



United States Department
of Agriculture

Upper Laramie Watershed



Hydrologic Unit Code 10180010

Natural Resources
Conservation Service

Lakewood, Colorado

Rapid Assessment

RWA 10180010

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.

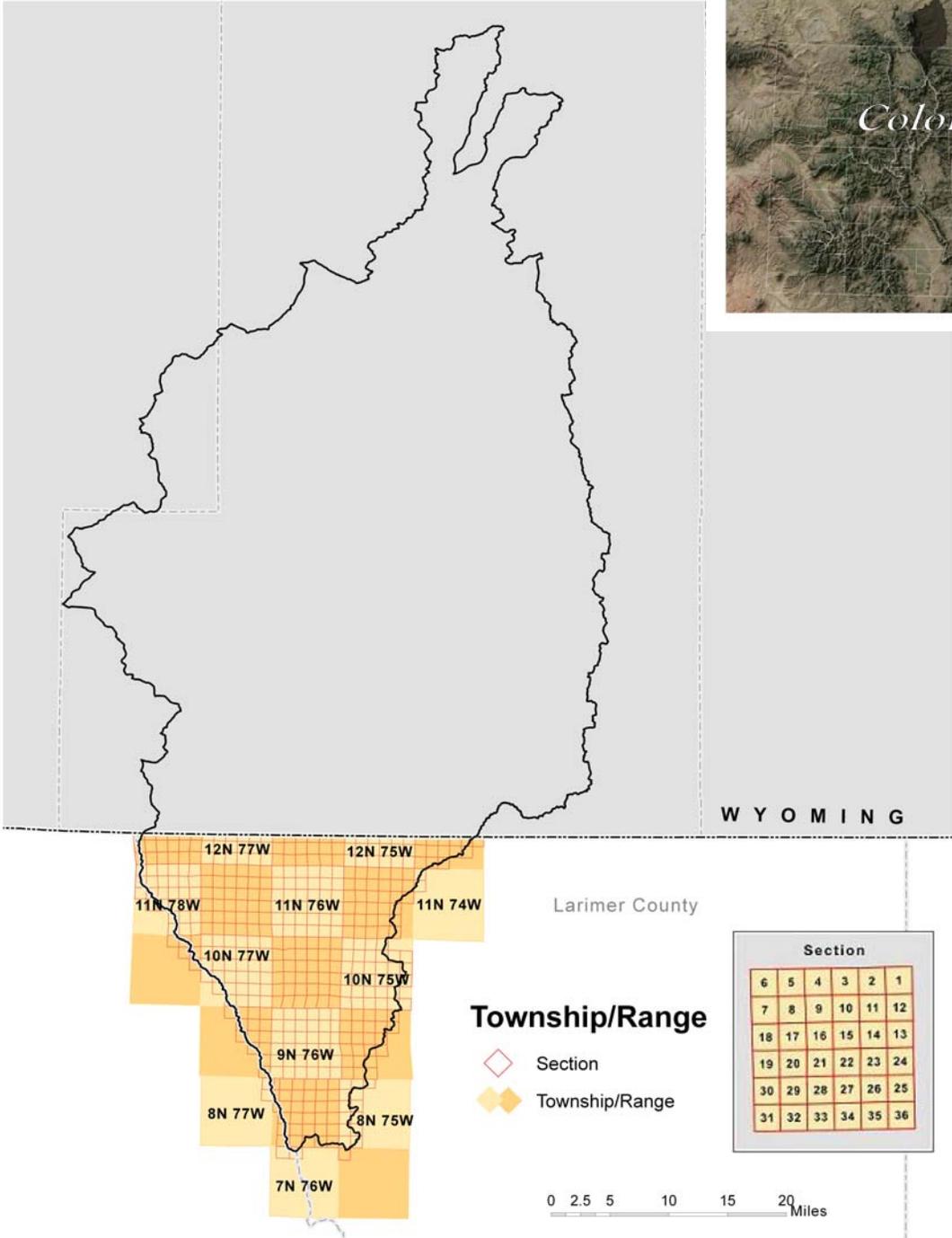
Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help landowners and local leaders set priorities and determine the best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

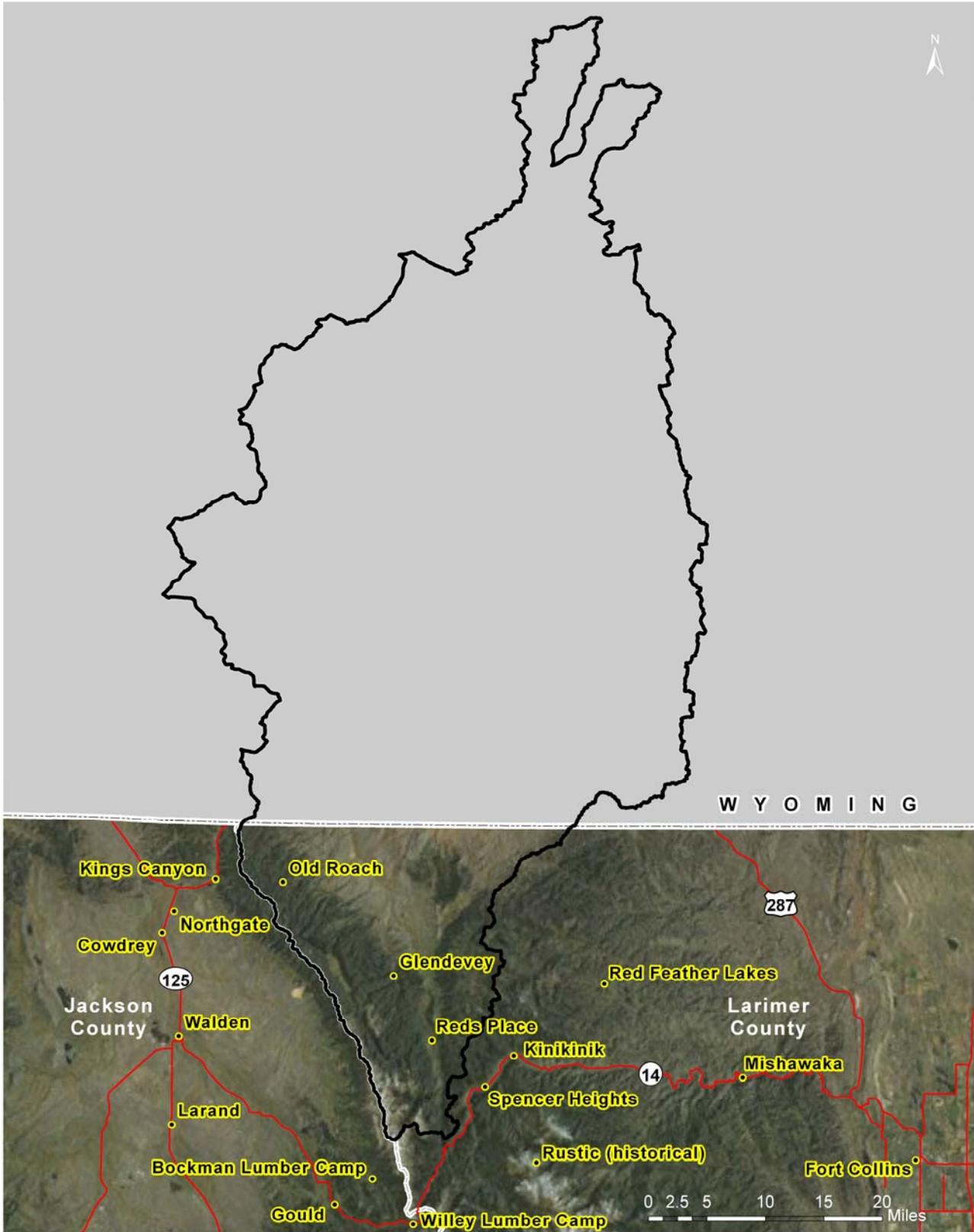
Rapid Watershed Assessments provide information that helps land-owners and local leaders set conservation priorities.

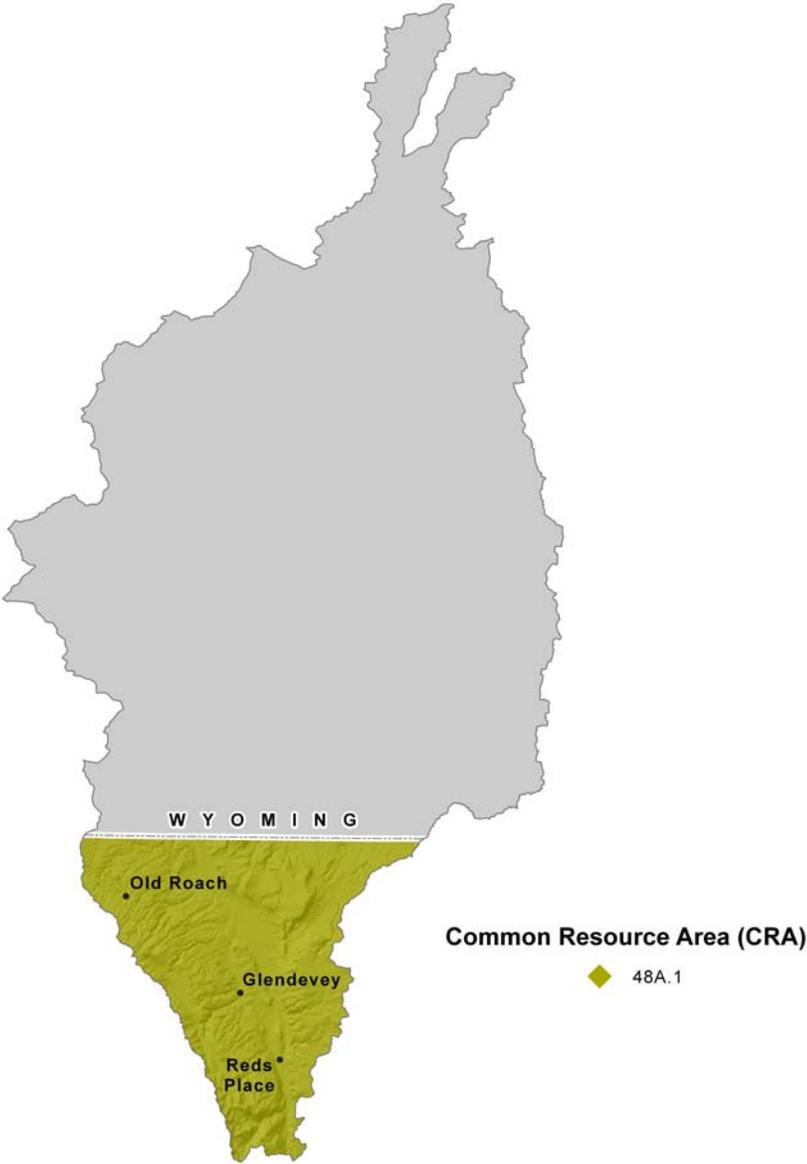


County	County Acres	County Acres in UPPER LARAMIE Watershed	% of County in the Watershed	% of Watershed in the County
Larimer	1,684,383	252,269	15.0%	17.4%

1,453,511

Upper Laramie Watershed - 10180010



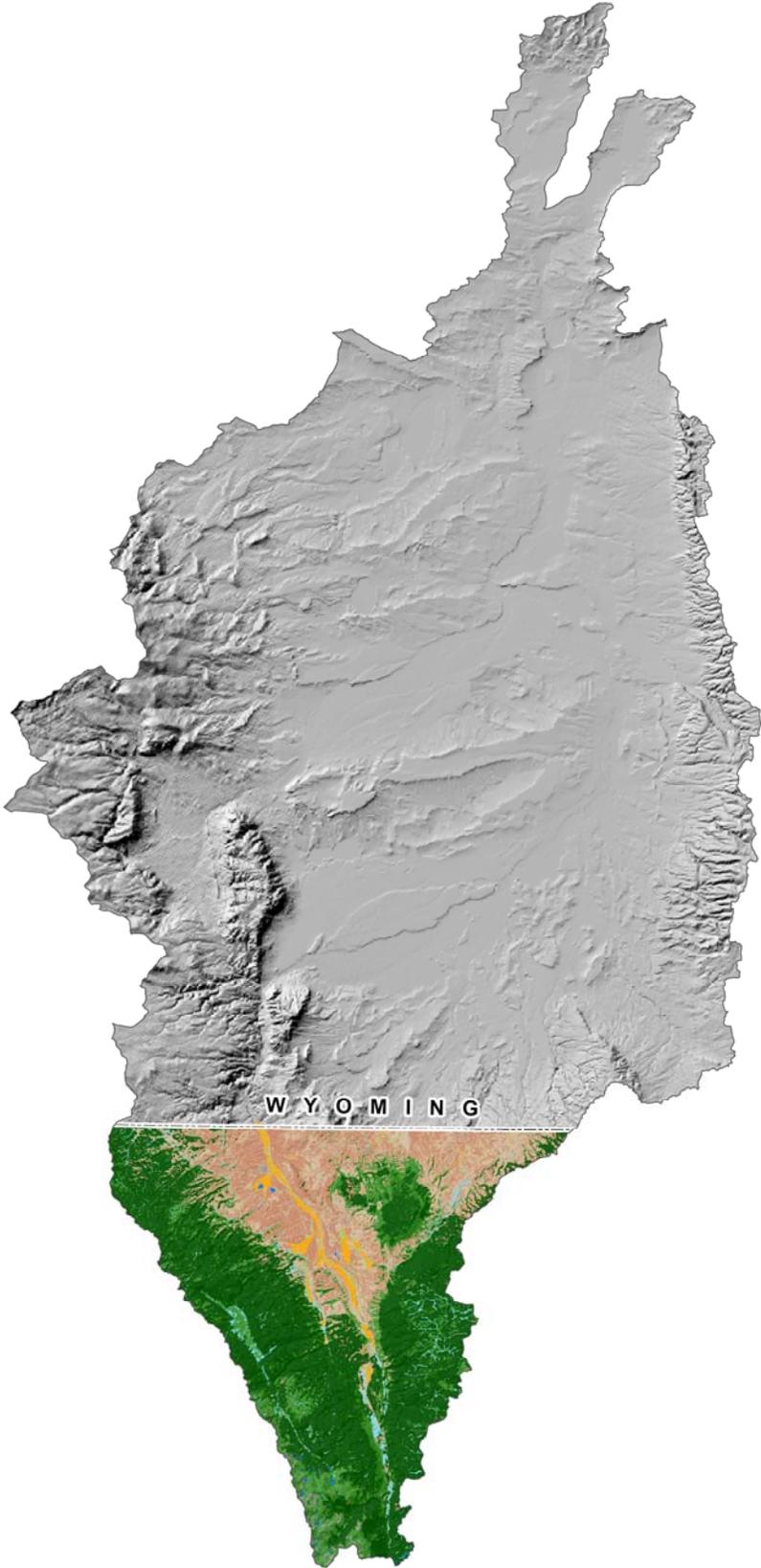


MLRA	CRA	CRA NAME	CRA DESCRIPTION
48A	48A.1	Southern Rocky Mountains - High Mountains and Valleys	This area is best characterized by steep, high mountain ranges and associated mountain valleys. The temperature regimes are mostly frigid and cryic; moisture regimes are mainly ustic and udic. Vegetation is sagebrush-grass at low elevations, and with increasing elevation ranges from coniferous forest to alpine tundra. Elevations range from 6,500 to 14,400 feet.



Ownership

- ◆ Bureau of Land Management (~26,817 acres)
- ◆ Private (~54,967 acres)
- ◆ State (~6,577 acres)
- ◆ U.S. Forest Service (~164,059 acres)



Vegetation

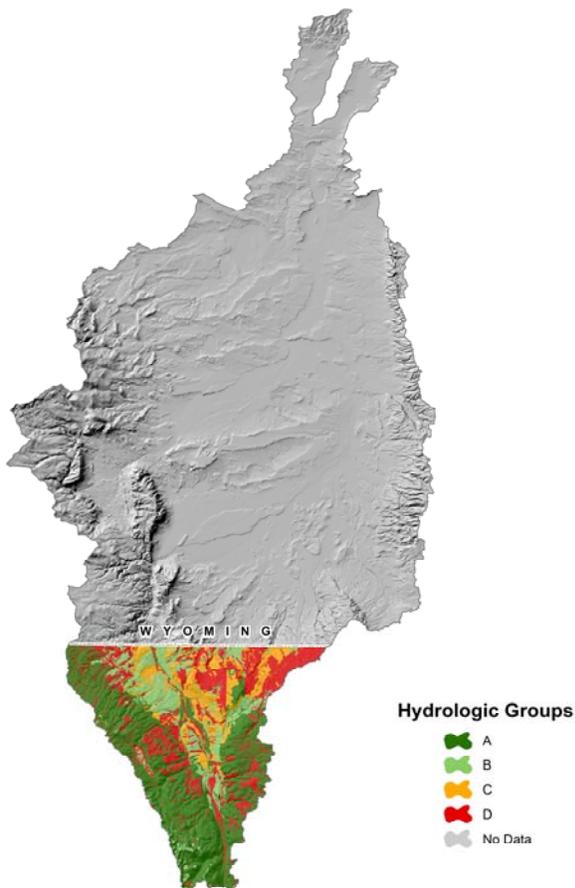
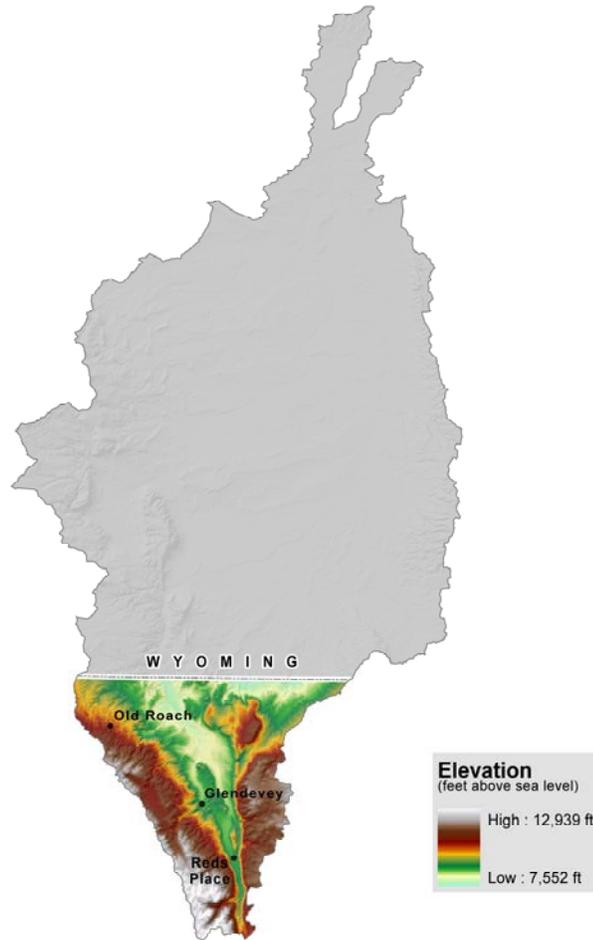
- ◊ Alpine/Subalpine/Tundra
- ◆ Coniferous Forest
- ◆ Mixed Forest
- ◆ Grass Dominated
- ◆ Irrigated Ag
- ◆ Other
- ◆ Rangeland
- ◆ Riparian
- ◆ Shrub/Brush Rangeland
- ◆ Shrub/Grass/Forb Mix Rangeland
- ◆ Water
- ◆ Woodland

<u>UPPER LARAMIE WATER-SHED Land Use</u>	Total Acreage	Vegetation	Acreage
Cropland	3,738	Irrigated Ag*	3,738.0
Rangeland/Grassland	78,577	Grass Dominated	384.0
		Grass/Forb Mix	32,534.7
		Sagebrush Community	2.7
		Sagebrush/Grass Mix	37,298.6
		Shrub/Grass/Forb Mix	5,353.0
		Sparse Grass (Blowouts)	2,623.6
		Xeric Mountain Shrub Mix	380.1
Forest	145,279	Aspen	14,432.0
		Douglas Fir	1,879.5
		Englemann Spruce/Fir Mix	25,772.8
		Limber Pine	111.7
		Lodgepole Pine	91,254.2
		Lodgepole Pine/Aspen Mix	8,251.5
		Lodgepole/Spruce/Fir Mix	1,313.6
		Ponderosa Pine	227.8
		Ponderosa Pine/Douglas Fir Mix	23.3
		Ponderosa Pine/Mesic Mtn. Shrub	0.3
		Spruce/Fir Regeneration	452.0
		Spruce/Fir/Aspen Mix	1,559.7
Riparian	7,093	Herbaceous Riparian	0.6
		Willow	7,061.7
		Upland Willow/Shrub Mix	30.6
Water	418	Water	418.2
Other	17,266	Alpine Grass Dominated	0.3
		Alpine Grass/Forb Mix	4,987.5
		SubAlpine Shrub Community	101.0
		Subalpine Grass/Forb Mix	10,040.5
		Snow	1.2
		Soil	210.0
		Talus Slopes & Rock Outcrops	1,925.2
~Total Watershed Acres			252,370.1

* 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.





Aquifer

Rocks that are generally poorly permeable, but locally may contain productive aquifers



Soil: Ecological Site Name

- ◆ Alpine Slopes
- ◆ Loamy Park
- ◆ Mountain Meadow
- ◆ Rocky Loam
- ◆ No Data

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.

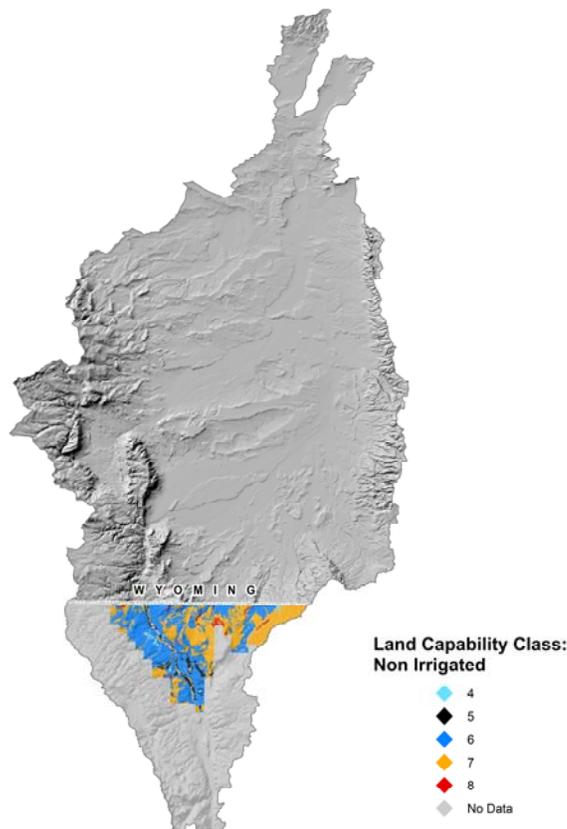
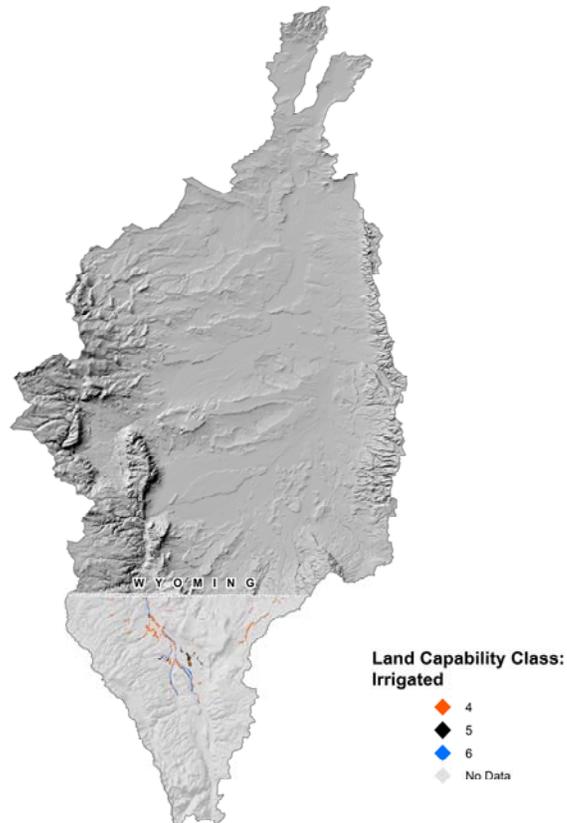
Class 4 - soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

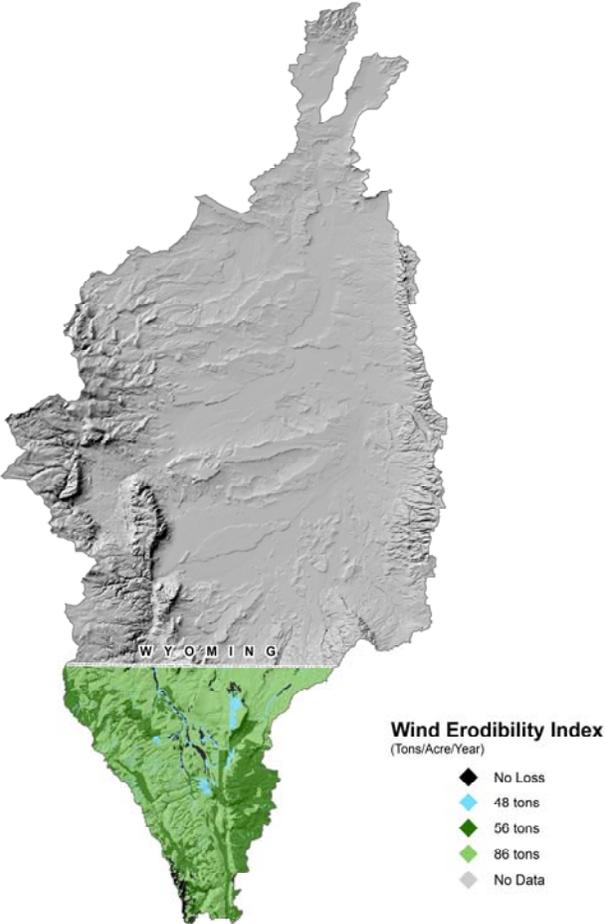
Class 5 - soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

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.

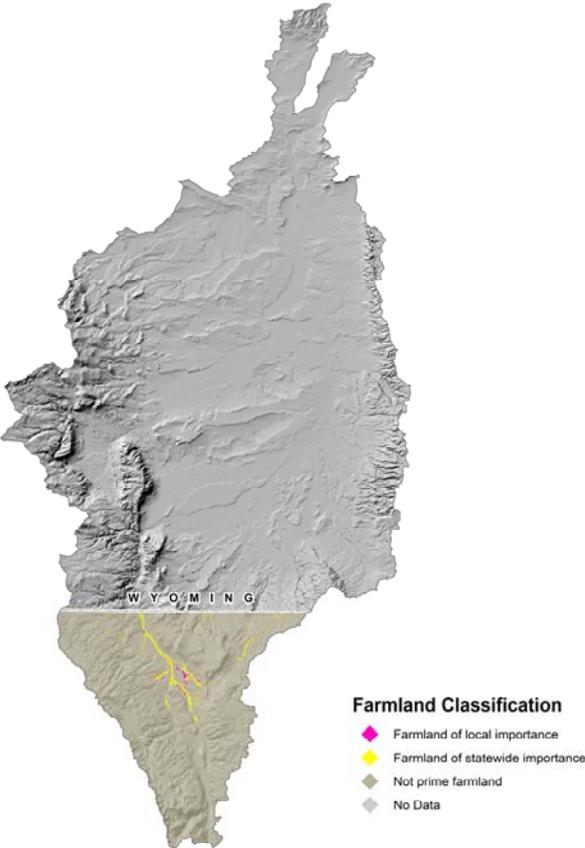
Class 8 - soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or aesthetic purposes.

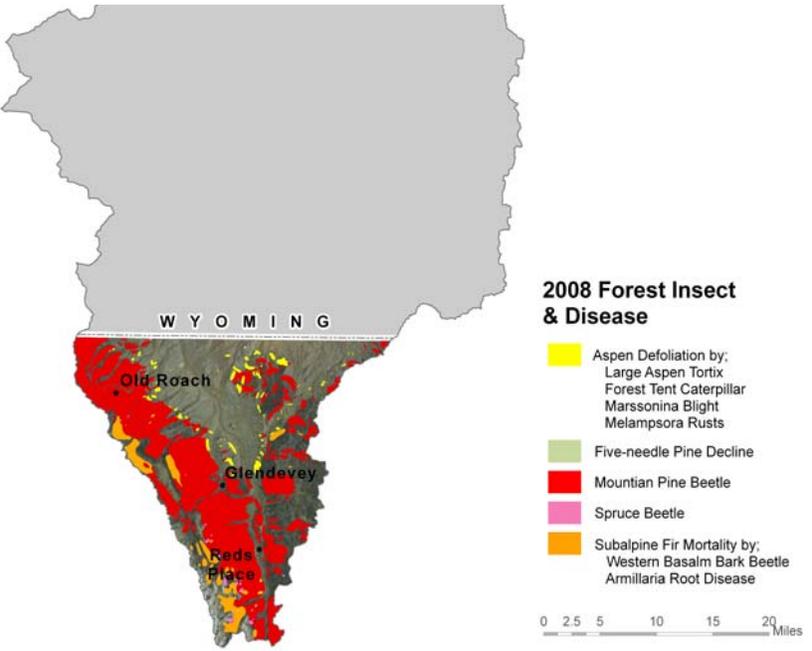
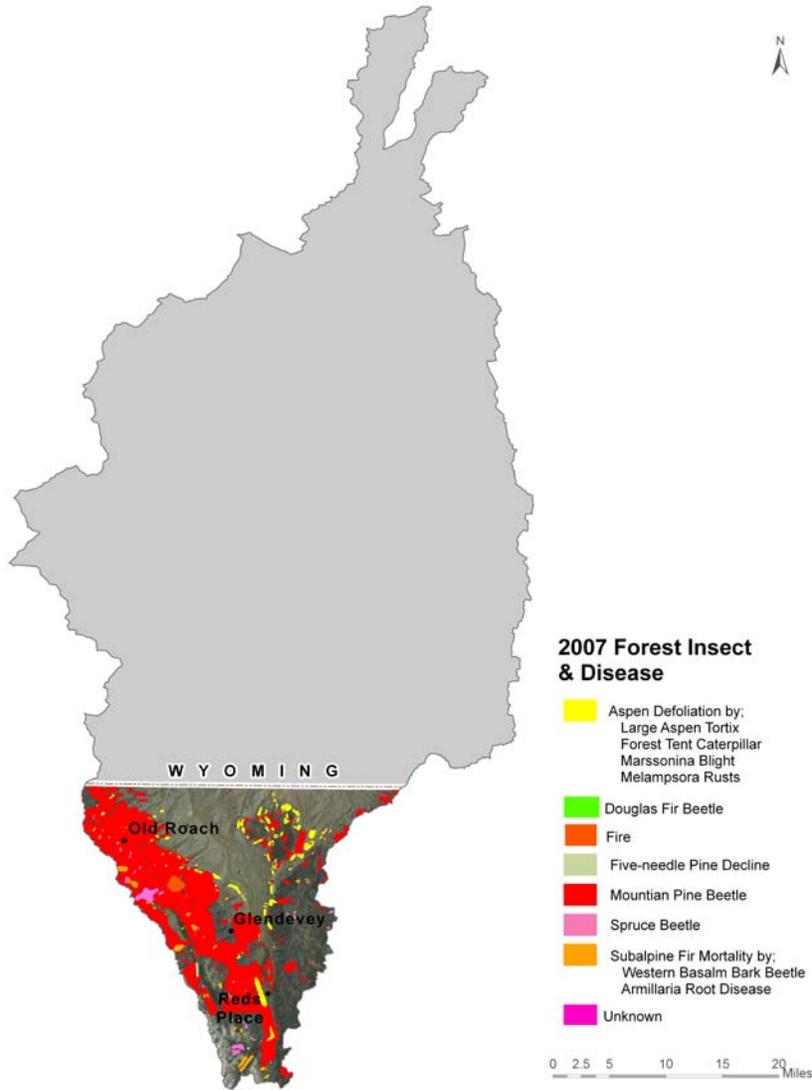




The Wind Erodibility Index (WEI): numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion if it is assumed there is no vegetative cover or management.

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





State and Federal Threatened, Endangered, and Candidate Species and Species of Special Concern in Upper Laramie Watershed

Common Name	Scientific Name	Class	State Status/Federal Status	Comments
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Birds	Threatened/None	Winters in the watershed
Boreal toad	<i>Bufo boreas boreas</i>	Amphibians	Endangered/None	May occur in the watershed
Canada lynx	<i>Lynx Canadensis</i>	Mammals	Endangered/Threatened	May occur in the watershed
Cylindrical Papershell	<i>Anodontoides ferussacianus</i>	Gastropods	Concern/None	May occur in the watershed
Greenback cutthroat trout	<i>Oncorhynchus clarkistomias</i>	Fish	Threatened/Threatened	May occur 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	Concern/None	May occur in the watershed
North Park phacelia	<i>Phacelia formosula</i>	Plants	None/Endangered	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.
River otter	<i>Lontra Canadensis</i>	Mammals	Threatened/None	Occurs in the watershed
Townsend's big-eared bat	<i>Corynorhinus townsendii pallescens</i>	Mammals	Concern/None	May occur in the watershed
Whooping Crane	<i>Grus Americana</i>	Birds	Endangered/Endangered	Occurs downstream of watershed; Depletions are a concern here.
Wolverine	<i>Gulo gulo</i>	Mammals	Endangered/None	May occur in the watershed
Wood Frog	<i>Rana sylvatica</i>	Amphibians	Concern/None	Occurs in the watershed

Terrestrial habitat types in this watershed include: large amounts of lodgepole pine with smaller acreages of spruce-fir, aspen and ponderosa pine; foothill/montane grassland; big sagebrush shrub habitat; a small amount of irrigated hayland; and, at the highest elevations, tundra. Riparian areas, natural lakes, reservoirs, and ponds provide aquatic habitats.

Economically important species in the watershed are bighorn sheep at high elevations, and black bear, mule deer, elk, moose, and mountain lion throughout the watershed. Pronghorn are found at low elevations. Snow geese are in the Laramie River, its major tributaries, and adjacent riparian areas. White-tailed deer frequent the Laramie River riparian area.

Social Data	Larimer
Demographics (US Census, American Factfinder)	
Total population	264,807
Male	133,444
Female	131,363
Median age (years)	33.9
White	243,945
Black or African American	1636
American Indian and Alaska Native	1077
Asian	4451
Native Hawaiian and Other Pacific Islander	201
Some other race	5934
Hispanic or Latino (of any race)	25319
Economic Characteristics (US Census, American Factfinder)	
In labor force (population 16 years and over)	154,222
Median household income (dollars)	48,686
Median family income (dollars)	64,088
Per capita income (dollars)	26,963
Families below poverty level	x
Individuals below poverty level	x
County Agricultural Characteristics (Colorado Agricultural Census, county data tables)	
Farms (number)	1564
Land in farms/ranches (acres)	521,599
Average size farm/ranch (acres)	334
Median size farm (acres)	40
Average age of farmer or rancher	52.9
Net cash return from ag sales (\$1,000)	124
Cattle and calves (number)	40,000

Identified Long Range Resource Concerns

Top Three Concerns within Conservation Districts

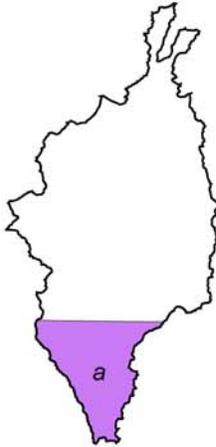
Conservation Districts
a Fort Collins

#1



◆ Water Quality & Quantity

#2



◆ Quality Land Use

#3



◆ Air & Water Quality/Quantity

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

Grazed Rangeland—The grazing Resources need improved plant condition (similarity index), productivity, health and vigor. Animals need feed, forage, and shelter. The animals are adapted to the climatic and ecological condition of the resources.

CO 48.1-GR-01

<i>Practices</i>	<i>Description</i>	<i>Resource Concerns Addressed</i>
314 Brush Management	This area encompasses the lower elevation mesas and Plateaus that represent the transition to the Southern Rocky Mountains. The typical vegetation is a scattered overstory of two needle pinyon and Utah juniper with a understorey of big sagebrush and perennial bunch-grasses. In some areas pinyon and juniper can increase and become a dominant species.	Fish and Wildlife - T&E Species: Declining Species, Species of Concern
338 Prescribed Burning		
378 Pond		Plant Condition - Productivity, Health and Vigor
382 Fence		Soil Erosion - Sheet and Rill
528 Prescribed Grazing		Soil Erosion - Wind
574 Spring Development		
595 Pest Management		
614 Watering Facility		
645 Upland Wildlife Habitat Management		
666 Forest Stand Improvement		

Hayland—Wild flood irrigation system converted to Structure for Water Control, Underground & Gated Pipeline, IWM, and Forage Harvest Mgt.

CO 48.1-HY-Pipe—R-1

<i>Practices</i>	<i>Description</i>	<i>Resource Concerns Addressed</i>
430DD Irr. Water Conveyance, Pipeline, H	Cool season grasses, alfalfa, or alfalfa/grass hay. Annual precipitation ranges from 8 - 20". 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 and as snowfall in the winter. Wildlife potential for use by elk, deer and other wildlife.	Soil Erosion - Sheet and Rill
431 Above Ground, Multi-Outlet Pipeline		Soil Erosion - Wind
443 Irrigation System, Surface and Subsurface		Water Quantity - Inefficient Water Use on Irrigated Land
449 Irrigation Water Management		
511 Forage Harvest Management		
587 Structure for Water Control		

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
Hayland	3,000	880	2,640,000
			Total Costs: \$3,240,000

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:

Larimer County Area (CO644) Published 01/15/2008

Roosevelt Arapahoe Routt (CO645) Published 2/4/2008

Jackson County Area (CO646) Published 1/30/2008

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>.

Forest Insect & Disease data obtained from the U.S. Forest Service annual aerial survey. For more information visit <http://www.fs.fed.us/r2/resources/fhm/aerialsurvey/>