



United States Department
of Agriculture

Sidney Draw Watershed



Hydrologic Unit Code 10190017

Natural Resources
Conservation Service

Lakewood, Colorado

Rapid Assessment

RWA 10190017

July 2010



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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.

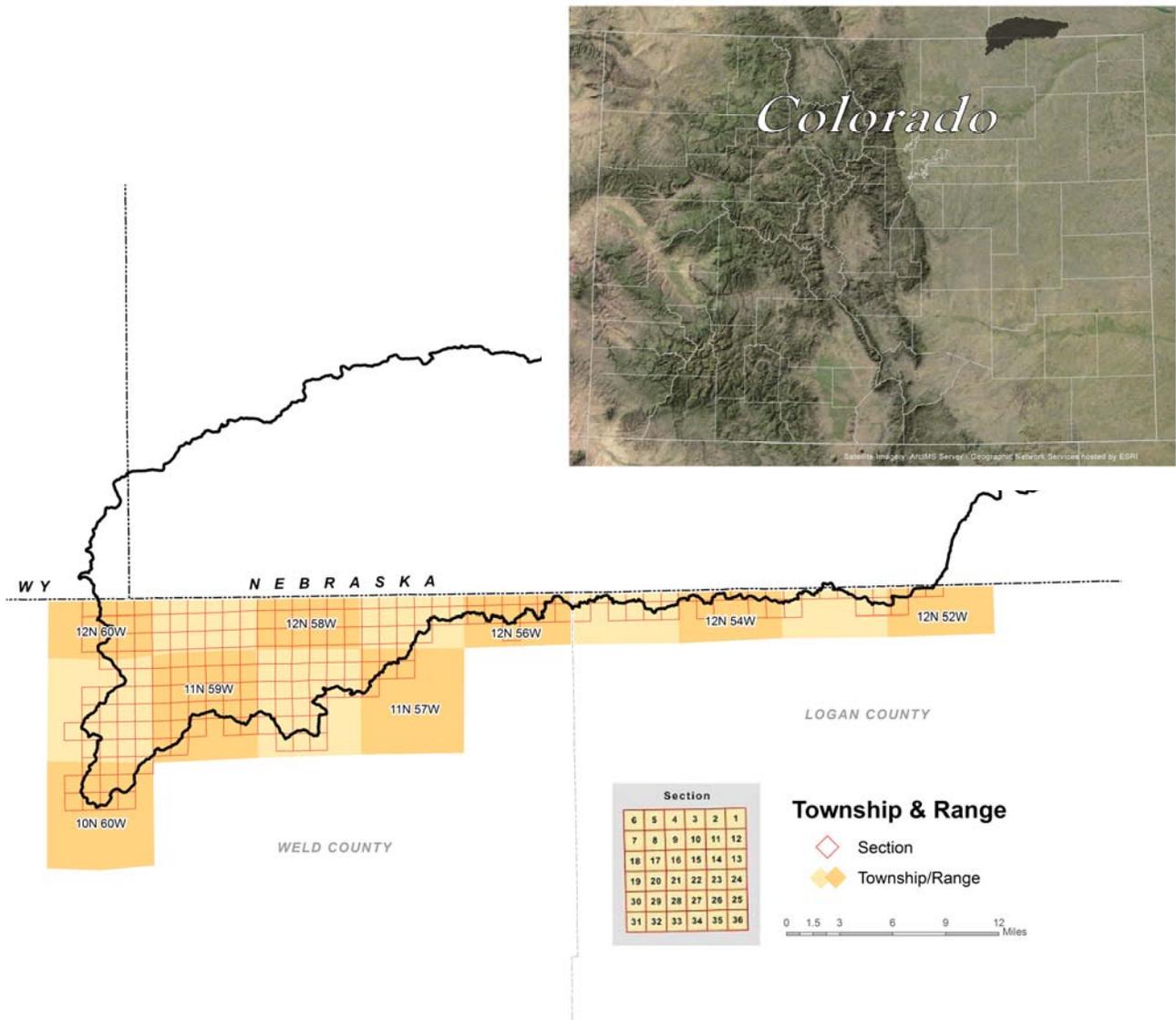
Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help landowners and local leaders set priorities and determine the best 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 SIDNEY DRAW Watershed	% of County in the Watershed	% of Watershed in the County
Logan	1,180,481	87,680	7.4%	18.2%
Weld	2,571,900	7,003	0.3%	1.5%

NEBRASKA

Cheyenne	765,638	106,090	13.9%	22.1%
Kimball	609,150	272,918	44.8%	56.7%

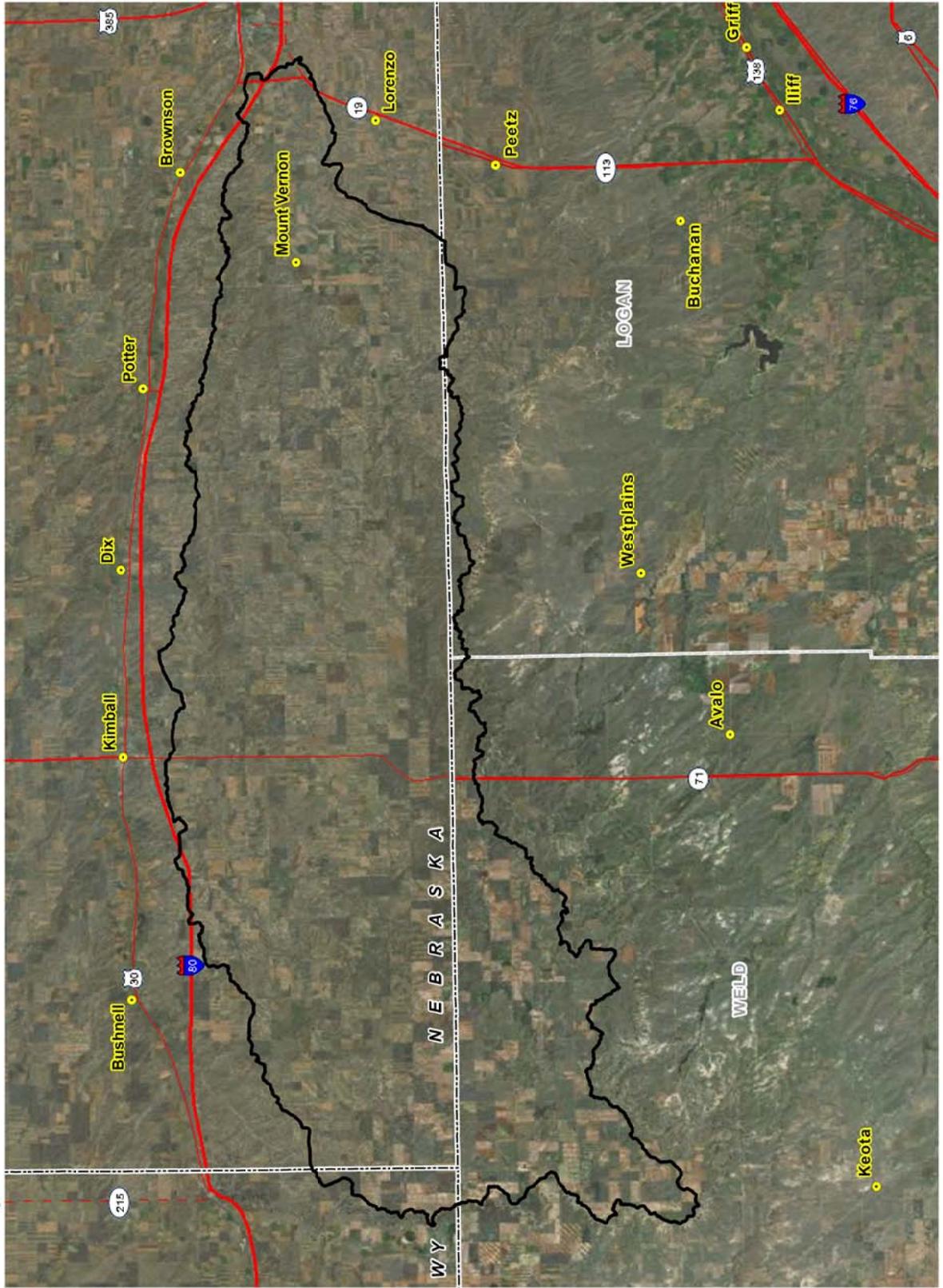
WYOMING

Laramie	1,718,726	7,351	0.4%	1.5%
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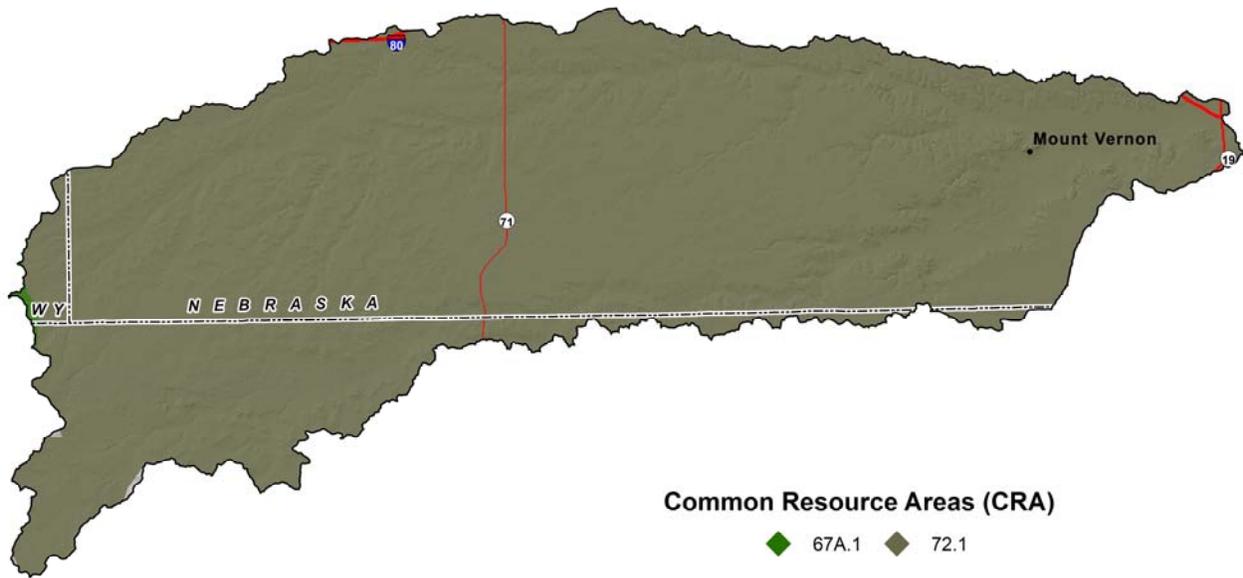
481,041

100.0%

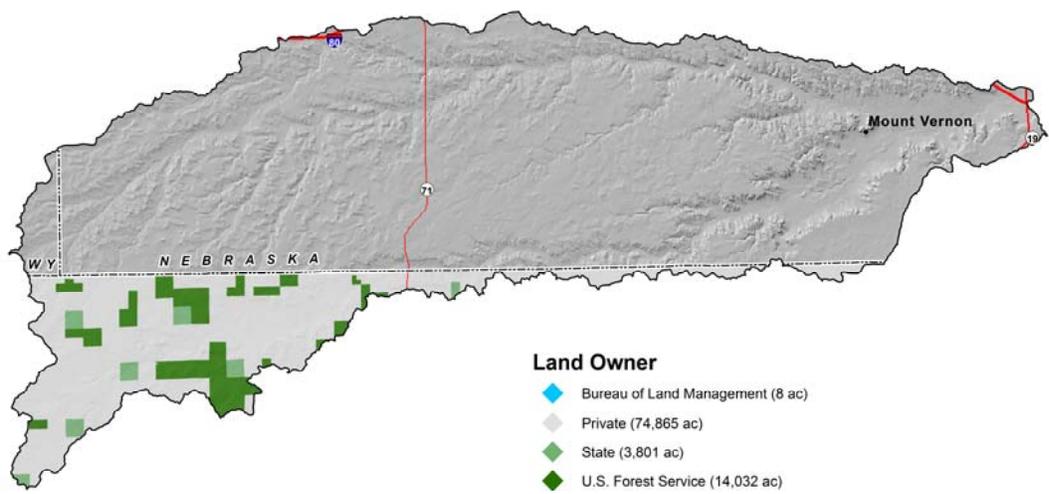
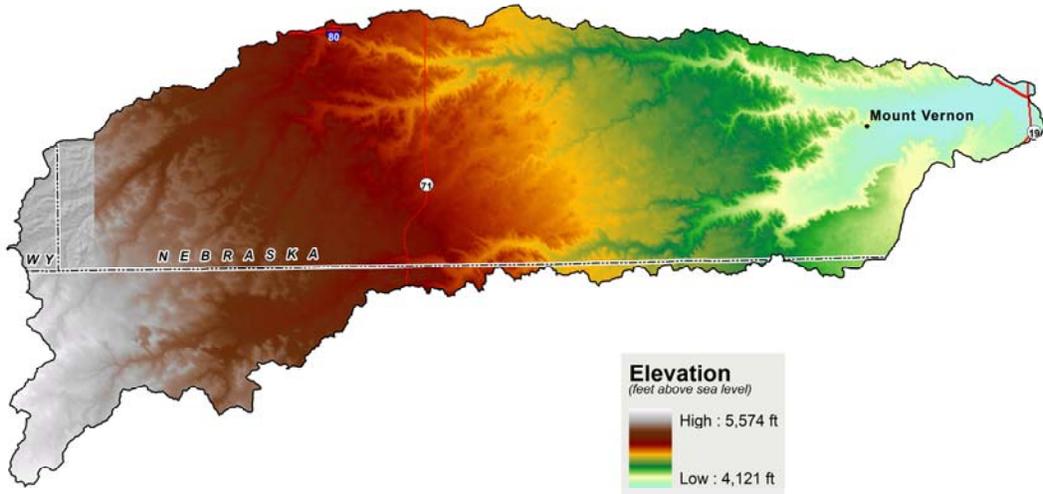
Sidney Draw Watershed - 10190017



Satellite Imagery: Arc IMS Server - ESRI Imagery

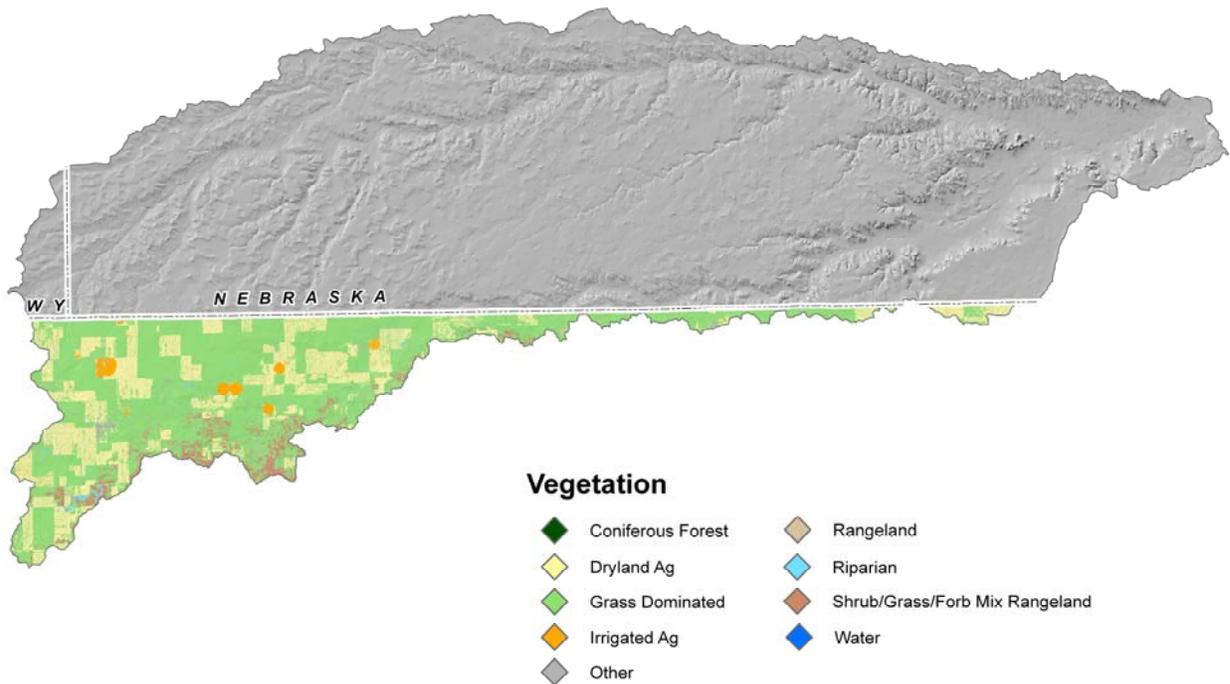


MLRA	CRA	CRA NAME	CRA DESCRIPTION
72	72.1	Central High Tableland	The Central High Tableland CRA is broad, level to gently rolling, loess mantled tableland. Local relief is measured in feet on the tableland tens of feet and major river valleys bordered by steep slopes. Soils are deep . Presettlement vegetation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



<u>SIDNEY DRAW</u> <u>COLORADO Land Use</u>	Total Acreage	Vegetation	Acreage
Cropland	23,161.5	Dryland Ag	22,220.5
		Irrigated Ag*	941.0
Rangeland/Grassland	69,739	Grass Dominated	64,719.2
		Grass/Forb Mix	275.4
		Grass/Yucca Mix	645.5
		Sagebrush/Grass Mix	88.6
		Shrub/Grass/Forb Mix	4,009.9
Forest	141	Cottonwood	140.3
		Ponderosa Pine	1.1
Riparian	331	Herbaceous Riparian	330.5
		Riparian	0.3
Water	2	Water	2.2
Other	1,029	Rock	12.0
		Soil	1,017.2
~Total Watershed Acres			94,404

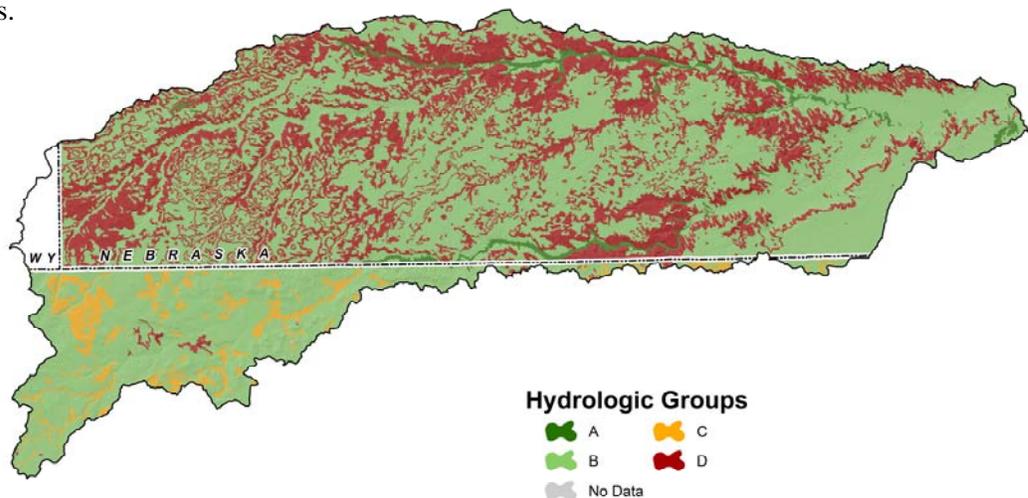
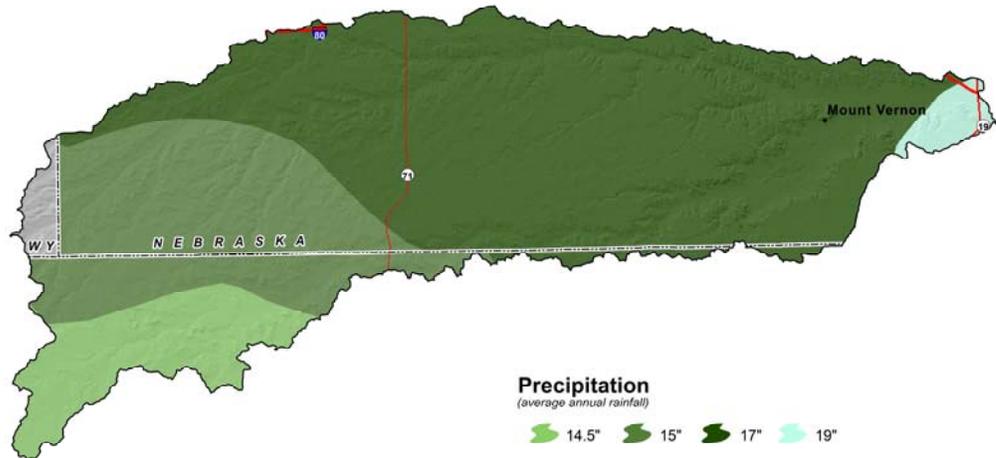
*Colorado Decision Support Systems Data

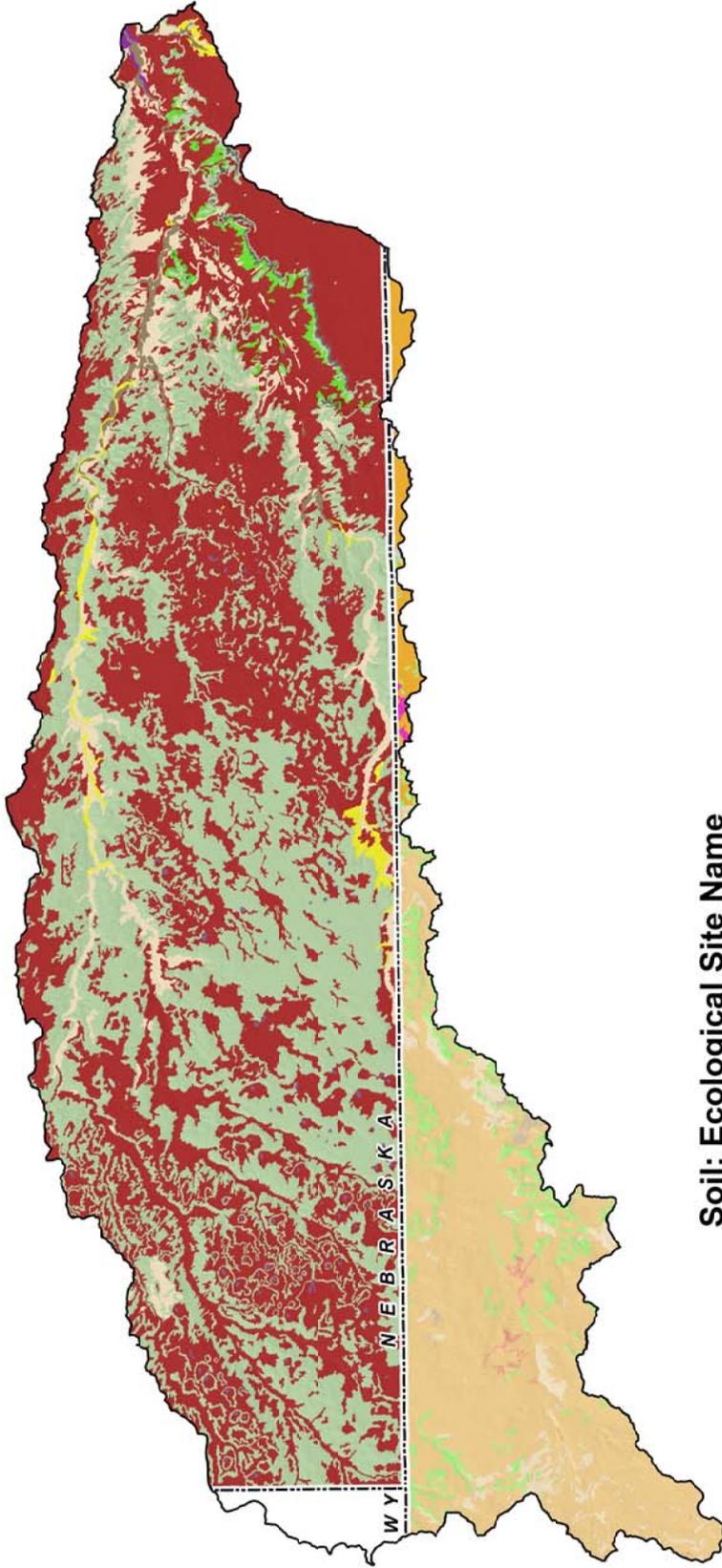


Precipitation

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

- | | | |
|---|-------------------------|-------------------------------|
| ◆ No data | ◆ Loamy | ◆ Sandy Bottomland |
| ◆ Clayey | ◆ Loamy Plains | ◆ Sandy Lowland - Veg. zone 1 |
| ◆ Clayey Overflow - Veg. zone 1 | ◆ Loamy Slopes | ◆ Sandy Plains |
| ◆ Closed Upland Depression (North) (PE 16-20) | ◆ Loamy Upland | ◆ Shallow Limy - Veg. zone 1 |
| ◆ Gravel Breaks | ◆ No Site - Veg. zone 1 | ◆ Siltstone Plains |
| ◆ Gravelly Hills | ◆ Salt Flat | ◆ Silty Lowland - Veg. zone 1 |
| ◆ Limestone Breaks | ◆ Sandstone Breaks | |
| ◆ Limy Upland - Veg. zone 1 | ◆ Sandy | |

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.

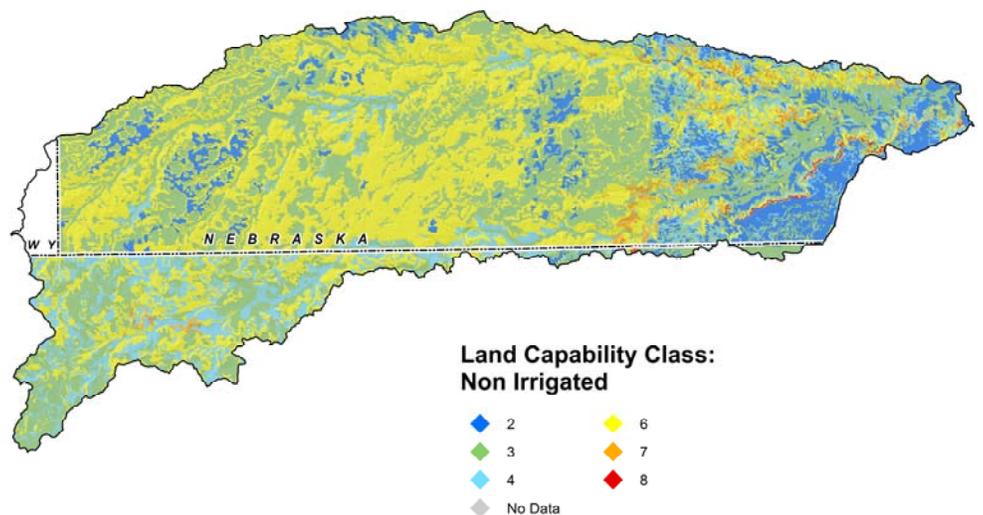
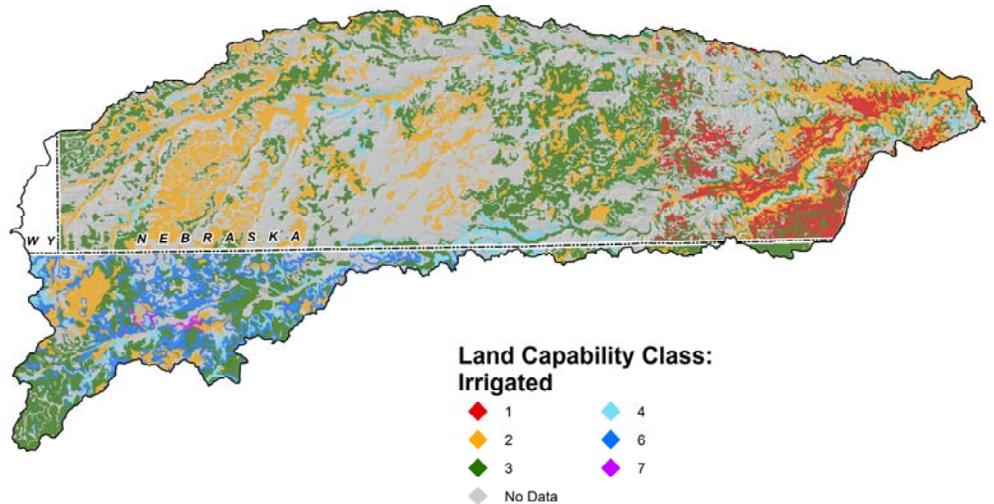
Class 4 - soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

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.

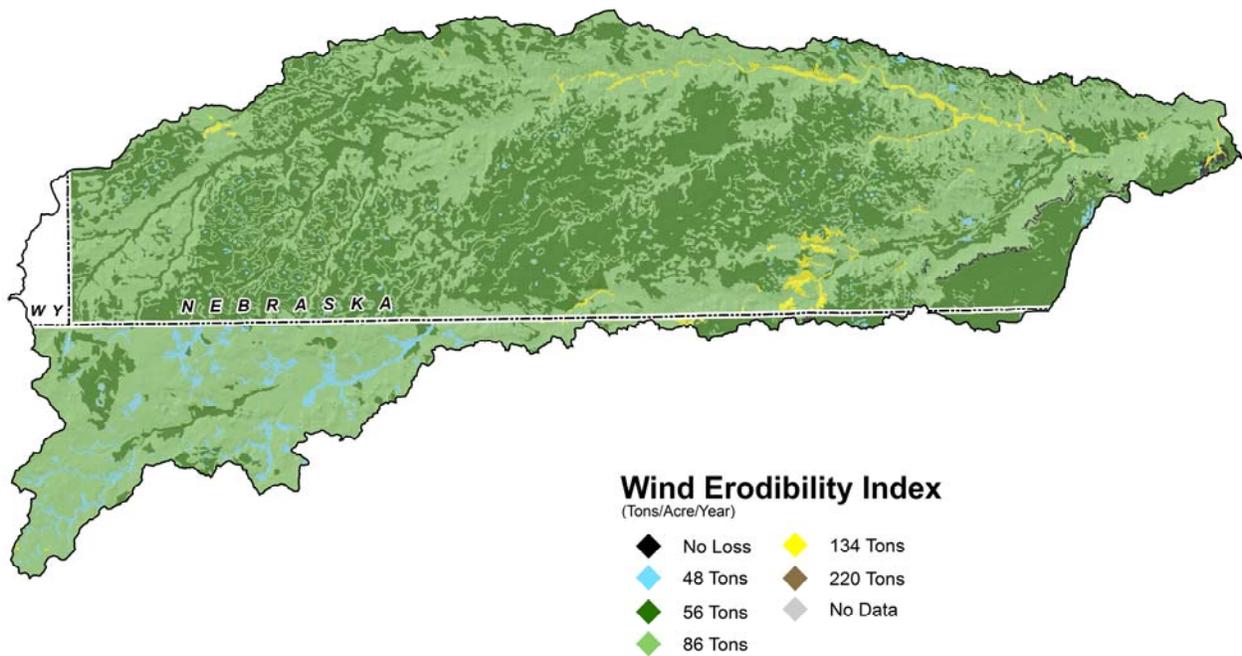
Class 8 - soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or aesthetic purposes.



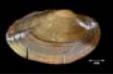
The Wind Erodibility Index (WEI):

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.



Threatened & Endangered Species *State & Federally Threatened, Endangered & Candidate Species as well as Species of Special Concern in the Sidney Draw Watershed*

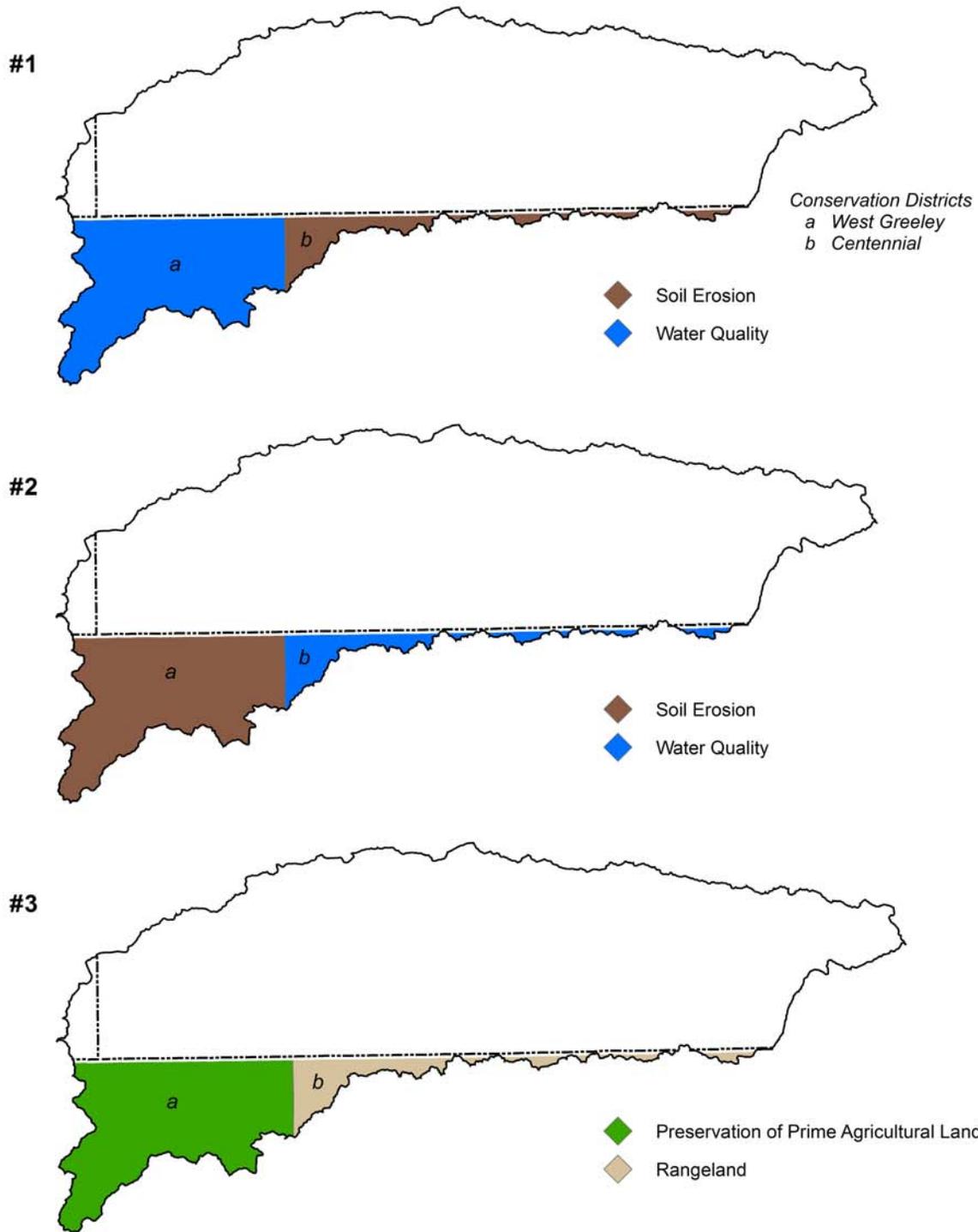
	Common Name	Scientific Name	Class	Federal Status	State Status	Comments
	Bald Eagle	<i>Haliaeetus leucocephalus</i>	Birds	Threatened	None	May occur in the watershed
	Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>	Mammals	Concern	None	Occurs in the watershed
	Burrowing Owl	<i>Athene cunicularia</i>	Birds	Threatened	None	May occur in the watershed
	Colorado Butterfly Plant	<i>Guara neomexicana</i> spp. <i>Coloradoensis</i>	Plants	None	Threatened	May occur in the watershed
	Cylindrical Paper-shell	<i>Anodontooides ferussacianus</i>	Gastropods	Concern	None	May occur in the watershed
	Ferruginous Hawk	<i>Buteo regalis</i>	Birds	Concern	None	May occur in the watershed
	Iowa Darter	<i>Etheostoma exile</i>	Fish	Concern	None	May occur in the watershed
	Least Tern	<i>Sterna antillarum</i>	Birds	Endangered	Endangered	Occurs downstream of watershed; Depletions are a concern here.
	Long-Billed Curlew	<i>Numenius americanus</i>	Birds	Concern	None	May occur in the watershed
	Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Fish	None	Endangered	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 Sharp-Tailed Grouse	<i>Tympanuchus phasianellus jamesii</i>	Birds	Endangered	None	Occurs in the watershed
	Swift Fox	<i>Vulpes velox</i>	Mammals	Concern	None	Occurs in the watershed
	Whooping Crane	<i>Grus Americana</i>	Birds	Endangered	Endangered	Occurs downstream of watershed; Depletions are a concern here.

The Colorado portion of Sidney Draw consists of both irrigated and dry cropland and some short to mid grass grasslands. Water and aquatic habitats are scarce and the native species in this watershed are those that can survive without abundant water supplies. Economically important wildlife species that occur in the watershed include mule deer, pronghorn, and mourning dove.

Social Data	Logan County	Weld County
Total population	20,504	223,966
Male	10,834	112,848
Female	9,670	111,118
Median age (years)	36.5	31.3
White	18,792	200,942
Black or African American	420	754
American Indian and Alaska Native	131	1465
Asian	82	2427
Native Hawaiian and Other Pacific Islander	14	117
Some other race	772	14814
Hispanic or Latino (of any race)	2,439	62792
In labor force (population 16 years and over)	9,771	120,817
Median household income (dollars)	32,724	48,763
Median family income (dollars)	42,241	57,009
Per capita income (dollars)	16,721	21,981
Families below poverty level	454	x
Individuals below poverty level	2,253	x
Farms (number)	930	3121
Land in farms/ranches (acres)	1,111,135	1,812,167
Average size farm/ranch (acres)	1,195	581
Median size farm (acres)	608	158
Average age of farmer or rancher	52.8	53.5
Net cash return from ag sales (\$1,000)	5,092	67,959
Cattle and calves (number)	185,000	505,000

Identified Long Range Resource Concerns

Top Three Concerns within Conservation Districts



Selected Conservation Practices Applied, FY 2004-2009

Practice Name	Unit	Program	Year	Land Use	Applied Amount	Applied Count
Conservation Cover	ac	CRP	2007	Crop	108.2	1
Conservation Cover	ac	CRP	2008	Crop	484.1	1
Conservation Cover	ac	CRP	2009	Crop	1455	7
Conservation Cover	ac	CTA-GENRL	2009	Crop	1107.7	3
Conservation Crop Rotation	ac	CTA-GENRL	2006	Crop	309.3	1
Conservation Crop Rotation	ac	CTA-GENRL	2008	Crop	607.3	3
Conservation Crop Rotation	ac	CTA-GENRL	2009	Crop	5.6	1
Residue and Tillage Management, No-Till/Strip Till/Direct Seed	ac	CTA-GENRL	2008	Crop	607.3	3
Residue Management, No-Till/Strip Till	ac	CTA-GENRL	2006	Crop	309.3	1
Cover Crop	ac	CTA-GENRL	2008	Crop	106.3	1
Residue and Tillage Management, Mulch Till	ac	CTA-GENRL	2009	Crop	5.6	1
Prescribed Grazing	ac	CSP	2005	Grazed Range	497	2
Prescribed Grazing	ac	CTA-GENRL	2008	Crop	545.5	1
Prescribed Grazing	ac	EQIP	2005	Grazed Range	1456.7	1
Prescribed Grazing	ac	EQIP	2008	Grazed Range	300.6	1
Prescribed Grazing	ac	EQIP	2006	Grazed Range	454	1
Pumping Plant	no	EQIP	2006	Grazed Range	1	1
Range Planting	ac	CRP	2006	Crop	35	1
Range Planting	ac	CTA-GENRL	2008	Crop	267.7	1
Range Planting	ac	EQIP	2005	Crop	151.5	1
Nutrient Management	ac	CTA-GENRL	2006	Crop	309.3	1
Nutrient Management	ac	CTA-GENRL	2008	Crop	607.3	3
Integrated Pest Management	ac	CTA-GENRL	2006	Crop	309.3	1
Integrated Pest Management	ac	CTA-GENRL	2008	Crop	607.3	3

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

<i>Practices</i>	<i>Description</i>	<i>Resource Concerns Addressed</i>
314 Brush Management 382 Fence 516 Pipeline 528 Prescribed Grazing 595 Pest Management 614 Watering Facility 642 Water Well 645 Upland Wildlife Habitat Management	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.	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

<i>Practices</i>	<i>Description</i>	<i>Resource Concerns Addressed</i>
328 Conservation Crop Rotation 329 Residue Mgmt-No-Till/Strip Till/Direct Seeding 590 Nutrient Management 595 Pest Management	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.	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	20,000	30	600,000
Dryland Crop	9,000	40	360,000
			Total Costs: \$960,000

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 surveys:

Logan County (CO075) Published 1/30/2008

Weld County N (CO617) Published 12/14/2005

Cheyenne County (NE033) Published 12/11/2007

Kimball County (NE105) Published 5/15/2008

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>.