



Colorado Department of
Agriculture

State Conservation Board

United States Department
of Agriculture

Natural Resources
Conservation Service

Lakewood, Colorado

Cache la Poudre

Hydrologic Unit Code 10190007

Rapid Assessment

RWA 10190007

October 2009



The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.)

Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th and Independence Avenue, SW, Washington DC 20250-9410, or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

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.

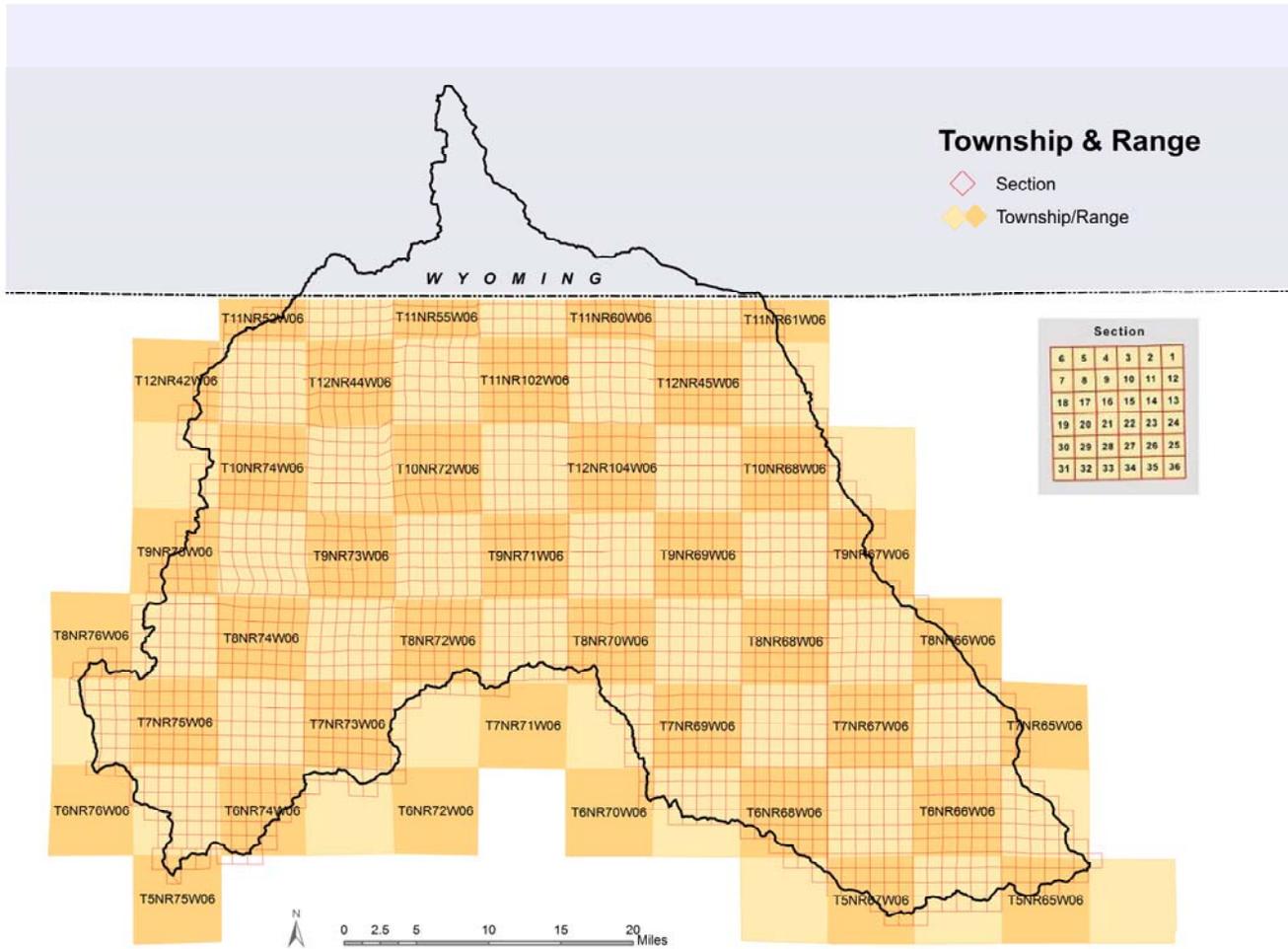
Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help landowners and local leaders set priorities and determine the best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

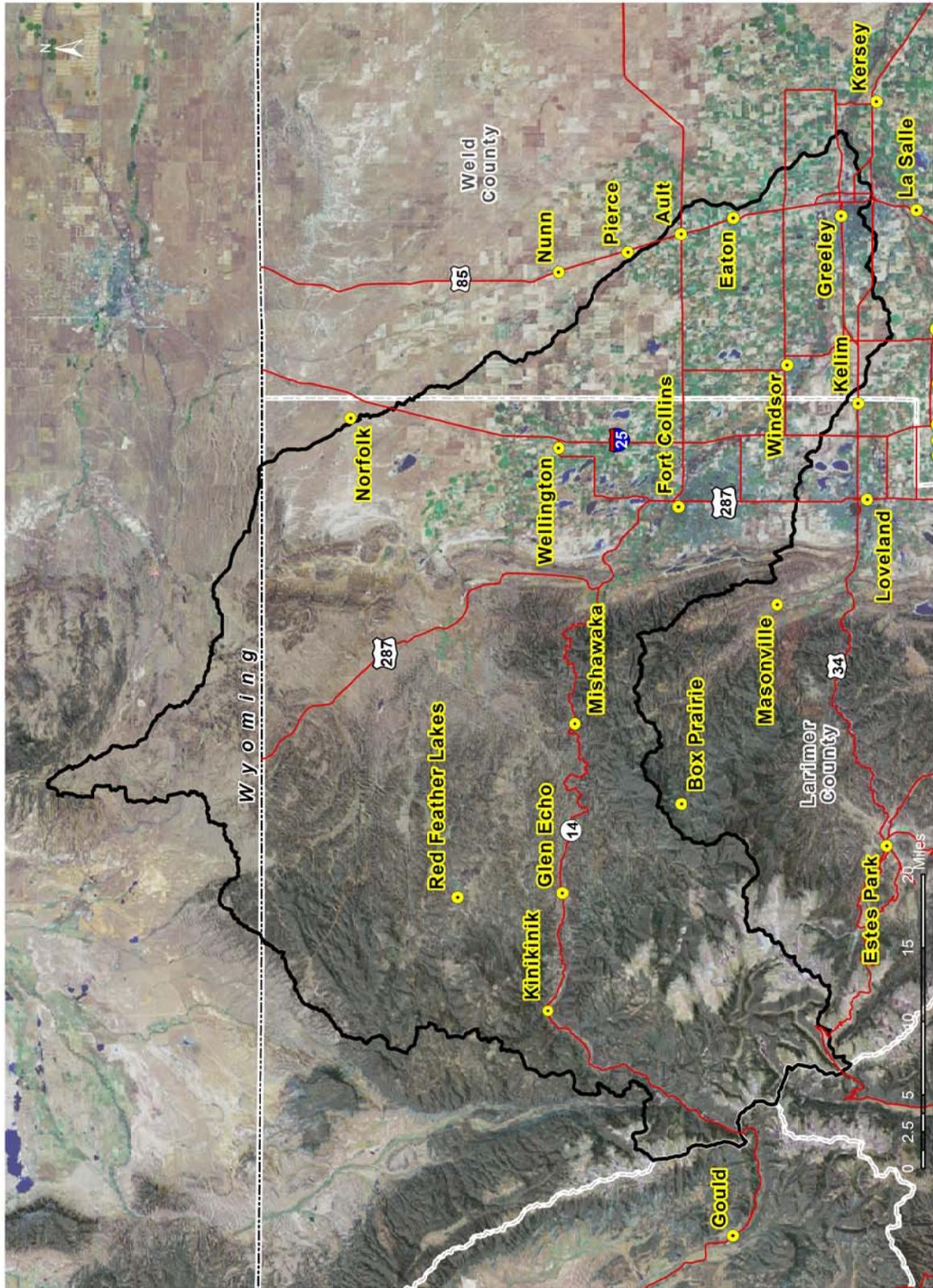
Rapid Watershed Assessments provide information that helps land-owners and local leaders set conservation priorities.



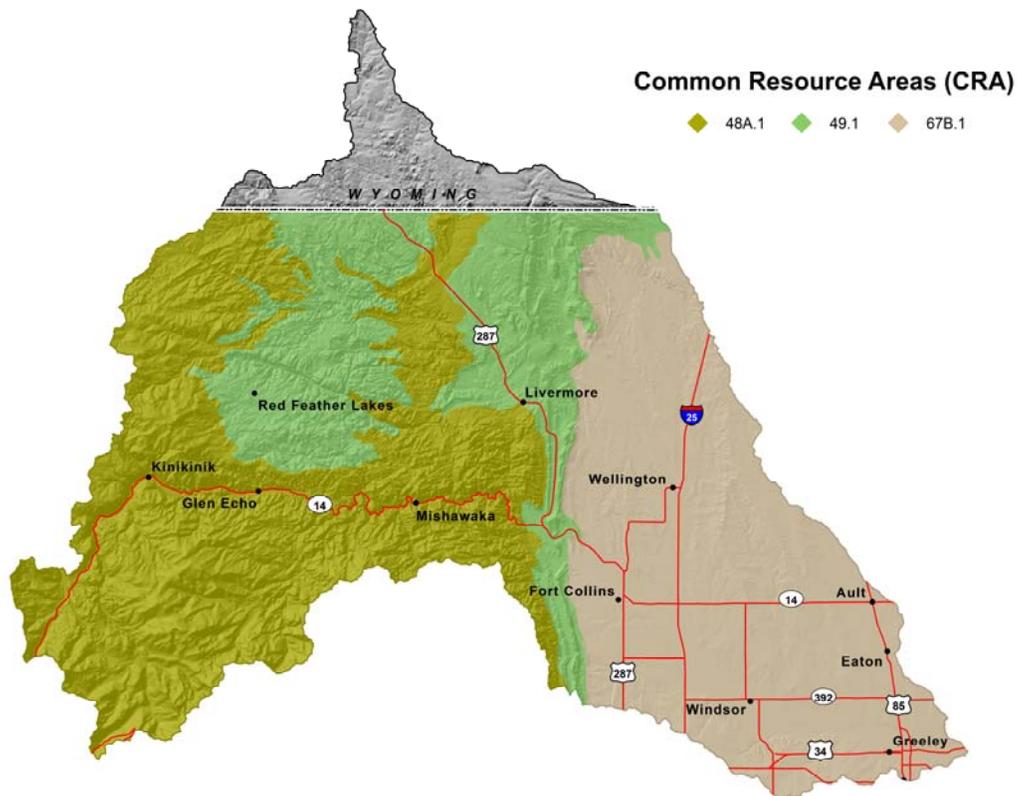
County	County Acres	County Acres in CACHE LA POUFRE Watershed	% of County in the Watershed	% of Watershed in the County
Grand	1,195,555	37	0.003%	0.003%
Jackson	1,036,924	14	0.001%	0.001%
Larimer	1,684,151	943,838	56.0%	83.619%
Weld	2,568,823	184,842	7.2%	16.376%

Total Watershed Acres 1,128,730

Cache La Poudre Watershed - 10190007

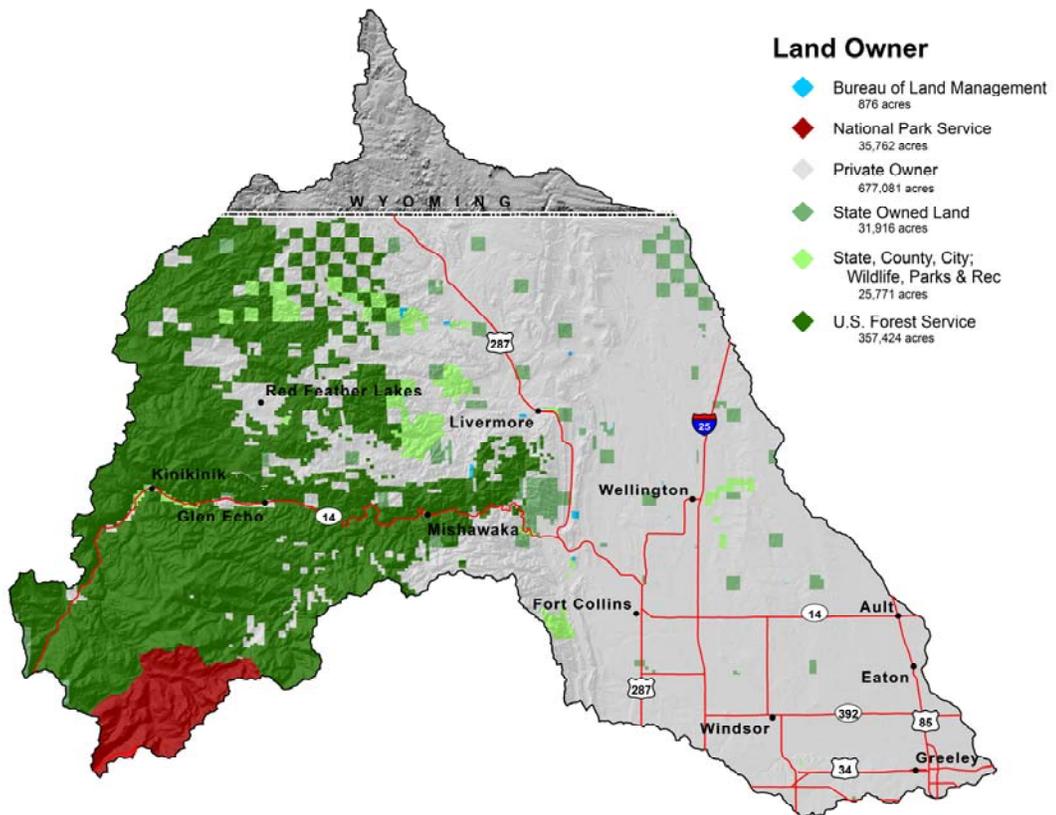
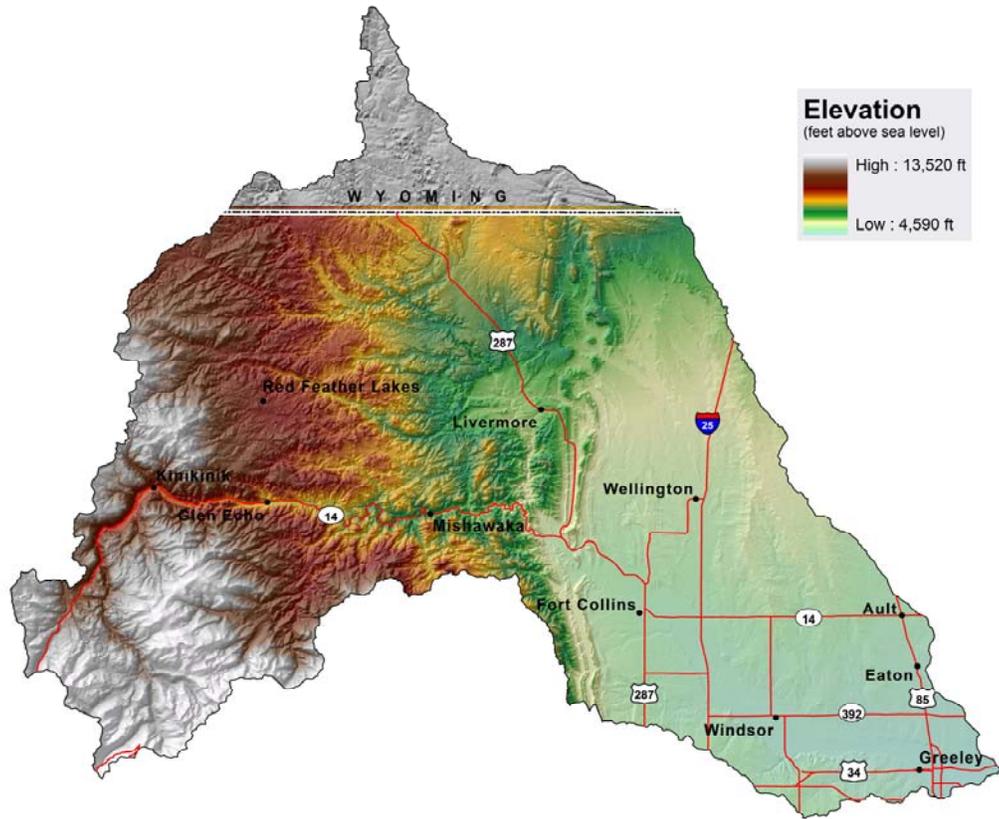


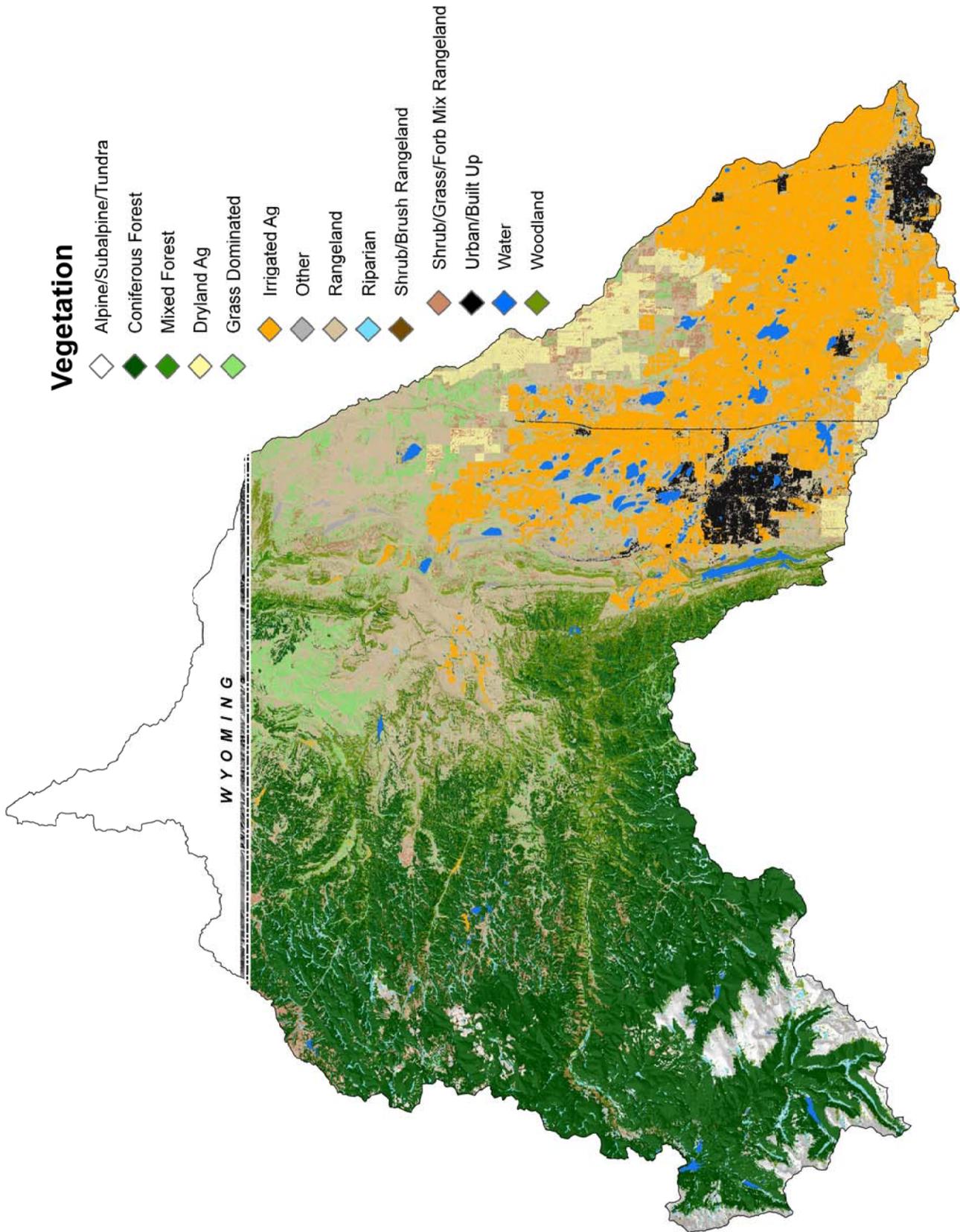
Satellite Imagery: Arc IMS Server - Geography Network Services hosted by ESRI



CRA: A geographical area where resource concerns, problems, and treatment needs are similar. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographical boundaries of the common resource area.

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.
49	49.1	Southern Rocky Mountain Foothills	This area is generally a transition between the Great Plains and the Southern Rocky Mountains. The temperature regime is mesic or frigid, and moisture regime is ustic. Characteristic native vegetation ranges from grasslands and shrubs to ponderosa pine and Rocky Mountain Douglas fir forest.
67B	67B.1	Central Great Plains, Southern Part	The Central High Plains, Southern Part CRA is broad, undulating to rolling plains dissected by streams and rivers. Local relief is measured in tens of feet on the plains. Soils are deep and formed in aeolian and alluvial materials. Pre-settlement vegetation was short grass prairies. Nearly all of this area in fallow cropland rotations or rangeland. Some cropland areas are irrigated.



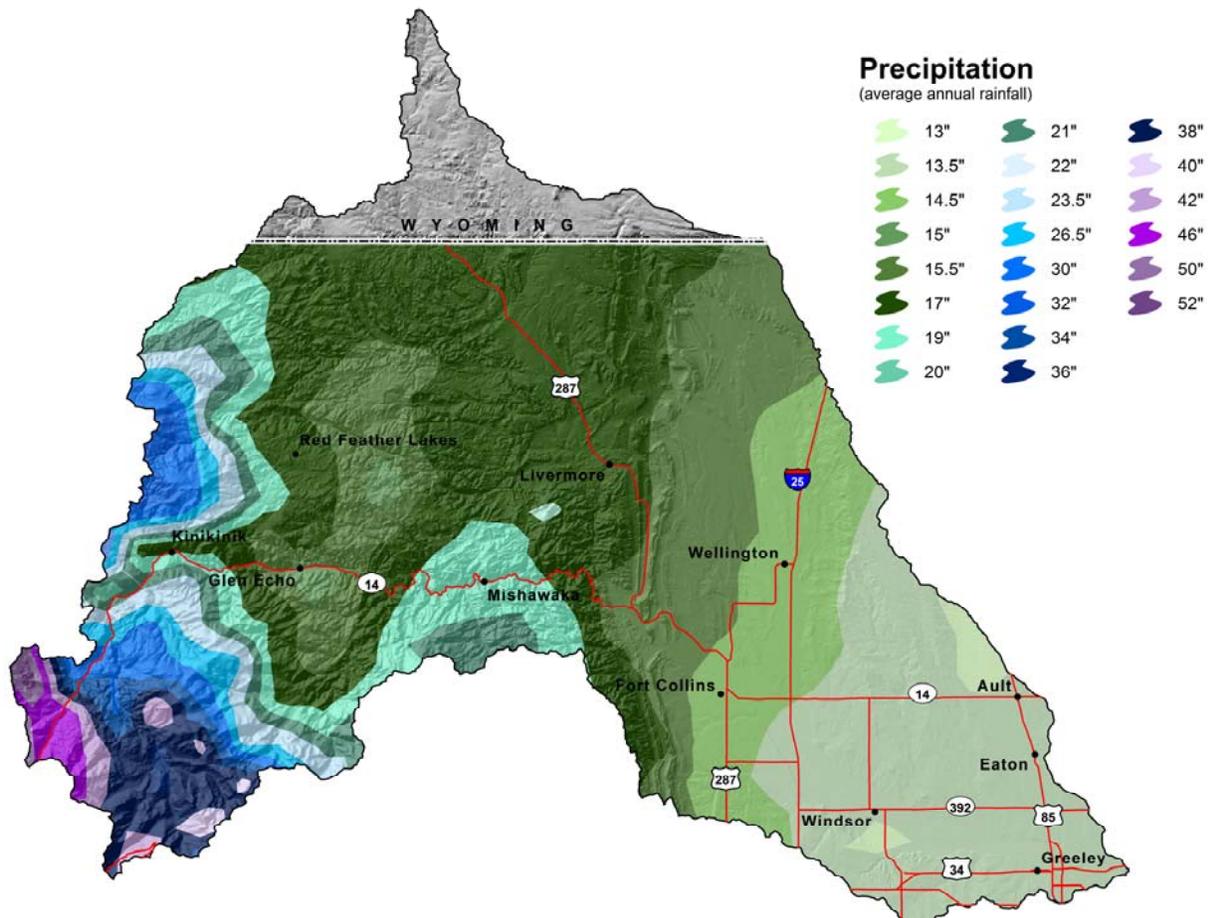


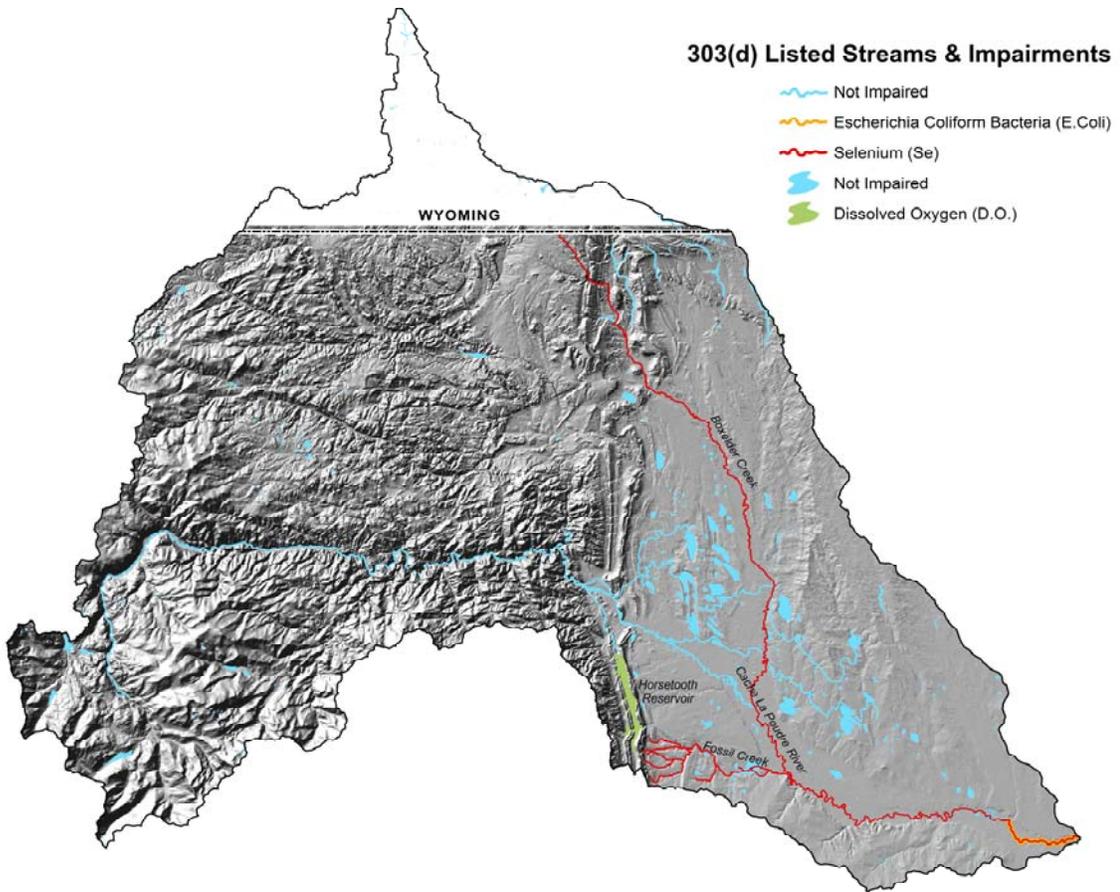
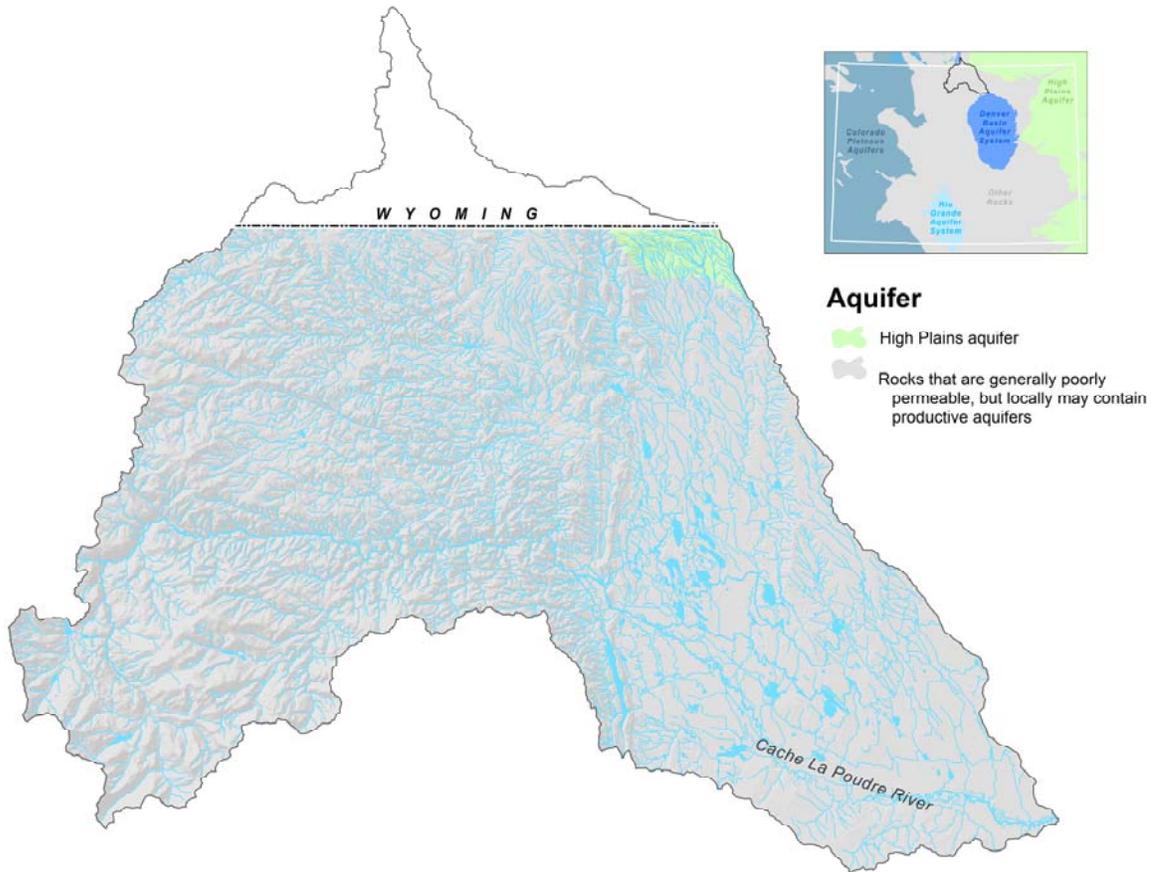
CACHE LA POUDRE Land Use	Total Acreage	Vegetation	Acreage
Cropland	184,941	Dryland Ag	33,393.5
		Irrigated Ag	151,547.1
Rangeland/Grassland	520,956	Alpine Grass Dominated	5.7
		Alpine Grass/Forb Mix	24,352.5
		Englemann Spruce/Fir Mix	28,226.2
		Grass Dominated	66,392.2
		Grass/Forb Mix	253,305.3
		Grass/Misc. Cactus Mix	5.4
		Mesic Mountain Shrub Mix	1,286.4
		Sagebrush Community	2.7
		Sagebrush/Grass Mix	4,340.6
		Shrub/Grass/Forb Mix	31,535.5
		Sparse Grass (Blowouts)	21,239.5
		SubAlpine Shrub Community	1,375.0
		Subalpine Grass/Forb Mix	8,871.1
Upland Willow/Shrub Mix	3,417.1		
Xeric Mountain Shrub Mix	76,601.1		
Forest	365,618	Aspen	7,396.7
		Cottonwood	241.6
		Douglas Fir	6,147.8
		Limber Pine	8.9
		Lodgepole Pine	129,992.1
		Lodgepole Pine/Aspen Mix	4,542.3
		Lodgepole/Spruce/Fir Mix	56,085.7
		Mixed Forest Land	1.0
		Ponderosa Pine	105,225.9
		Ponderosa Pine/Aspen Mix	203.6
		Ponderosa Pine/Douglas Fir Mix	19,719.7
		Ponderosa Pine/Mesic Mtn. Shrub	19,797.1
		Spruce/Fir Regeneration	4.0
		Spruce/Fir/Aspen Mix	6.9
Spruce/Fir/Lodgepole/Aspen Mix	1.0		
Willow	16,244.3		
Riparian	5,268	Herbaceous Riparian	4,844.0
		Riparian	16.3
		Shrub Riparian	407.7
Water	16,865	Water	16,865.3
Other	35,962	Commercial	4.6
		Residential	18,404.9
		Rock	13.8
		Snow	610.6
		Soil	6,586.1
		Talus Slopes & Rock Outcrops	3,983.2
Urban/Built Up	6,358.6		
Total Watershed Acres			1,129,611

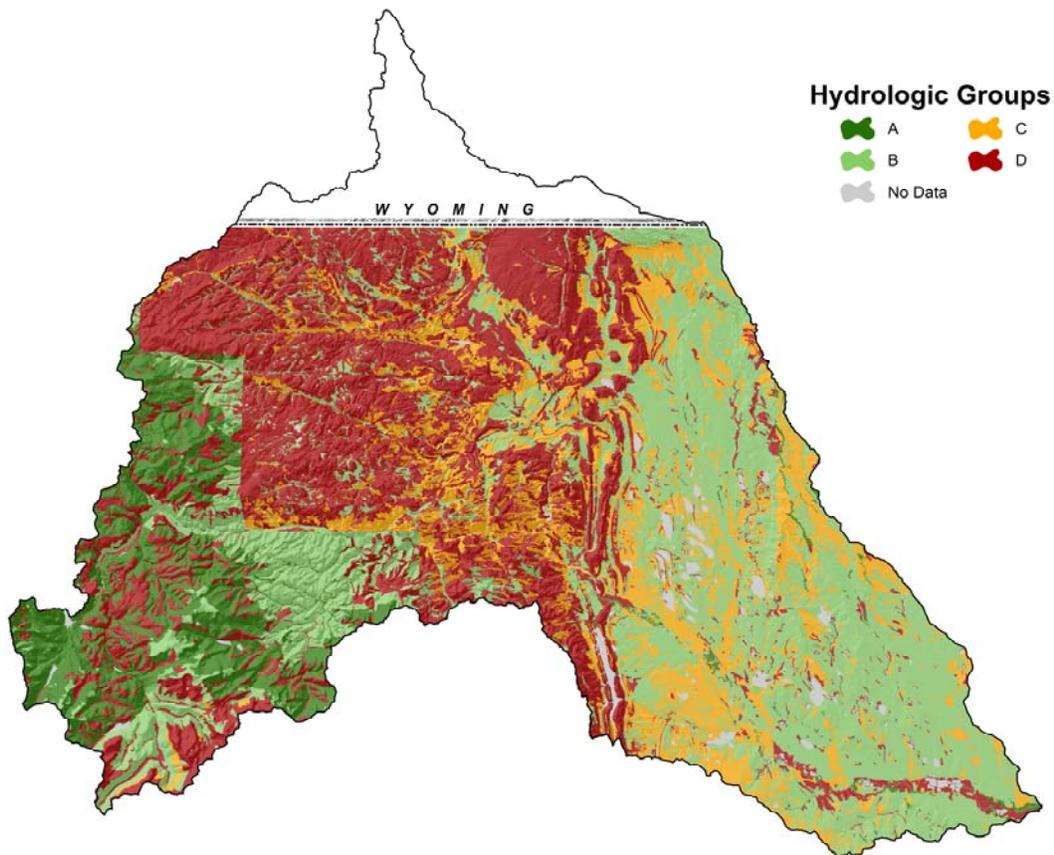
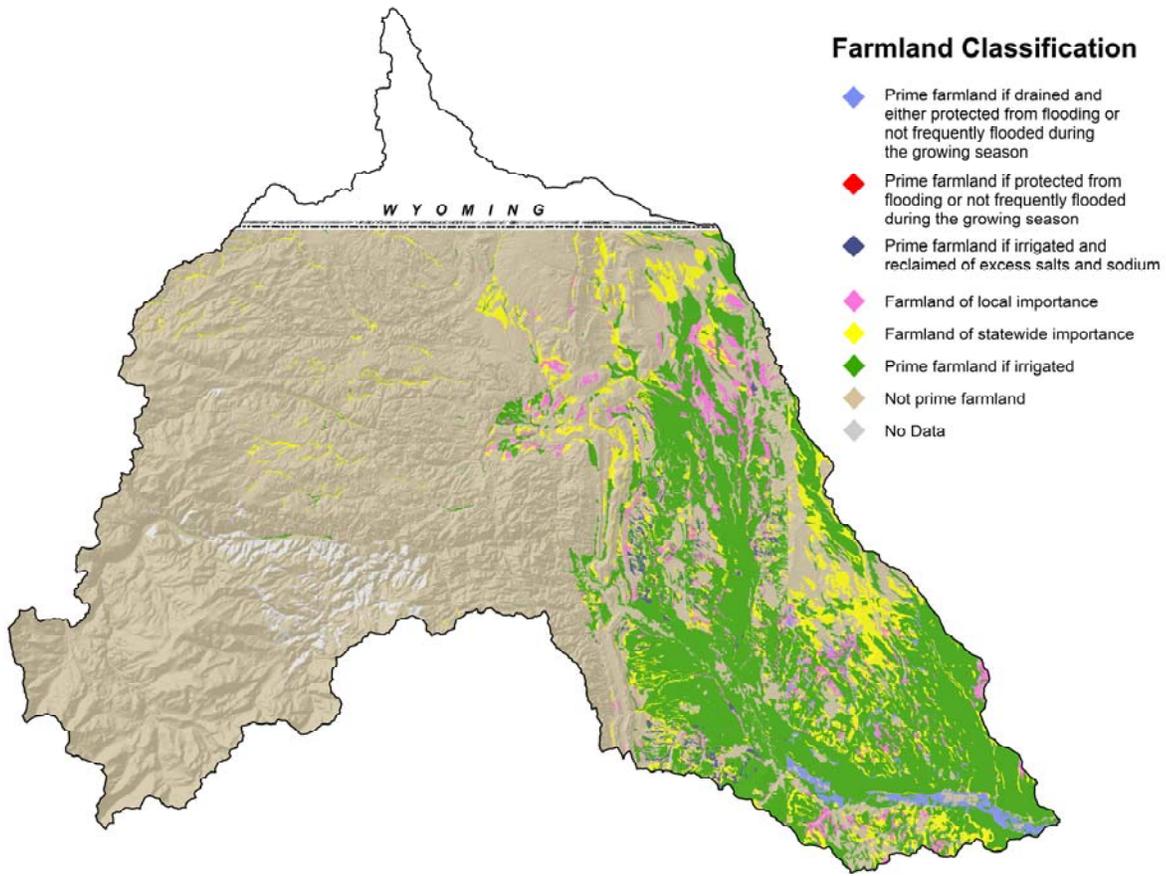
Precipitation

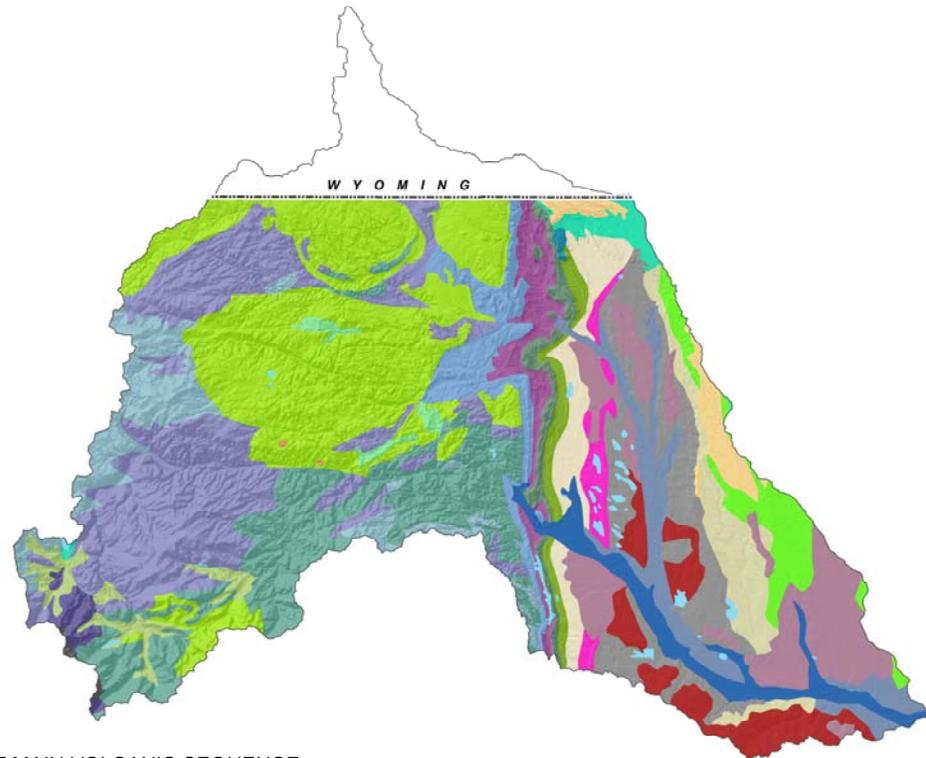
Droughts are regular visitors to the watershed as with the rest of Colorado. Statewide, in the 1900's alone, four prolonged dry spells occurred. There was one in the 1910s. Another, in the '30s, caused the dust-bowl period. The second worst drought on record in the state occurred in the mid-50s. A series 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.

The average annual temperature varies between 48°F and 51°F degrees and ranges between 46°F and 54°F. July is warmest month while December and January are the coolest months. It is not uncommon for the temperatures to reach 100°F during the summer. Summer humidity is low and evaporation is high. The winters are characterized with frequent northerly winds that produce extreme cold temperatures dropping to -35°F or lower. Winds average about 9 to 10 miles per hour annually with daytime winds that are generally stronger than nighttime and occasional strong storms bring periods of high winds with gusts greater than 50 to 90 miles per hour. Rainfall occurs as frontal storms in the spring and early summer and high intensity, convective thunderstorms in late summer. Approximately seventy-five percent of annual precipitation occurs from mid-April through late September. The mean average annual precipitation ranges from 12 to 18 inches per year and ranges from 6 inches to over 29 inches. Precipitation in winter is snow. The average snowfall ranges from 20 inches to 49 inches but ranges between 4 and 84 inches. The frost free period averages 142 days but ranges from 129 to 155 days. The average date of first frost in the fall is September 28 and the last frost in the spring is about May 9.



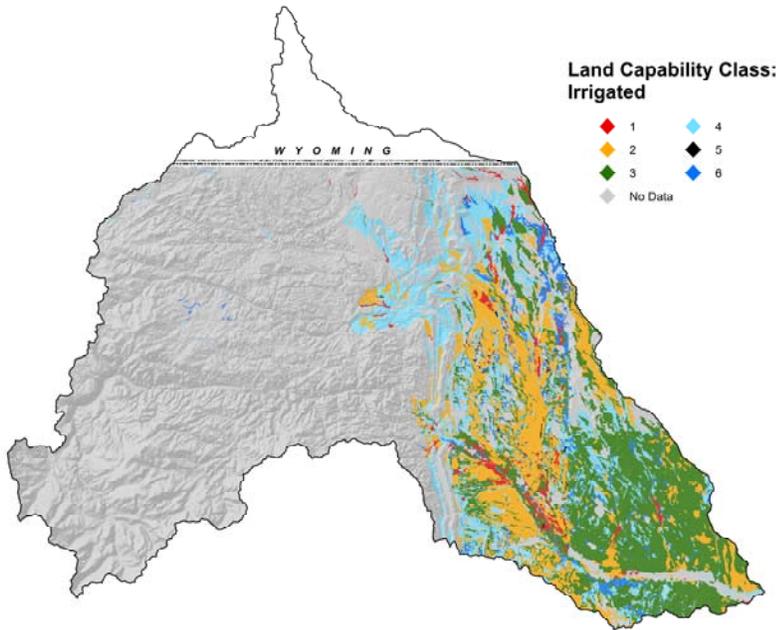






Geology

- ◆ ASH-FLOW TUFF OF MAIN VOLCANIC SEQUENCE
- ◆ BIOTITIC GNEISS, SCHIST, AND MIGMATITE
- ◆ BOULDERY GRAVEL ON OLD EROSION SURFACES IN FRONT RANGE AND NEVER SUMMER MOUNTAINS
- ◆ COLORADO GROUP
- ◆ DAKOTA, MORRISON, AND SUNDANCE FORMATIONS
- ◆ EOLIAN DEPOSITS
- ◆ FELSIC AND HORNBLENDIC GNEISSES, EITHER SEPARATE OR INTERLAYERED
- ◆ FOX HILLS SANDSTONE
- ◆ GLACIAL DRIFT OF PINEDALE AND BULL LAKE GLACIATIONS
- ◆ GRANITIC ROCKS OF 1,400-M.Y. AGE GROUP (AGE 1,350-1,480 M.Y.)
- ◆ GRANITIC ROCKS OF 1,700-M.Y. AGE GROUP (AGE 1,650-1,730 M.Y.)
- ◆ GRAVELS AND ALLUVIUMS (PINEDALE AND BULL LAKE AGE)
- ◆ INGLESIDE FORMATION (LIMESTONE AND CALCAREOUS SANDSTONE) AND FOUNTAIN FORMATION
- ◆ JELM, LYKINS, LYONS, AND SATANKA FORMATIONS
- ◆ LANCE FORMATION
- ◆ LANDSLIDE DEPOSITS
- ◆ Lower unit
- ◆ MIDDLE TERTIARY INTRUSIVE ROCKS (AGE 20-40 M.Y.)
- ◆ MODERN ALLUVIUM
- ◆ Middle unit
- ◆ OGALLALA FORMATION
- ◆ OLDER GRAVELS AND ALLUVIUMS (PRE-BULL LAKE AGE)
- ◆ Upper unit
- ◆ VOLCANIC ROCKS IN NORTHWESTERN COLORADO (AGE <7-33 M.Y.)
- ◆ WATER
- ◆ WHITE RIVER FORMATION



Land Capability Classes

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.

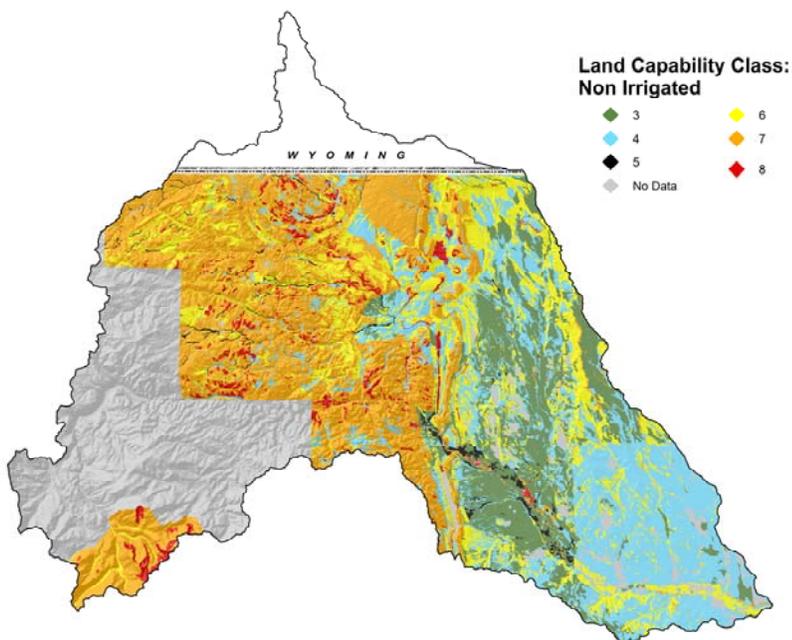
Class 4 - soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

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.

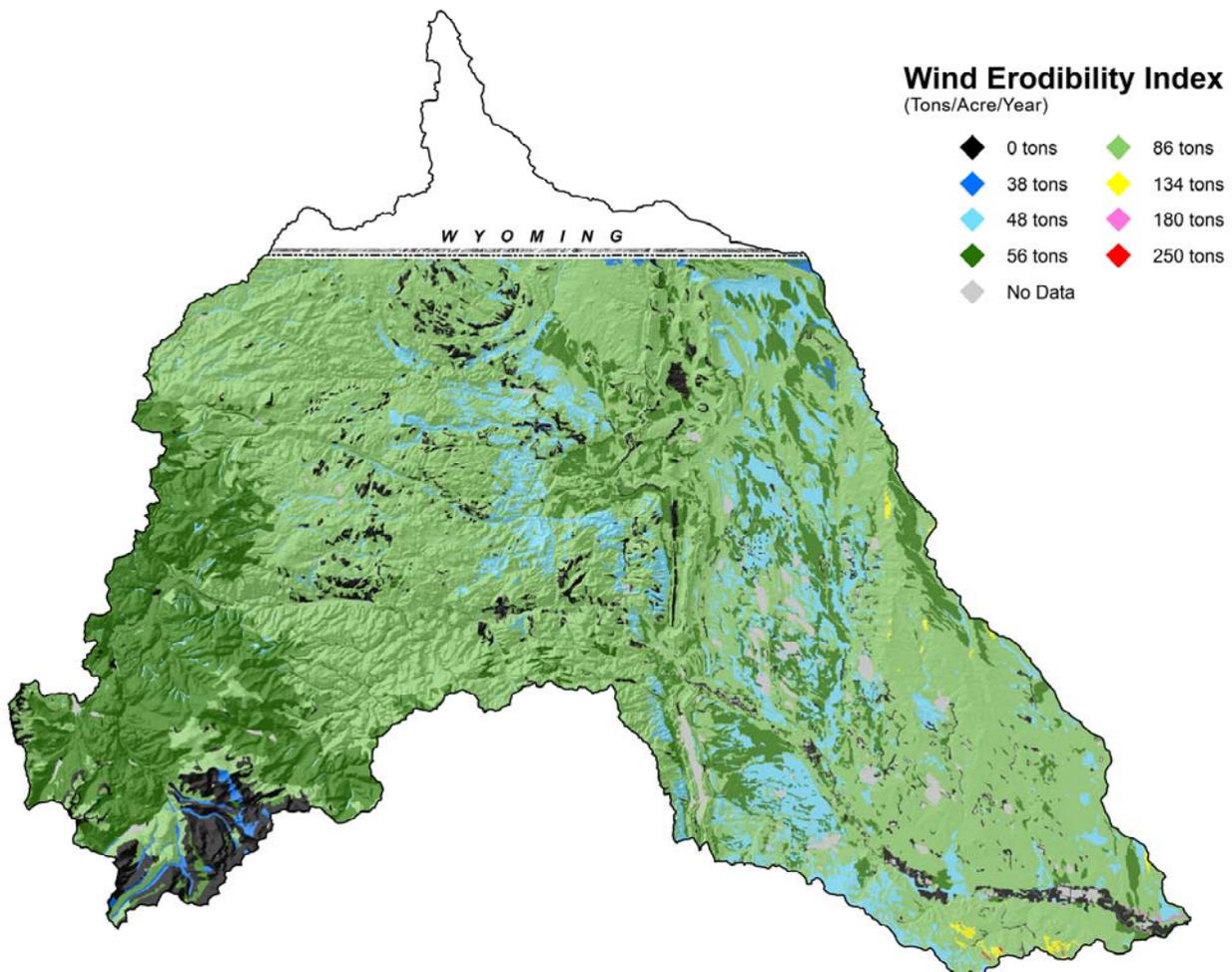


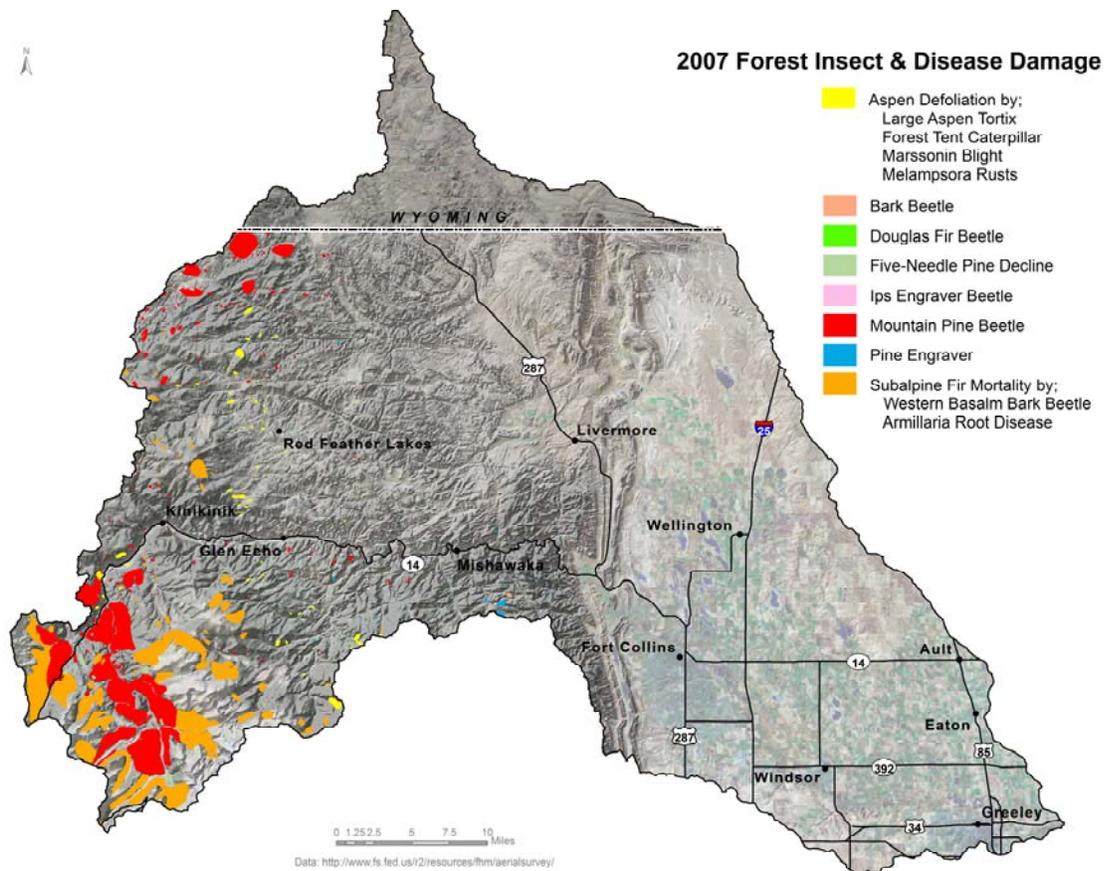
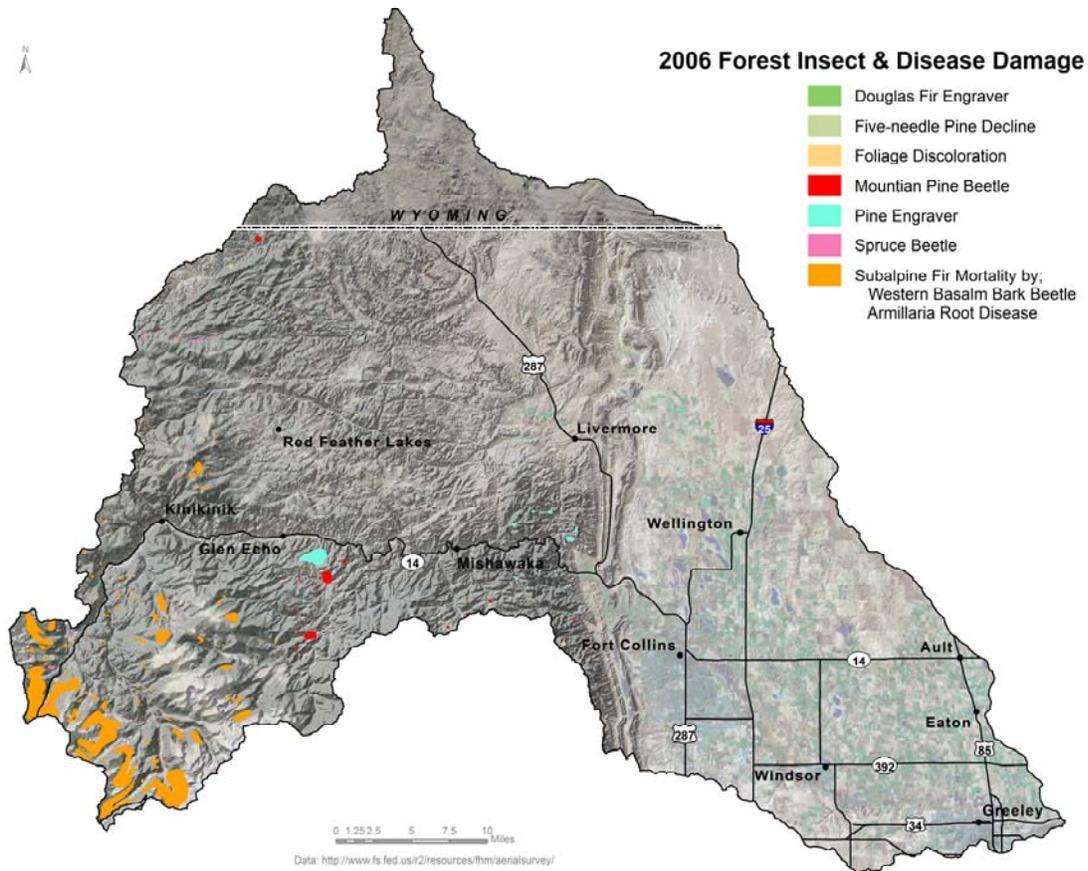
The Wind Erodibility Index (WEI):

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.

As shown on the Wind Erodibility Index map below, most cropland soils in the Cache la Poudre Watershed are considered highly erodible.





State & Federally Threatened, Endangered & Candidate Species as well as Species of Special Concern

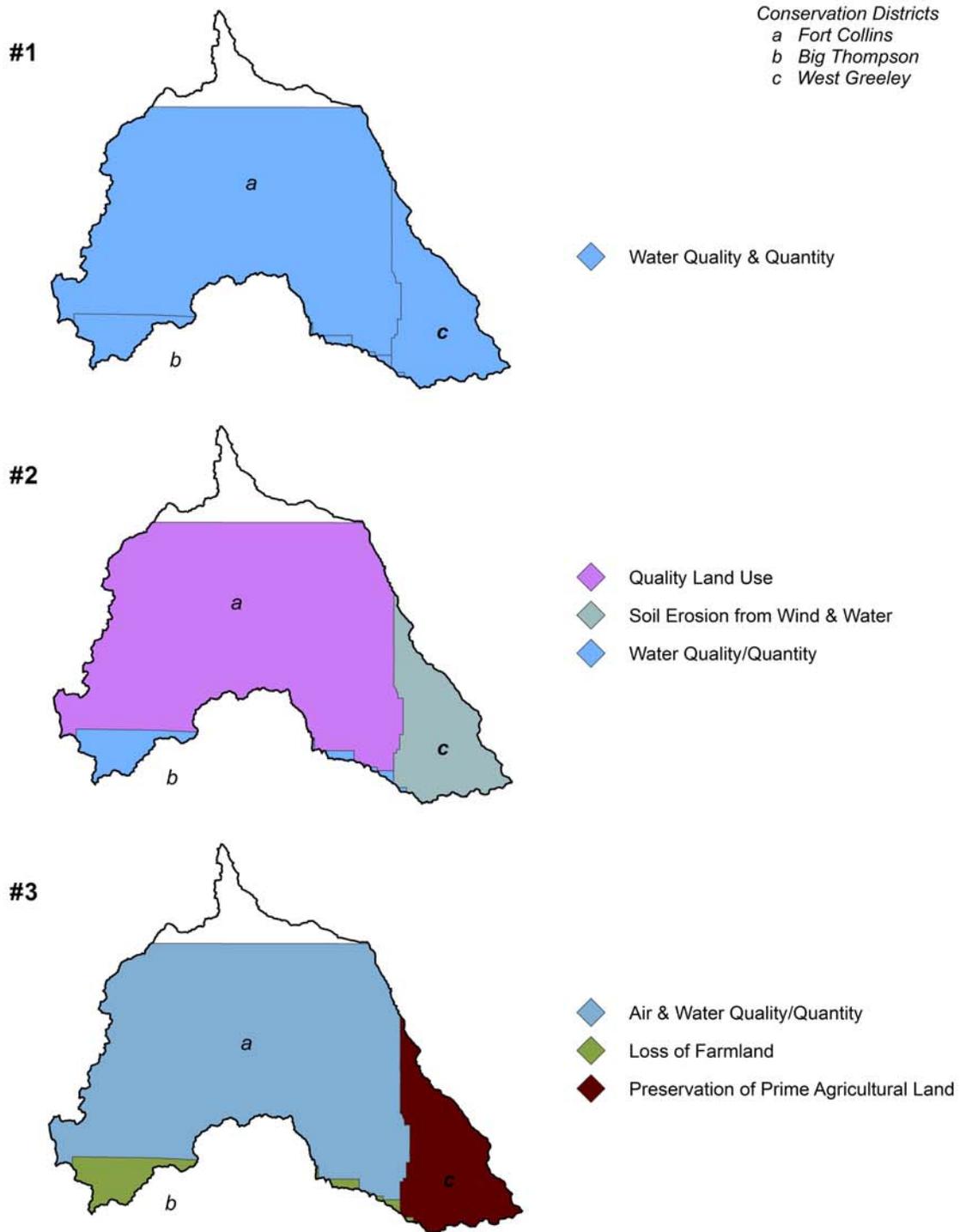
Common Name	Scientific Name	Class	State Status	Federal Status	Comments
American peregrine falcon	<i>Falco peregrinus anatum</i>	Birds	Concern	None	Occurs in the watershed
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Birds	Threatened	None	Occurs year round in the watershed
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>	Mammals	Concern	None	Occurs in the watershed
Brassy Minnow	<i>Hybognathus hankinsoni</i>	Fish	Threatened	None	Occurs in the watershed
Burrowing Owl	<i>Athene cunicularia</i>	Birds	Threatened	None	Occurs in the watershed
Common Garter Snake	<i>Thamnophis sirtalis</i>	Reptiles	Concern	None	Occurs in the watershed
Common Shiner	<i>Luxilus cornutus</i>	Fish	Threatened	None	Occurs in the watershed
Greenback Cutthroat Trout	<i>Oncorhynchus clarki stomias</i>	Fish	Threatened	Threatened	Occurs in the watershed
Iowa Darter	<i>Etheostama exile</i>	Fish	Concern	None	Occurs in the watershed
Northern Leopard Frog	<i>Rana pipiens</i>	Amphibians	Concern	None	Occurs in the watershed
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Fish	None	Endangered	Occurs downstream of watershed; Depletions are a concern here.
Preble's Meadow Jumping Mouse	<i>Zapus hudsonius preblei</i>	Mammals	Threatened	Threatened	Occurs in the watershed
River Otter	<i>Lontra Canadensis</i>	Mammals	Threatened	None	Occurs in the watershed
Swift fox	<i>Vulpes velox</i>	Mammals	Concern	None	Occurs in the watershed
Townsend's Big-Eared Bat	<i>Corynorhinus townsendii pallescens</i>	Mammals	Concern	None	Occurs in the watershed

This watershed has diverse habitat types, leading to great diversity in wildlife species found here. Lodgepole, spruce-fir, ponderosa pine forest; foothill/montane grassland; and foothills shrubs comprise the non-cropland terrestrial habitat types. Both irrigated and dry cropland are common at low elevations. Riparian areas, natural lakes, water supply reservoirs, and ponds provide aquatic habitats. Mule deer occur throughout the watershed. Pronghorn are found in the northeast part of the watershed. Wild turkey occur in a limited area near the confluence with the South Platte River and in the mountains. Pheasants, white-tailed deer, and snow geese are commonly found in the eastern half of the watershed at lower elevations. Species found in the foothills and/or mountains include bighorn sheep, black bear, elk, moose, mountain lion, and white-tailed ptarmigan.

Social Data	Grand	Jackson	Larimer	Weld
Demographics (US Census, American Factfinder)				
Total population	12,442	1,577	264,807	223,966
Male	6,593	794	133,444	112,848
Female	5,849	783	131,363	111,118
Median age (years)	36.9	40.5	33.9	31.3
White	11,839	1,517	243,945	200,942
Black or African American	60	4	1636	754
American Indian and Alaska Native	54	12	1077	1465
Asian	85	1	4451	2427
Native Hawaiian and Other Pacific Islander	12	0	201	117
Some other race	249	23	5934	14814
Hispanic or Latino (of any race)	543	103	25319	62792
Economic Characteristics (US Census, American Factfinder)				
In labor force (population 16 years and over)	7,768	829	154,222	120,817
Median household income (dollars)	47,759	31,821	48,686	48,763
Median family income (dollars)	55,217	37,361	64,088	57,009
Per capita income (dollars)	25,198	17,826	26,963	21,981
Families below poverty level	172	46	x	x
Individuals below poverty level	901	220	x	x
X means that value is not applicale or not available				
County Agricultural Characteristics (Colorado Agricultural Census, county data tables)				
Farms (number)	173	89	1564	3121
Land in farms/ranches (acres)	219,598	437,630	521,599	1,812,167
Average size farm/ranch (acres)	1,269	4,917	334	581
Median size farm (acres)	350	2,000	40	158
Average age of farmer or rancher	54.8	54.5	52.9	53.5
Net cash return from ag sales (\$1,000)	-1,467	4,355	124	67,959
Cattle and calves (number)	18,000	24,000	40,000	505,000

Identified Long Range Resource Concerns

Top Three Concerns within Conservation Districts



Selected Conservation Application Data

Practices	FY 2004	FY 2005	FY 2006	FY 2007	Total
Irrigation Water Management (ac)	313	369	545	845	2,072
Prescribed Grazing (ac)	523	11,637	14,637	25,478	52,275
Conservation Crop Rotation (ac)	2,961	575	648	600	4,784

Conservation Systems to Address Major Resource Concerns

Primary Resource Concern: Rangeland Health					
Conservation System Description:		Prescribed Grazing—planned management that provides adequate recovery opportunity between grazing events and proper stocking of animals. Estimate 85,000 acres need to be treated on median sized ranches of 2,350 acres.			Reference Conservation System Guide Code: CO 67B.1-GR-01-R-Grazing
Practices	Unit	Quantity	Cost/Unit (\$)	Estimated Cost per Median Sized Ranch (\$)	
Prescribed Grazing					
Fence (382)	Ft.	12,400	0.7	8,680	
Pest Management (595)	500 Ac.	1	4,500	4,500	
Pipeline (516)	Ft.	10,000	1.45	14,500	
Upland Wildlife Habitat Management (645)	Ac.	300	na	0	
Watering Facility (614)	No.	4	800	3,200	
Range Planting (550)	Ac.	10,000	1.45	10,608	
Costs to apply prescribed grazing per median sized ranch of 2,350 acres	No.	36		41,488	

Subtotal Rangeland costs: \$1,493,568

Conservation Systems to Address Major Resource Concerns (cont'd)

Primary Resource Concern: Water Quality				
Conservation System Description:		Upgrading Sprinkler irrigation system with IWM, Crop rotation, Nutrient and Pest Mgt.		Reference Conservation System Guide Code: CO 67B.1-CR-Pivot-R-1.1
Practices	Unit	Quantity	Cost/Unit (\$)	Estimated Cost (\$)
Irrigation Water Management (449)* * includes re-bowl, renozzle, and IWM	Ac	115,000	34.20	3,933,000
Nutrient Management (590)	Ac	100,000	15.00	1,500,000
Pest Management (595)	Ac	100,000	15.00	1,500,000
Conservation System Description:		Surface irrigation converted to sprinkler system. Sprinkler irrigation system with IWM, Crop rotation, Nutrient and Pest Mgt.		Reference Conservation System Guide Code: CO 67B.1-CR-Pivot
Practices	Unit	Quantity	Cost/Unit (\$)	Estimated Cost (\$)
Irrigation System, Sprinkler (442)	Ac	2,000	600.00	1,200,000
Irrigation Water Management (449)	Ac	17,000	5.00	85,000
Nutrient Management (590)	Ac	17,000	11.50	195,500
Pest Management (595)	Ac	17,000	15.00	255,000
Subtotal Irrigated Crops:				\$8,668,500

Primary Resource Concern: Soil Erosion By Wind on Dryland Crops				
Conservation System Description:		Seasonal residue management with Conservation crop rotation, Nutrient and Pest Mgt		Reference Conservation System Guide Code: CO 67B.1-CR-Dryland-R-2
Practices	Unit	Quantity	Cost/Unit (\$)	Estimated Cost (\$)
Residue Mgmt (344)	Ac	18,150	5	90,750
Nutrient Management (590)	Ac	18,150	5	90,750
Pest Management (595)	Ac	18,150	15	272,250
Conservation Cover (327)	Ft	25,000	3.5	87,500
Subtotal Costs Dryland Crops:				\$ 541,250

General Effects, Impacts, and Estimated Costs of Application of Conservation Systems

Landuse	Resource Concern	Measurable Effects	Non-measurable Effects	Estimated Cost (\$)
Rangeland	Plants		Improved plant condition, productivity, health and vigor. Grazing animals have adequate feed, forage, and shelter. Wildlife habitat is sustained or improved.	1,493,568
Irrigated Crop	Water		Efficiency of water use. Salt load reduction.	8,668,500
Dryland Crop	Soil	1,026,675 Total Tons/ Year saved	Cropland sustainability	541,250
Estimated Total Costs to Address Major Resource Concerns:				\$10,703,318

FOOTNOTES/ BIBLIOGRAPHY

303(d) listed streams within the Watershed were created using data from Colorado Department of Public Health & Environments' Water Quality & Control Commission. Impaired streams are current as of April 30, 2006. For a list of all Colorado impaired streams, locations and priority ratings, visit <http://www.cdphe.state.co.us/regulations/wqccregs/100293wqlimitedsegtmdls.pdf>.

Stream data from National Hydrologic Dataset <http://nhd.usgs.gov>

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>.

Resource Concerns were identified using the Colorado Association of Conservation Districts' (CACD) long range (10 year) plans from the period of 1996-2000. 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:

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

Weld County S (CO618) Published 12/14/2005

Larimer County Area (CO644) Published 03/07/2006

RooseveltArapahoeRoutt (CO645) Published 02/04/2008

RMNP (CO651) Published 01/08/2007

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.

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). The data was downloaded from the NRCS Geospatial Data Gateway at <http://datagateway.nrcs.usda.gov>.