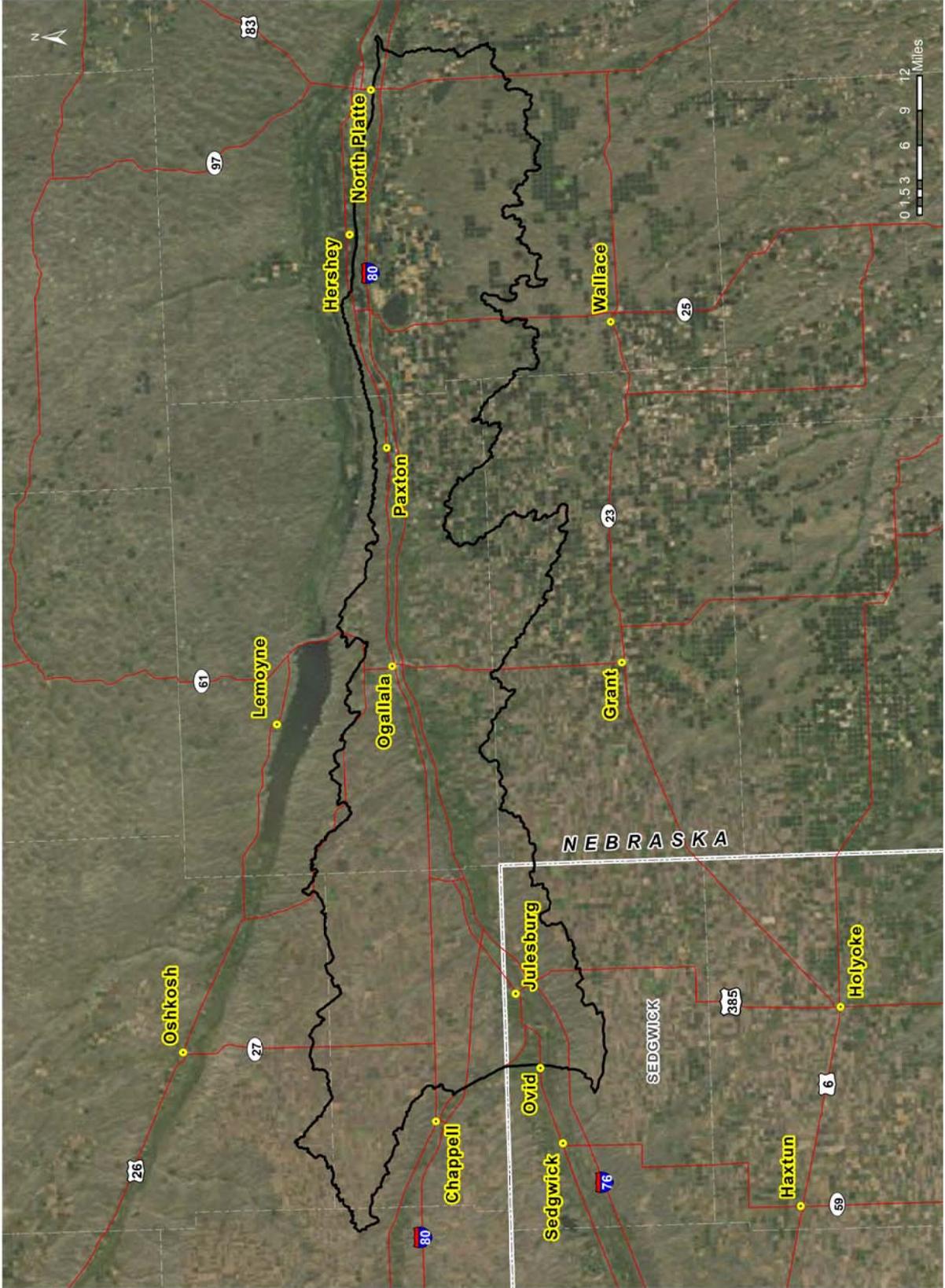
COLORADO County	County Acres	County Acres in LOWER SOUTH PLATTE Watershed	% of County in the Watershed	% of Watershed in the County
Sedgwick	351,884	68,748	19.5%	7.6%

NEBRASKA

Cheyenne	765,638	1,915	0.3%	0.2%
Deuel	282,222	212,789	75.4%	23.5%
Garden	1,108,269	12,824	1.2%	1.4%
Keith	711,049	297,735	41.9%	32.9%
Lincoln	1,651,921	259,643	15.7%	28.7%
Perkins	566,580	51,147	9.0%	5.7%

904,800

Lower South Platte Watershed - 10190018

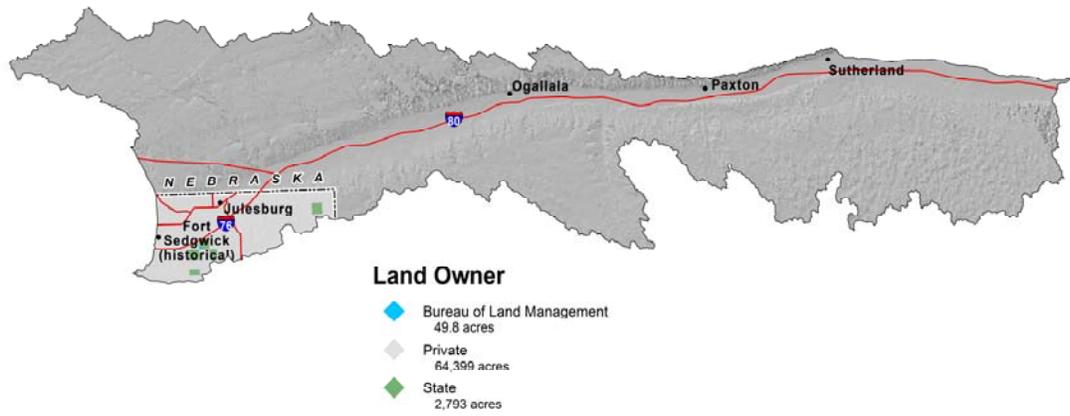
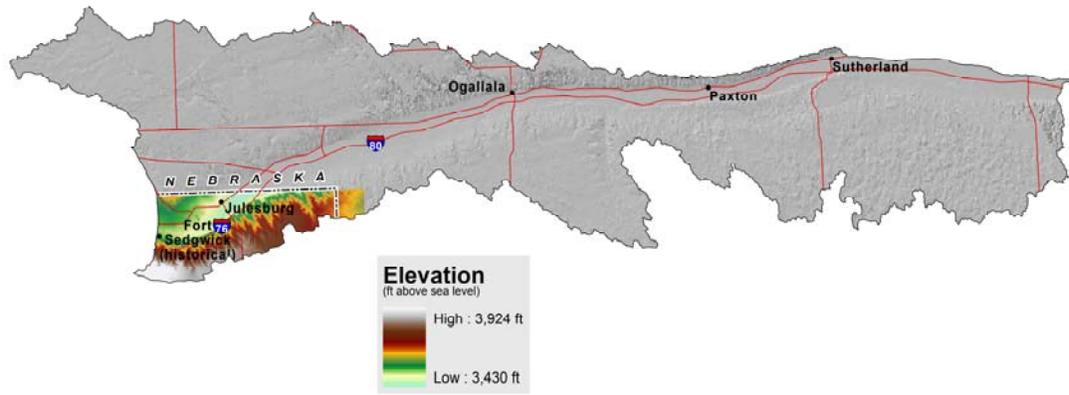




Common Resource Areas (CRA)

◆ 65.1 ◆ 72.1 ◆ 73.1

MLRA	CRA	CRA NAME	CRA DESCRIPTION
72	72.1	Central High Tableland	The Central High Tableland CRA is broad, level to gently rolling, loess mantled tableland. Local relief is measured in feet on the tableland tens of feet and major river valleys bordered by steep slopes. Soils are deep . Presettlement vegetation was short grass prairies. Nearly all of this area in cropland, both dryland small grain crops and irrigated corn and grain sorghum.



<u>LOWER SOUTH PLATTE</u> <u>Land Use</u>	Total Acreage	Vegetation	Acreage
Cropland	25,257	Dryland Ag	15,560
		Irrigated Ag*	9,697
Rangeland/Grassland	39,264	Grass Dominated	14,268
		Grass/Forb Mix	21,413
		Sagebrush/Grass Mix	7
		Sand Dune Complex	352
		Shrub/Grass/Forb Mix	3,224
		Cottonwood	2,327
Riparian	2,344	Herbaceous Riparian	16
		Riparian	1
Water	310	Water	310
Other	1,779	Commercial	56
		Residential	319
		Soil	1,063
		Urban/Built Up	341
		~Total Colorado Watershed Acres	68,953

* Colorado Decision Support Systems Data

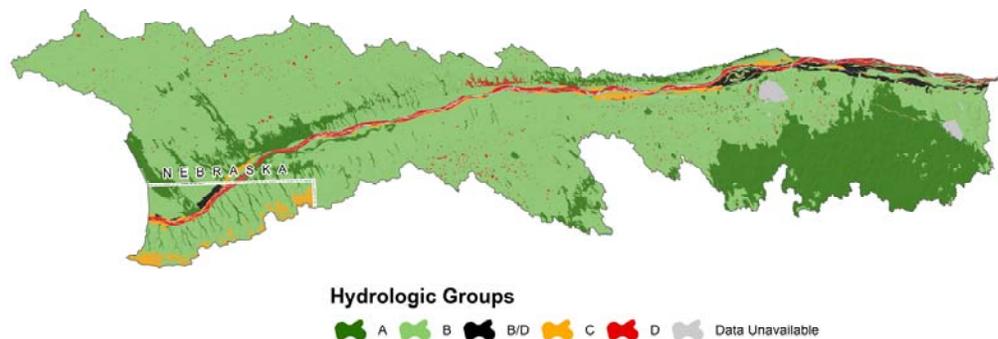
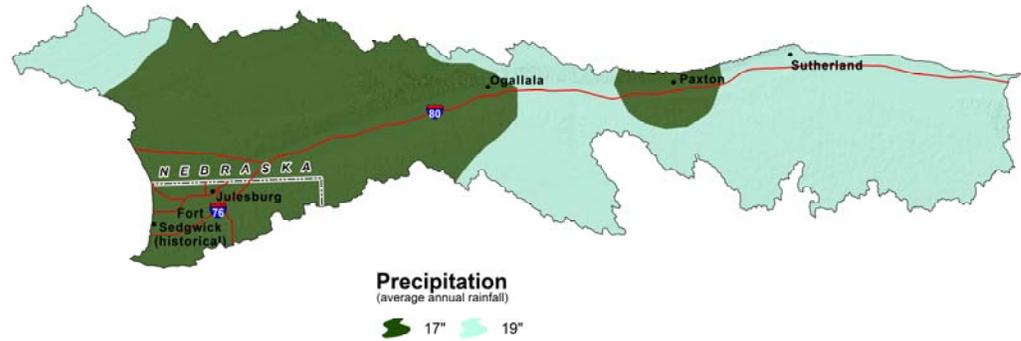


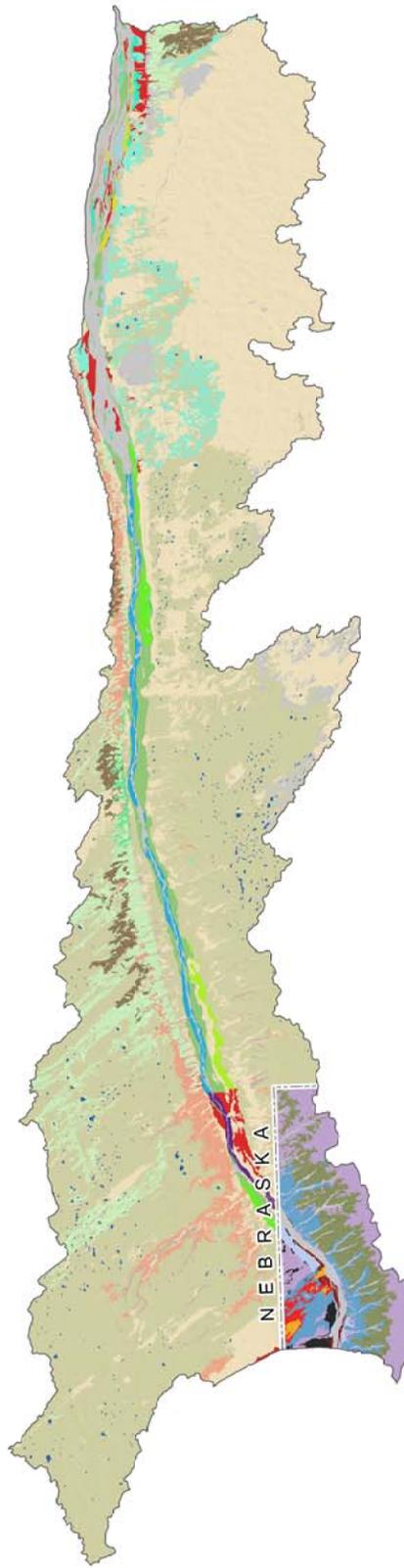
Vegetation

- ◆ Dryland Ag
- ◆ Other
- ◆ Shrub/Grass/Forb Mix Rangeland
- ◆ Grass Dominated
- ◆ Rangeland
- ◆ Urban/Built Up
- ◆ Irrigated Ag
- ◆ Riparian
- ◆ Water

Precipitation

Droughts are regular visitors to the watershed as with the rest of Colorado. Statewide, in the 1900's alone, four prolonged dry spells occurred. There was one in the 1910s. Another, in the '30s, caused the dust-bowl period. The second worst drought on record in the state occurred in the mid-50s. A series of hot, dry summers following a period of scant mountain snowpack created water shortages. The fourth drought hit parts of Colorado in the late 1970s. In this century, the most severe drought since 1723 hit the state in 2002. Prior to the 1700's, researchers looking at tree ring records have found evidence of even more severe droughts, some lasting many years.





Soil: Ecological Site Name

◆	Data Unavailable	◆	Loamy Lowland	◆	Saline Subirrigated
◆	Choppy Sands	◆	Loamy Plains	◆	Salt Meadow
◆	Clayey Overflow	◆	Loamy Terrace (PE 20-26)	◆	Sands
◆	Closed Upland Depression	◆	Loamy Upland	◆	Sandy Lowland
◆	Deep Sands	◆	Loess Breaks	◆	Sandy Meadow
◆	Gravel Breaks	◆	No Site - Veg. zone 2	◆	Sandy Plains
◆	Gravelly Hills	◆	No Site - Veg. zone 3	◆	Seasonally Wet (North) (PE 16-20)
◆	Limestone Breaks	◆	Overflow	◆	Shallow Limy
◆	Limy Upland	◆	Plains Swale	◆	Subirrigated
◆	Loamy Bottomland	◆	Saline Lowland	◆	Wet Subirrigated

Class 1 - soils have few limitations that restrict their use.

Class 2 - soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 - soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

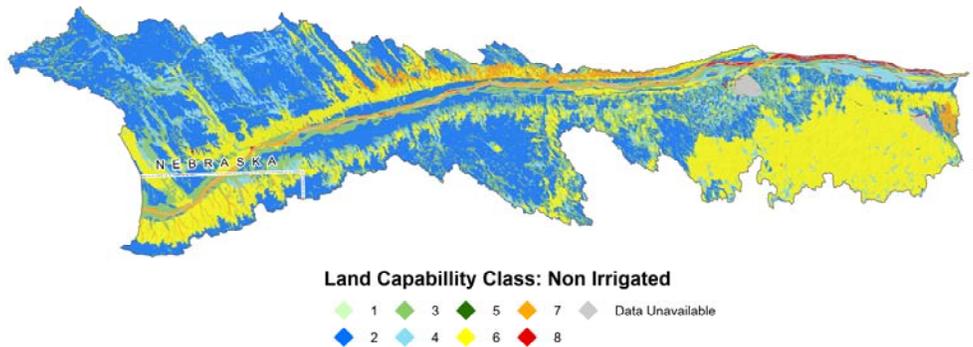
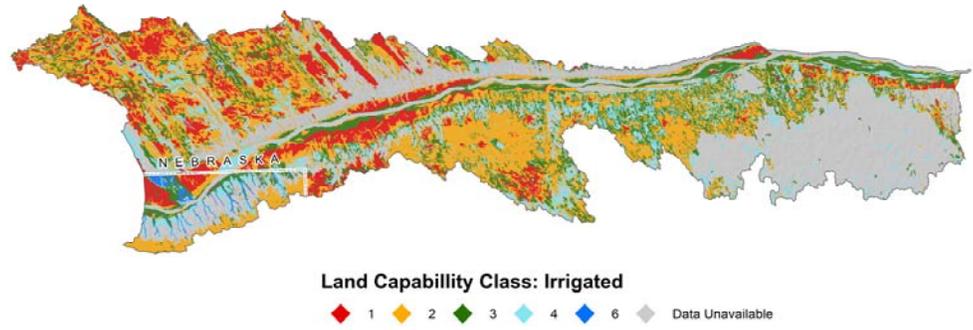
Class 4 - soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 - soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 - soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 - soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

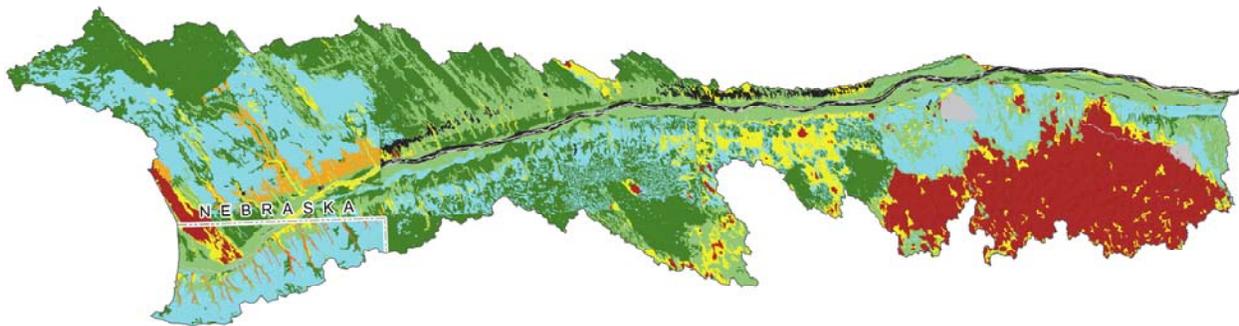
Class 8 - soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or aesthetic purposes.



The Wind Erodibility Index (WEI):

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 if it is assumed there is no vegetative cover or management.

Soils with an erodibility index equal to or greater than 8 are considered highly erodible.



Wind Erodibility Index



Threatened & Endangered Species *State & Federally Threatened, Endangered & Candidate Species as well as Species of Special Concern in Lower South Platte Watershed*

Common Name	Scientific Name	Class	Federal Status	State Status	Comments
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Birds	None	Threatened	Occurs in the watershed
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>	Mammals	None	Concern	Occurs in the watershed
Brassy Minnow	<i>Hybognathus hankinsoni</i>	Fish	None	Threatened	Occurs in the watershed
Common Shiner	<i>Luxilus cornutus</i>	Fish	None	Threatened	Occurs in the watershed
Least Tern	<i>Sterna antillarum</i>	Birds	Endangered	Endangered	Occurs downstream of watershed; Depletions are a concern here.
Northern Leopard Frog	<i>Rana pipiens</i>	Amphibians	None	Concern	Occurs in the watershed
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Fish	Endangered	None	Occurs downstream of watershed; Depletions are a concern here.
Piping Plover	<i>Charadrius melodus</i>	Birds	Threatened	Threatened	Occurs downstream of watershed; Depletions are a concern here.
Plains Minnow	<i>Hybognathus placitus</i>	Fish	None	Endangered	Occurs in the watershed
Plains Sharp-tailed Grouse	<i>Tympanuchus phasianellus jamesii</i>	Birds	None	Endangered	Occurs in the watershed
Suckermouth Minnow	<i>Phenacobius mirabilis</i>	Fish	None	Endangered	Occurs in the watershed
Swift fox	<i>Vulpes velox</i>	Mammals	None	Concern	Occurs in the watershed

The Colorado portion of Lower South Platte consists of a small amount of dry cropland, irrigated cropland, and some short grass prairie. Water and aquatic habitats are found in ponds and in the South Platte and adjacent riparian areas. Economically important wildlife species that occur in much of the watershed include pheasant, mule deer, and white-tailed deer. Pronghorn and greater prairie chicken occur in parts of the watershed. Wild turkey, bobwhite quail, and snow geese occur in the riparian area along the South Platte.

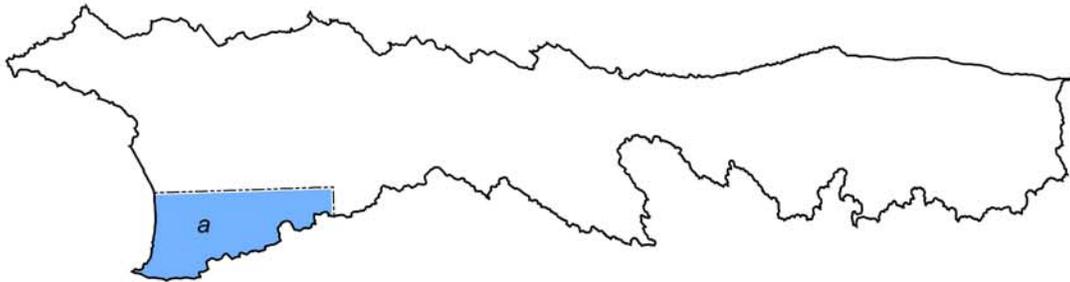
Social Data	Sedgwick
Total population	2,747
Male	1,374
Female	1,373
Median age (years)	43.2
White	2,486
Black or African American	14
American Indian and Alaska Native	4
Asian	21
Native Hawaiian and Other Pacific Islander	2
Some other race	164
Hispanic or Latino (of any race)	314
In labor force (population 16 years and over)	1,340
Median household income (dollars)	28,278
Median family income (dollars)	33,953
Per capita income (dollars)	16,125
Families below poverty level	62
Individuals below poverty level	270
Farms (number)	188
Land in farms/ranches (acres)	274,243
Average size farm/ranch (acres)	1,459
Median size farm (acres)	830
Average age of farmer or rancher	56.4
Net cash return from ag sales (\$1,000)	7,716
Cattle and calves (number)	15,000

Identified Long Range Resource Concerns

Top Three Concerns within Conservation Districts

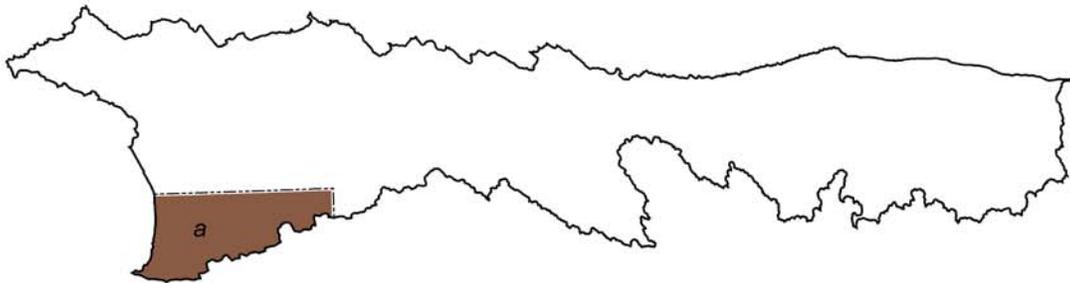
Conservation Districts
a Sedgewick County

#1



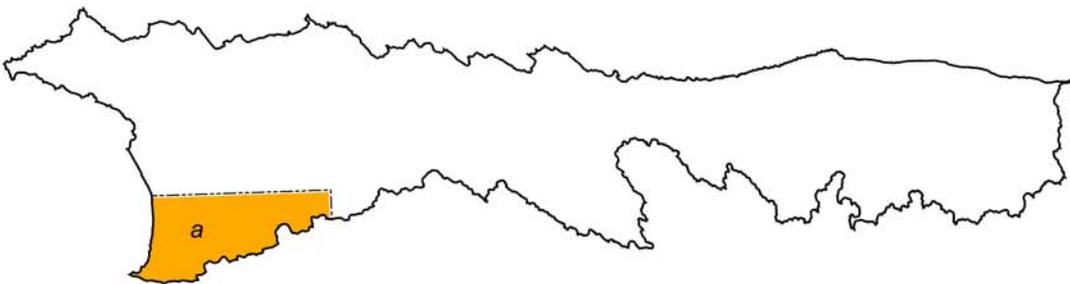
◆ Water Quality & Quantity

#2



◆ Soil Erosion

#3



◆ Noxious Weeds

Selected Conservation Practices Applied, FY 2005 through FY 2009

Practice Code	Practice Name	Practice Unit	Applied Amount	Applied Count
449	Irrigation Water Management	ac	1,789	27
528	Prescribed Grazing	ac	7,049	20
328	Conservation Crop Rotation	Ac	1,829	17

Conservation Systems to Address Major Resource Concerns *from the Field Office Technical Guide*

Grazed Rangeland—Grazing resources need improved plant condition (similarity index), productivity, health and vigor. Grazing animals have inadequate quantities and quality of feed, forage, and shelter. The animals are adapted to the climatic and ecological condition of the resources.

CO 72.1-GR-01

Practices

- 314 Brush Management
- 382 Fence
- 516 Pipeline
- 528 Prescribed Grazing
- 595 Pest Management
- 614 Watering Facility
- 642 Water Well
- 645 Upland Wildlife Habitat Management

Description

The Central High Tableland is broad, level to gently rolling, loess mantled tableland. Soils vary from shallow to deep. Vegetation varies from short grasses to tall grasses based on soils and past management. Majority of the precipitation occurs thru spring snows and also thru severe summer high intensity rains.

Resource Concerns Addressed

- Domestic Animals - Inadequate Stock Water
- Fish and Wildlife - T&E Species: Declining Species, Species of Concern
- Plant Condition - Productivity, Health and Vigor
- Soil Erosion - Sheet and Rill
- Soil Erosion - Wind

Dryland Crops—Implementation of No-Till Residue Management with Conservation crop rotation, Nutrient and Pest Management.

CO 72.1-CR-Dryland

Practices

- 328 Conservation Crop Rotation
- 329 Residue Mgmt-No-Till/Strip Till/Direct Seeding
- 590 Nutrient Management
- 595 Pest Management

Description

Crops: wheat, corn, milo, millet, sunflower, forage sorghum. Fallow included in rotation. Soils: silt loams and loams. Annual precipitation ranges from 14 - 18". Moisture usually lacking in the summer during peak ET; rainfall often comes in short intense spring and early summer storms. Wildlife potential for use by pheasant, quail, deer, pronghorn and other wildlife. Long term agricultural production practices have resulted in water and wind erosion, soil compaction and decrease in organic matter.

Resource Concerns Addressed

- Soil Erosion - Sheet and Rill
- Soil Erosion - Wind
- Water Quantity - Inefficient Water Use on Irrigated Land

Conservation Systems to Address Major Resource Concerns *from the Field Office Technical Guide*

Irrigated Crop—Gravity converted to Sprinkler, Mulch-till (HEL). Sprinkler irrigation system with IWM, Crop rotation, Mulch-till, Nutrient and Pest Mgt	CO 72.1-CR-Pivot
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<i>Practices</i>	<i>Description</i>	<i>Resource Concerns Addressed</i>
328 Conservation Crop Rotation 345 Residue Mgmt, Mulch Till 442 Irrigation System, Sprinkler 449 Irrigation Water Management 590 Nutrient Management 595 Pest Management	Crops: corn (silage or grain), field beans, wheat, alfalfa, potatoes and sugar beets. Soils: fine sandy loams, loams, silt and clay loams, sands and fine sands. Annual precipitation ranges from 14 - 18". Moisture usually lacking in the summer during peak ET and supplemented with gravity irrigation, the water source may be ground or surface water; rainfall often comes in short intense spring and early summer storms. Wildlife potential for use by pheasant, quail, deer, pronghorn and other wildlife. Long term agricultural production practices have resulted in soil compaction.	Soil Erosion - Sheet and Rill Soil Erosion - Wind Water Quantity - Inefficient Water Use on Irrigated Land

Estimated Costs of Application of Conservation Systems

Landuse	Estimated Acres Need to be Treated	Estimated Average Cost per Acre (\$)	Costs (\$)
Range	10,000	30	300,000
Dryland Crop	9,000	40	360,000
Irrigated Crop	3,500	1,200	4,200,000
Total Costs:			\$4,860,000

FOOTNOTES/ BIBLIOGRAPHY

Threatened and Endangered Species information was gathered using data from the Colorado Division of Wildlife (CDOW) Natural Diversity Information Source (NDIS). NDIS GIS data may be downloaded at <http://ndis.nrel.colostate.edu>. For more information on Colorado's Endangered & Threatened Species, as well as Species of Concern, visit <http://wildlife.state.co.us/WildlifeSpecies/SpeciesOfConcern/ThreatenedEndangeredList/ListOfThreatenedAndEndangeredSpecies.htm> or <http://mountainprairie.fws.gov/endspp/CountyLists/COLORADO.htm>

Resource Concerns were identified using the Colorado Association of Conservation Districts' (CACD) long range (10 year) plans from the period of 1996-2000. Only the top three environmental resource concerns for each district were used. For more information on Colorado's Conservation Districts, visit <http://www.cacd.us>.

Maps were generated using Soil Survey Geographic Database (SSURGO) tabular and spatial data. SSURGO data was downloaded for the following Colorado & Nebraska surveys:

Sedgwick County CO115) Published 01/30/2008

Cheyenne County (NE033) Published 12/11/2007

Deuel County (NE049) Published 12/11/2007

Garden County (NE069) Published 10/28/2008

Keith County (NE101) Published 11/21/2006

Lincoln County (NE111) Published 10/28/2008

Perkins County (NE135) Published 01/05/2007

Vegetation data was generated using the Colorado Division of Wildlife's "Colorado Vegetation Classification Project" (CVCP) data. Completed in 2003, the CVCP is a landscape level vegetation dataset created using Landsat TM imagery and then formatted for GIS use. The species identified are an overview of the most common species associated in each cover type, in order of greatest occurrence. For more information on the Colorado Vegetation Classification Project, visit <http://ndis.nrel.colostate.edu/coveg>.

All border state (if applicable) vegetation data courtesy of the National Land Cover Dataset (NLCD). For more information visit http://www.mrlc.gov/mrlc2k_nlcd.asp

Common Resource Area (CRA), a subdivision of the Major Land Resource Area (MLRA), is a geographical area where resource concerns, problems, or treatment needs are similar. Geographic boundaries of a CRA are determined by landscape conditions, soil, climate, human considerations and other natural resource information. For more information on Common Resource Areas visit <http://soils.usda.gov/survey/geography/cra.html>.

Average Annual Precipitation data was developed through a partnership between the Natural Resources Conservation Service's (NRCS) National Water and Climate Center (NWCC), the National Cartography and Geospatial Center (NCGC), and the PRISM (the Parameter-elevation Regressions on Independent Slopes Model) group at Oregon State University (OSU), developers of PRISM. Mean annual precipitation maps were developed calculating averages of rainfall for the period of 1961-1990. For more information on PRISM data visit <http://www.ncgc.nrcs.usda.gov/products/datasets/climate/docs/fact-sheet.html> or for more information about technical aspects of PRISM, visit the PRISM website at <http://www.ocs.orst.edu/prism>.

Land Ownership (status,07/22/2006 dataset) data was obtained from the Bureau of Land Management, Colorado State Office. For more information, visit http://www.blm.gov/co/st/en/BLM_Programs/geographical_sciences/gis.html

Relief & Elevation maps were created using the National Elevation Dataset (NED), 30m Digital Elevation Model (DEM) raster product assembled by the U.S. Geological Survey (USGS). A hillshade grid was created from the 30m DEM to create a 3D effect. For more information about the NED visit <http://ned.usgs.gov>. The data was downloaded from the NRCS Geospatial Data Gateway at <http://datagateway.nrcs.usda.gov>.