



United States Department  
of Agriculture

# Lower Yampa Watershed



Hydrologic Unit Code 14050002

Natural Resources  
Conservation Service

Lakewood, Colorado

## Rapid Assessment

RWA 14050002

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

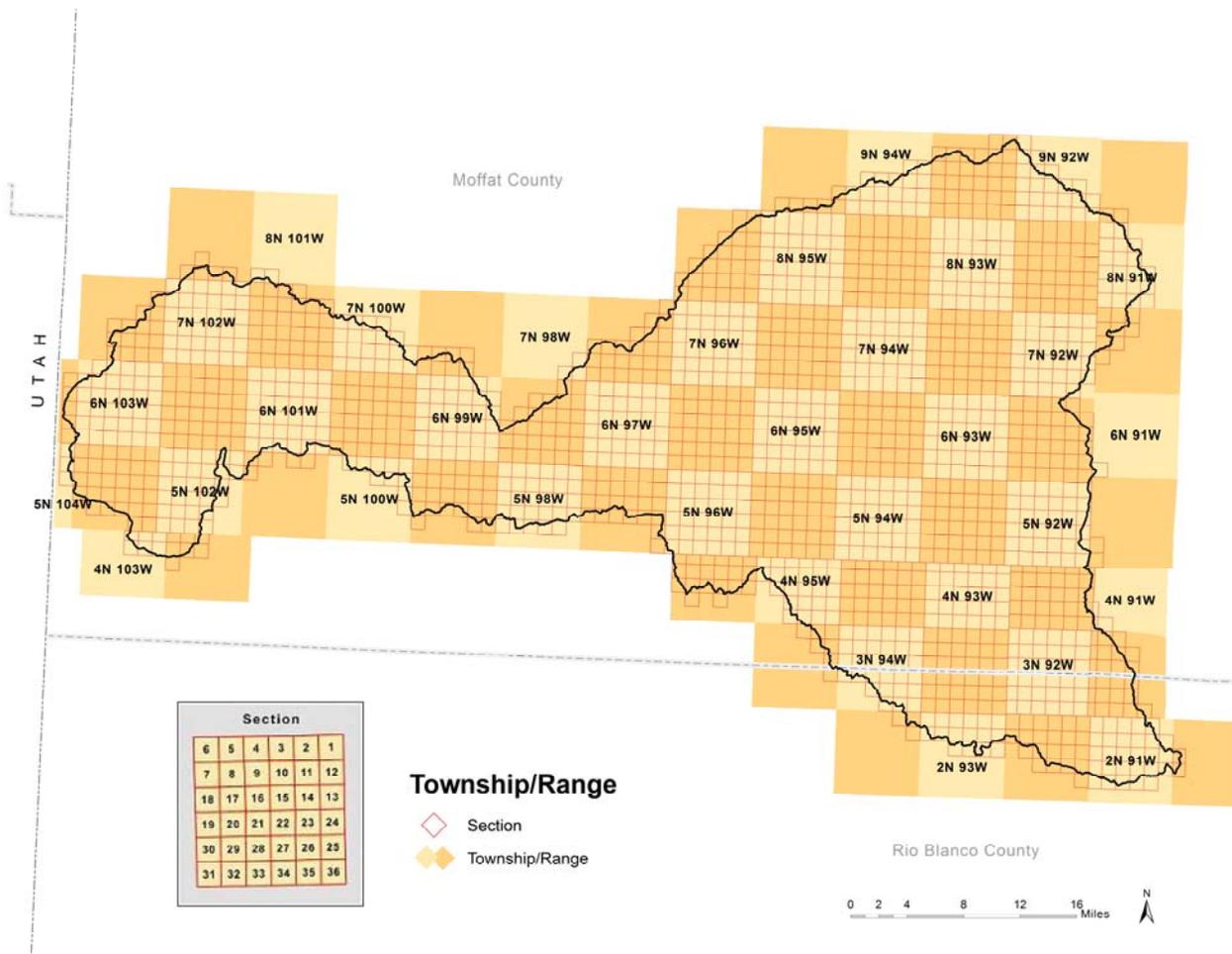
While rapid assessments provide less detail and analysis than full-blown studies and plans, they do provide the benefits of NRCS locally-led planning in less time and at a reduced cost. The benefits include:

- 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)

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

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Section					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

**Township/Range**

- ◇ Section
- ◆ Township/Range

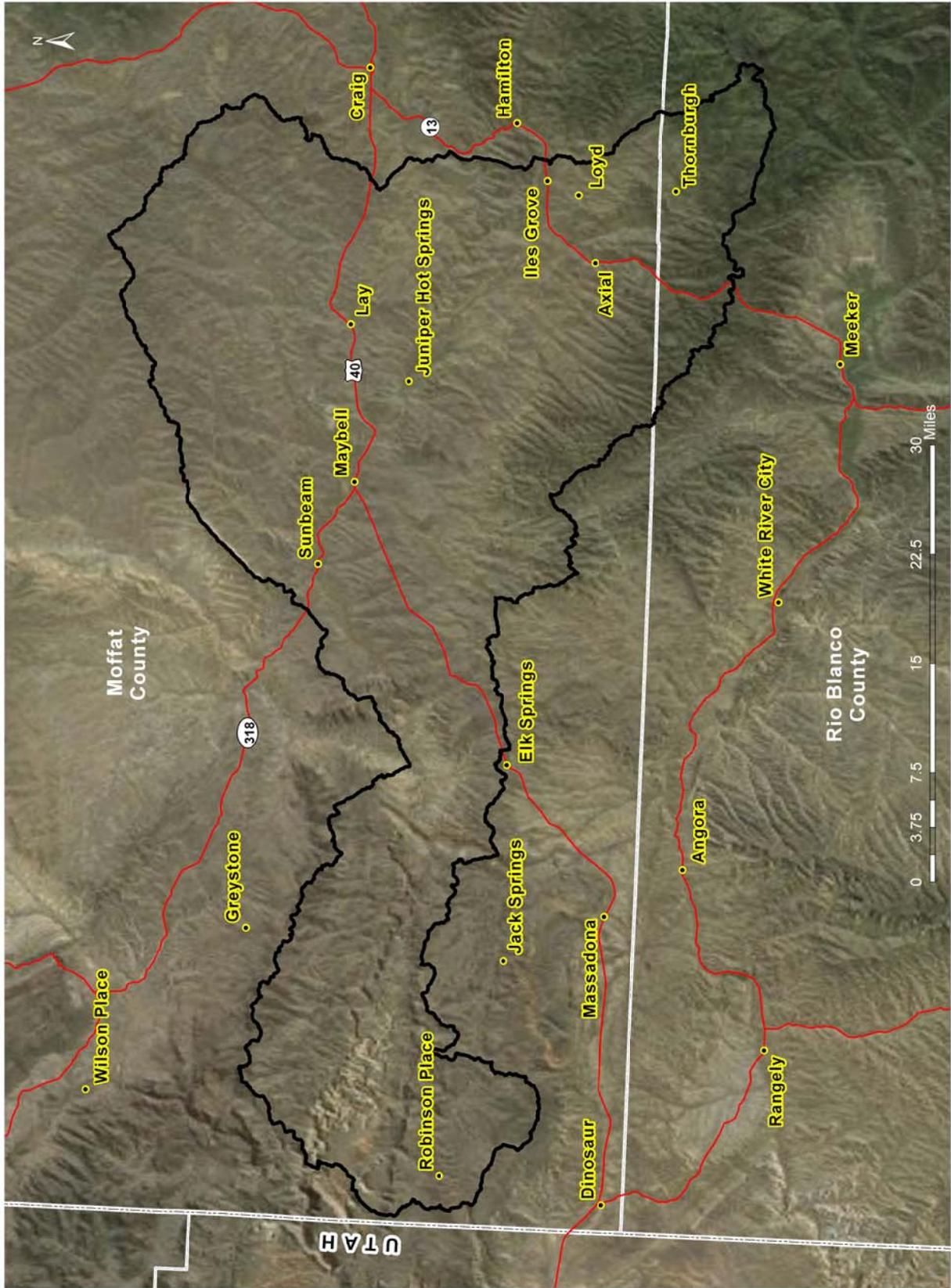
Rio Blanco County

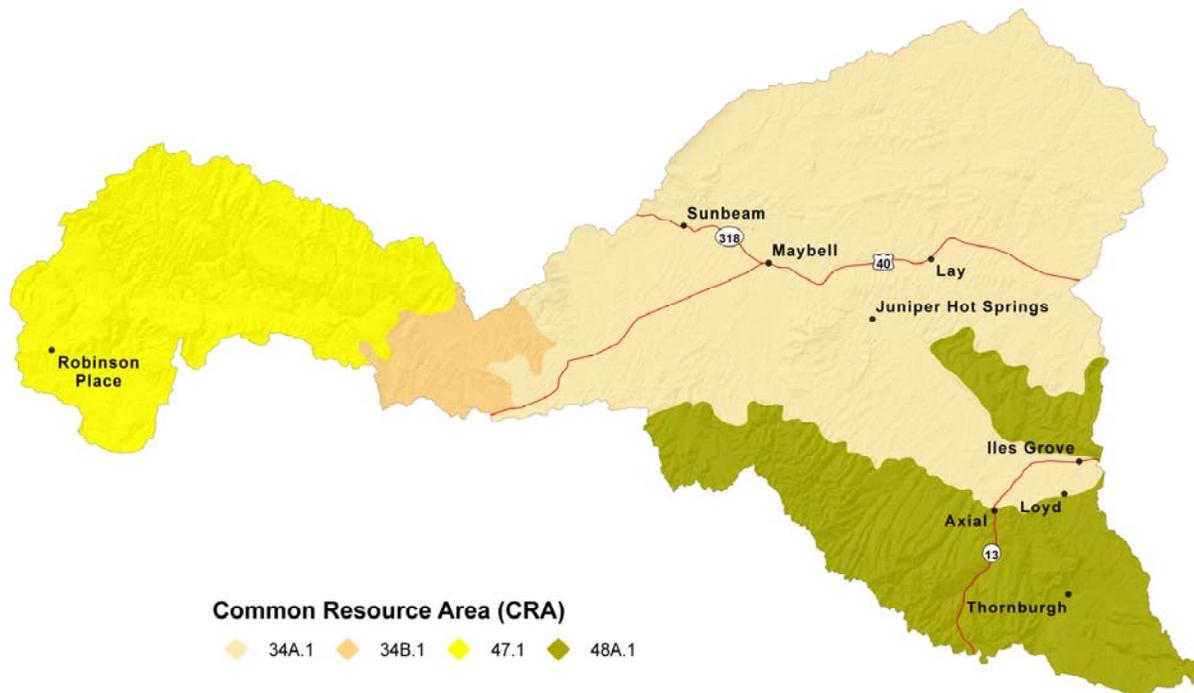


County	County Acres	County Acres in LOWER YAMPA Watershed	% of County in the Watershed	% of Watershed in the County
Moffat	3,043,524	936,102	30.8%	93.1%
Rio Blanco	2,064,823	69,339	3.4%	6.9%

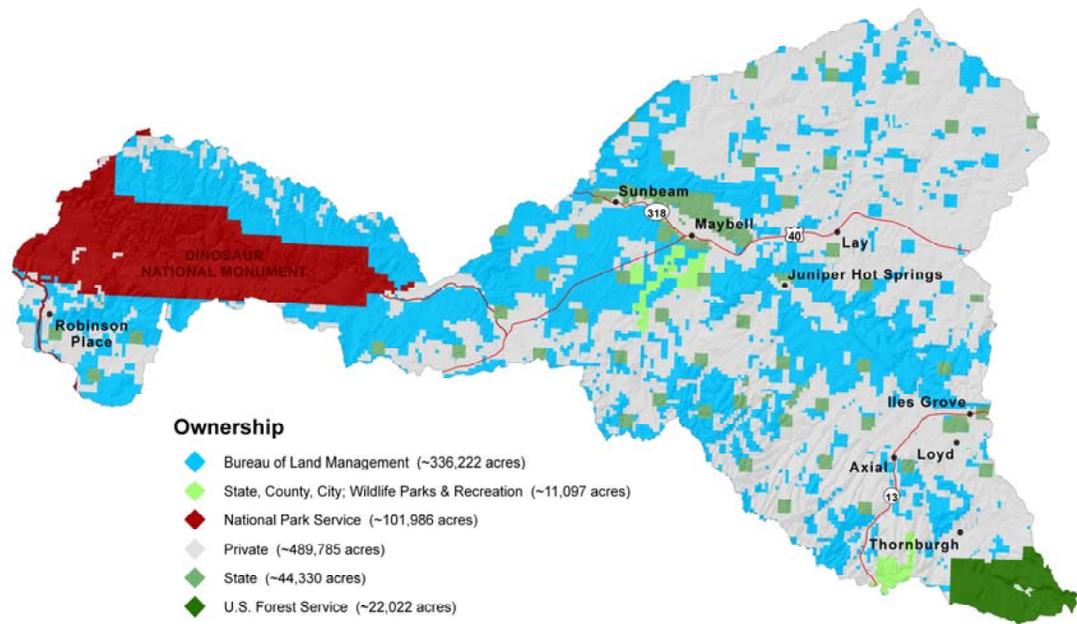
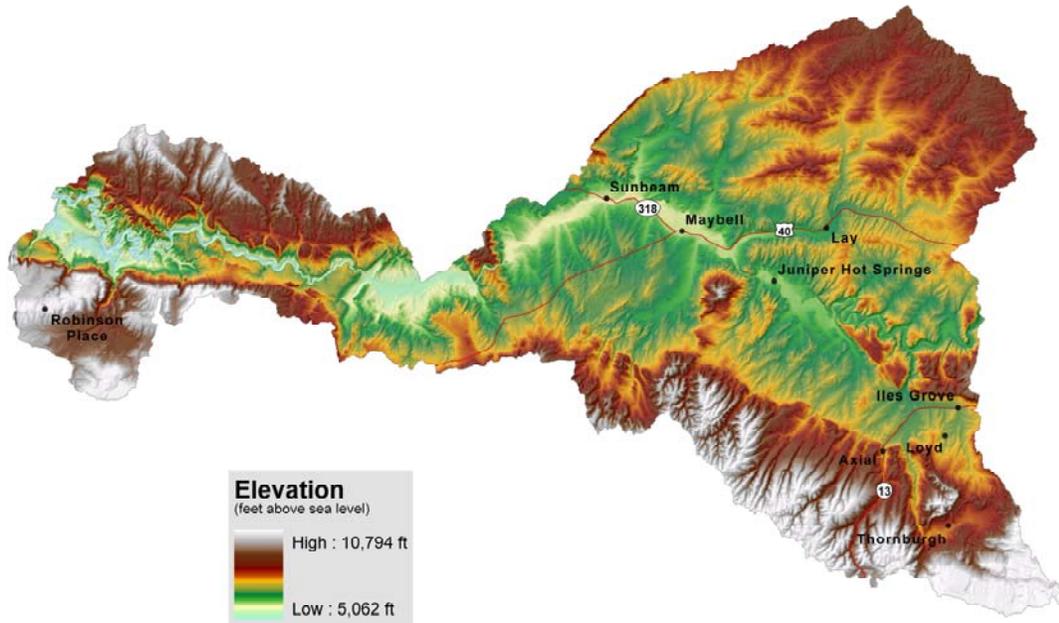
1,005,441

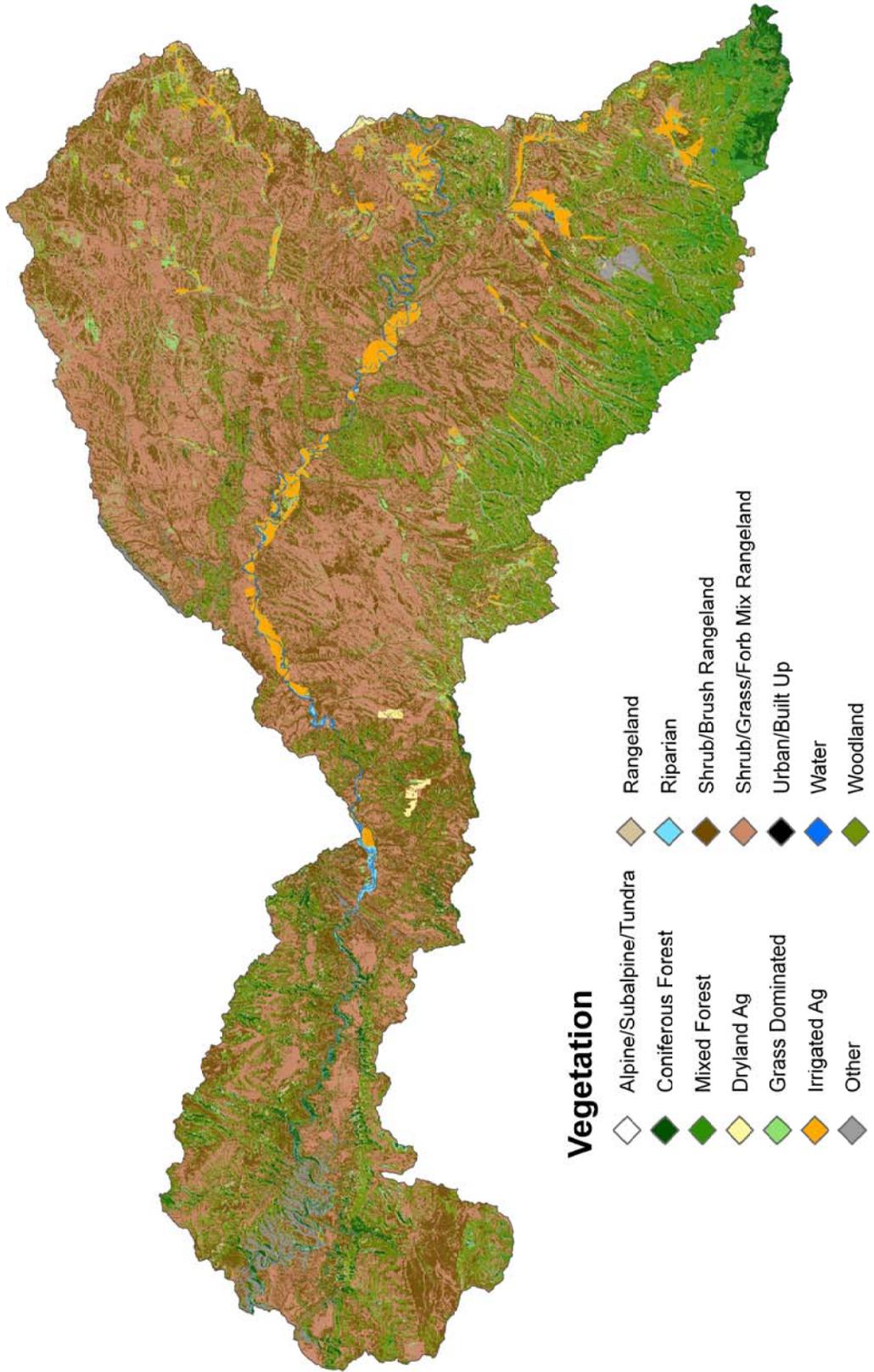
Lower Yampa Watershed - 14050002





MLRA	CRA	CRA NAME	CRA DESCRIPTION
34A	34A.1	Cool Central Desertic Basins and Plateaus-- Green River Basin	This unit is in the cool semiarid basins, plateaus, and low mountains that are west of the Continental Divide in MLRA 34A. Soils have an aridic moisture regime and frigid temperature regime. Vegetation is sagebrush or shadscale and bunchgrasses. Major use is range. Precipitation ranges from 7 to 14 inches. Elevations range from about 4,000 to 7,000 feet.
34B	34B.1	Warm Central Desertic Basins and Plateaus - Semiarid Plateaus and Low Mountains	This area is on broad plateaus and in narrow saline basins in Colorado and Utah. Soils have an aridic moisture regime and a mesic temperature regime. Natural vegetation is typically big sagebrush and bunchgrasses. Major use is range. Precipitation ranges from 5 to 16 inches. Elevations range from about 4,500 to 6,000 feet.
47	47.1	Wasatch and Uinta Mountains - Low Mountains and Foothills; Utah, Wyoming, and Colorado	This unit is in the gently sloping to steep semiarid low mountains and hills in the Wasatch and Uinta Mountains. Soils have xeric or ustic moisture regimes with frigid or cryic temperature regimes. Precipitation ranges from 10 to about 18 inches. Elevations are about 5,000 to 8,000 feet. Range and cropland are the predominant land uses.
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.

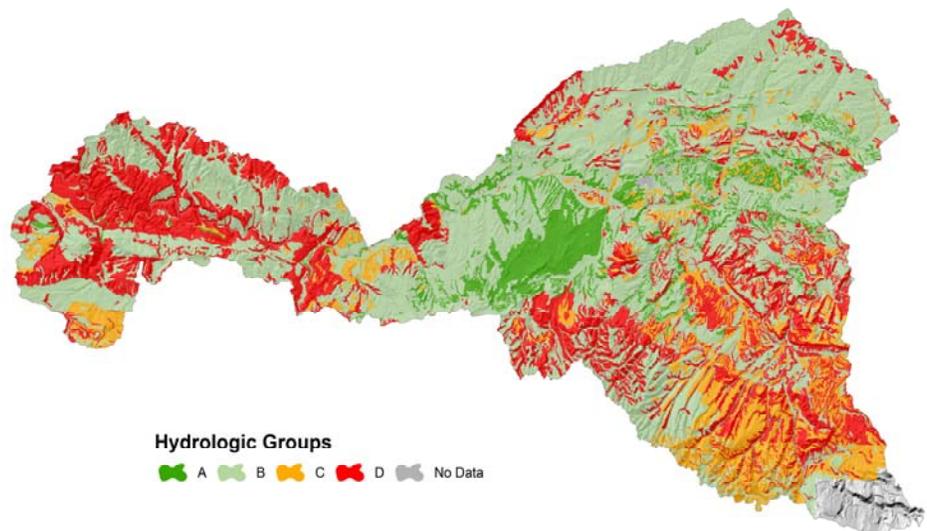
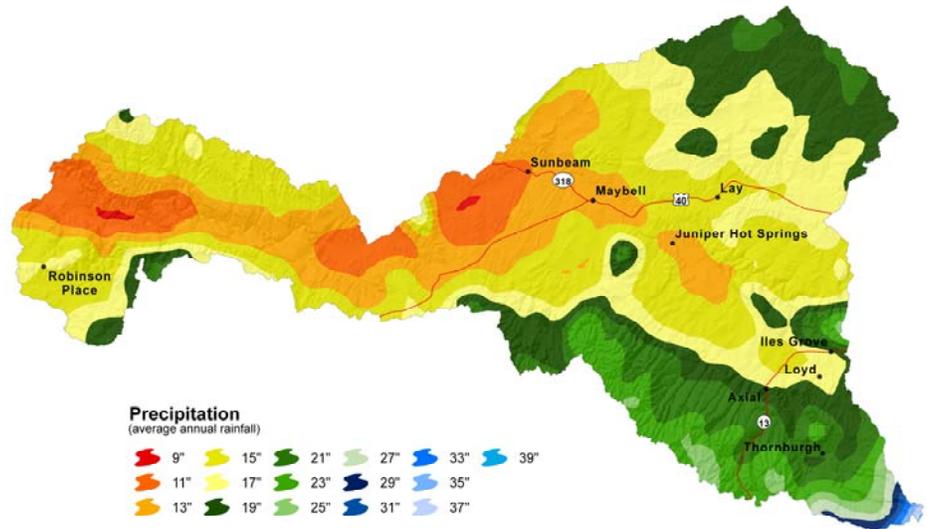


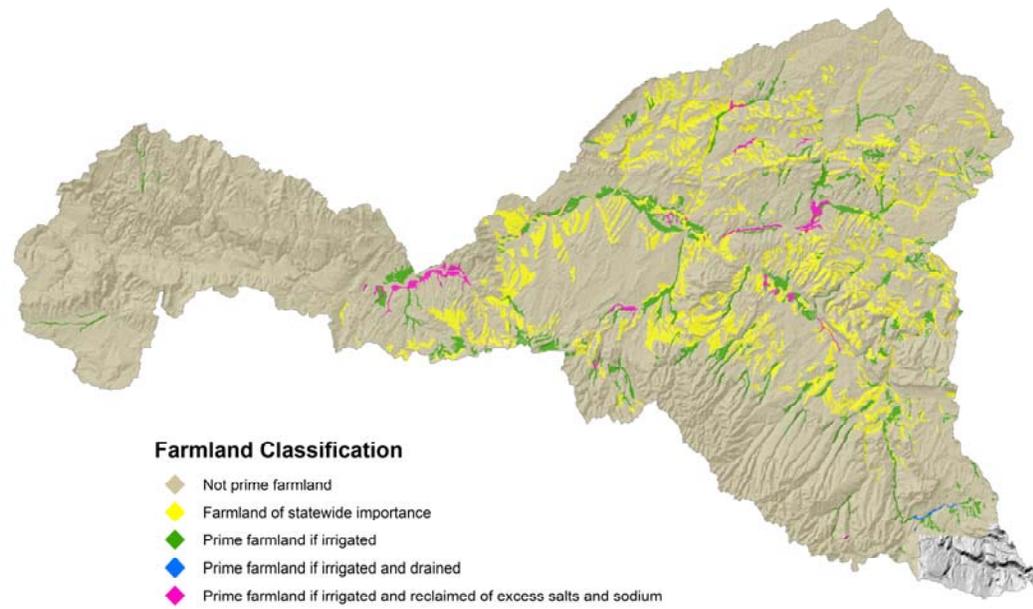
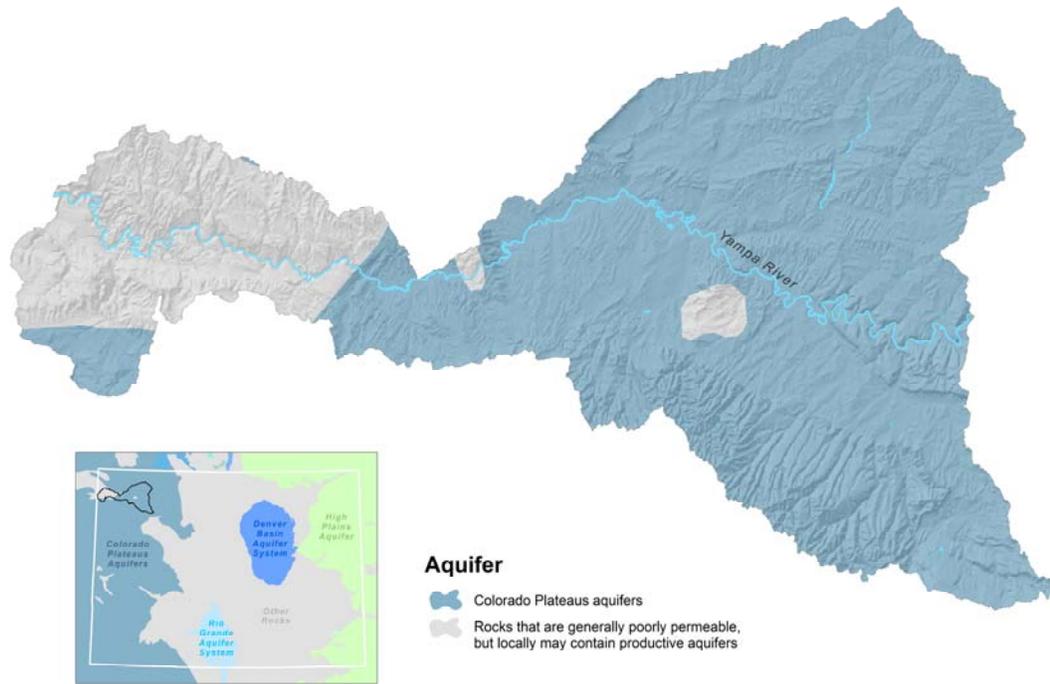


<u>LOWER YAMPA WATERSHED</u> <u>Land Use</u>	Total Acreage	Vegetation	Acreage
Cropland	15,960	Dryland Ag	1,710.6
		Irrigated Ag*	14,249.0
Rangeland/Grassland	918,557	Bitterbrush Community	13,369.3
		Bitterbrush/Grass Mix	4,064.7
		Foothill and Mountain Grasses	35.4
		Gambel Oak	273.1
		Grass Dominated	32,560.2
		Grass/Forb Mix	17,023.9
		Greasewood	20,169.4
		Juniper	2,640.2
		Juniper/Mtn Shrub Mix	88.0
		Juniper/Sagebrush Mix	42,834.3
		Mesic Mountain Shrub Mix	82,966.4
		PJ-Mtn Shrub Mix	32,718.8
		PJ-Sagebrush Mix	21,699.6
		Pinon-Juniper	18,117.8
		Sagebrush Community	192,771.1
		Sagebrush/Gambel Oak Mix	65.2
		Sagebrush/Grass Mix	369,009.6
		Sagebrush/Greasewood	10,762.8
		Sagebrush/Mesic Mtn Shrub Mix	5,512.0
		Sagebrush/Rabbitbrush Mix	16.5
		Salt Desert Shrub Community	4,215.3
		Saltbush Community	24,401.5
		Serviceberry/Shrub Mix	189.2
		Snowberry/Shrub Mix	52.4
		Sparse Juniper/Shrub/Rock Mix	17,416.3
		Sparse PJ/Shrub/Rock Mix	5,531.3
Xeric Mountain Shrub Mix	14.2		
Forest	38,511	Aspen	8,261.7
		Aspen/Mesic Mountain Shrub Mix	14,184.3
		Douglas Fir	3,255.0
		Englemann Spruce/Fir Mix	574.5
		Lodgepole Pine	486.2
		Lodgepole Pine/Aspen Mix	918.2
		Lodgepole/Spruce/Fir Mix	3,229.0
		Ponderosa Pine	6,177.8
Riparian	11,661	Spruce/Fir/Aspen Mix	300.4
		Spruce/Fir/Lodgepole/Aspen Mix	1,114.8
		Cottonwood	367.1
		Forested Riparian	1,923.6
		Herbaceous Riparian	4,847.0
Water	4,316	Shrub Riparian	3,163.6
		Willow	1,356.5
		Water	4,315.5
		Disturbed Soil	1,771.6
Other	15,011	Soil	13,130.6
		SubAlpine Shrub Community	44.3
		Subalpine Grass/Forb Mix	47.6
		<b>~Total Watershed Acres</b>	

### 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.





**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.

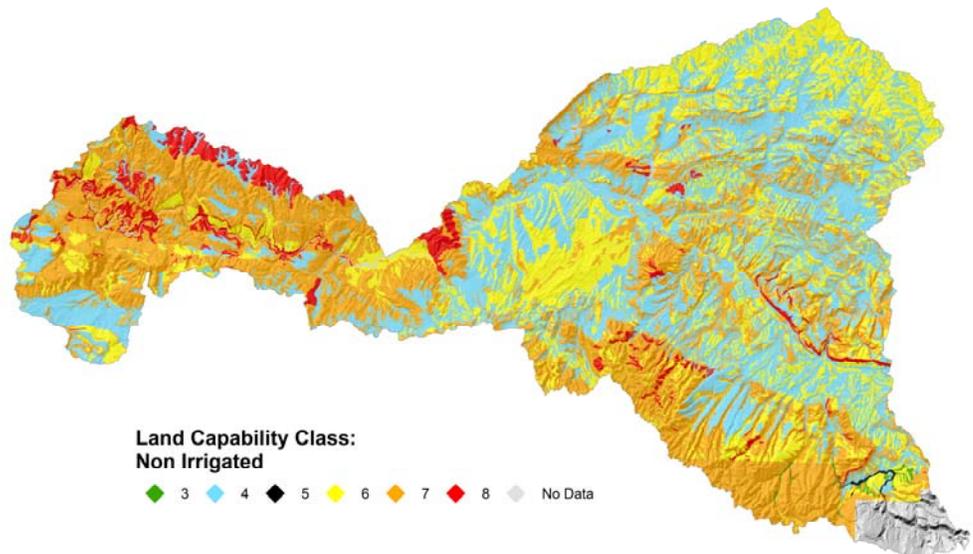
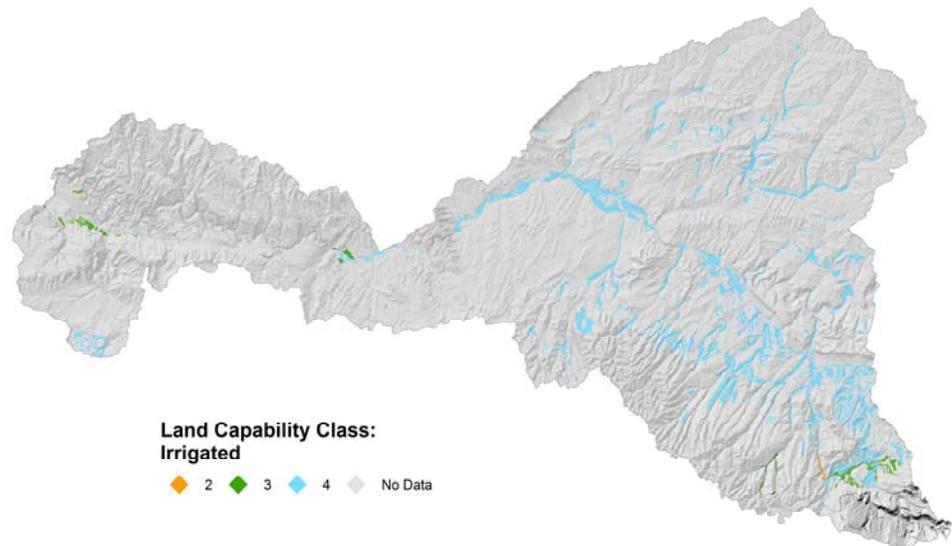
**Class 4** - soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

**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.

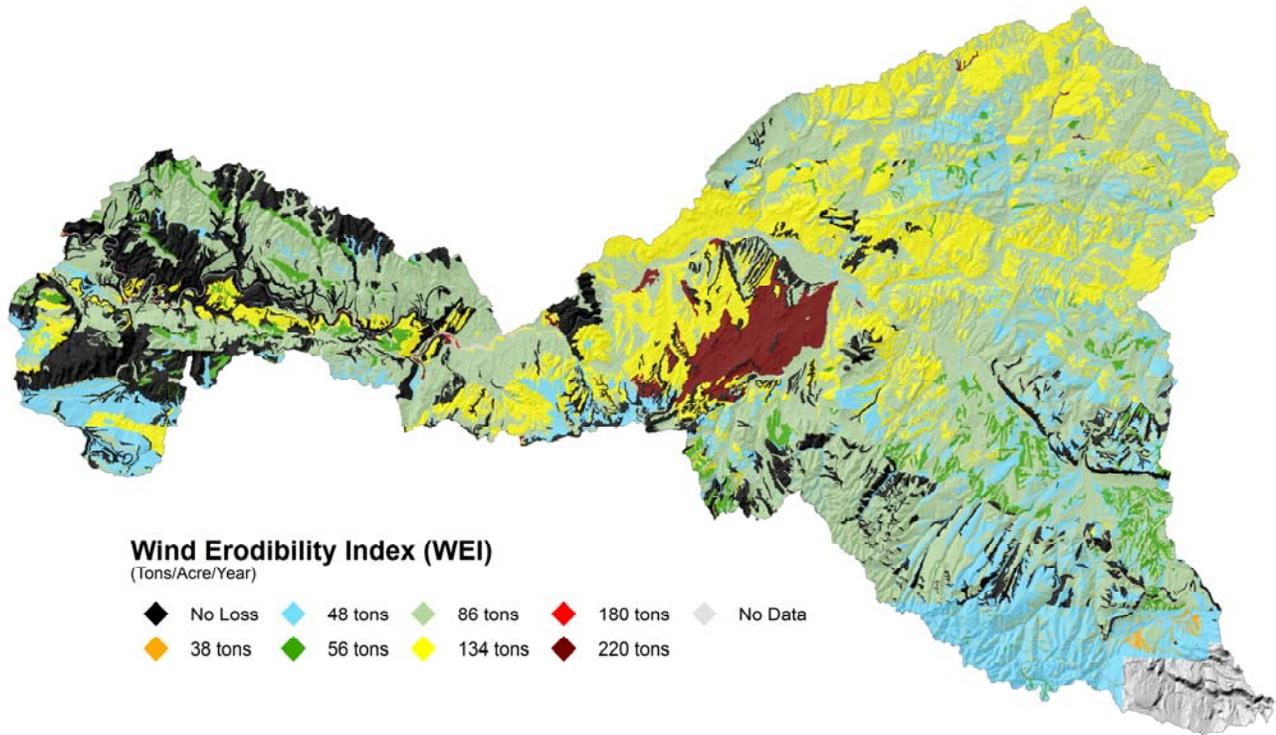
**Class 7** - soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

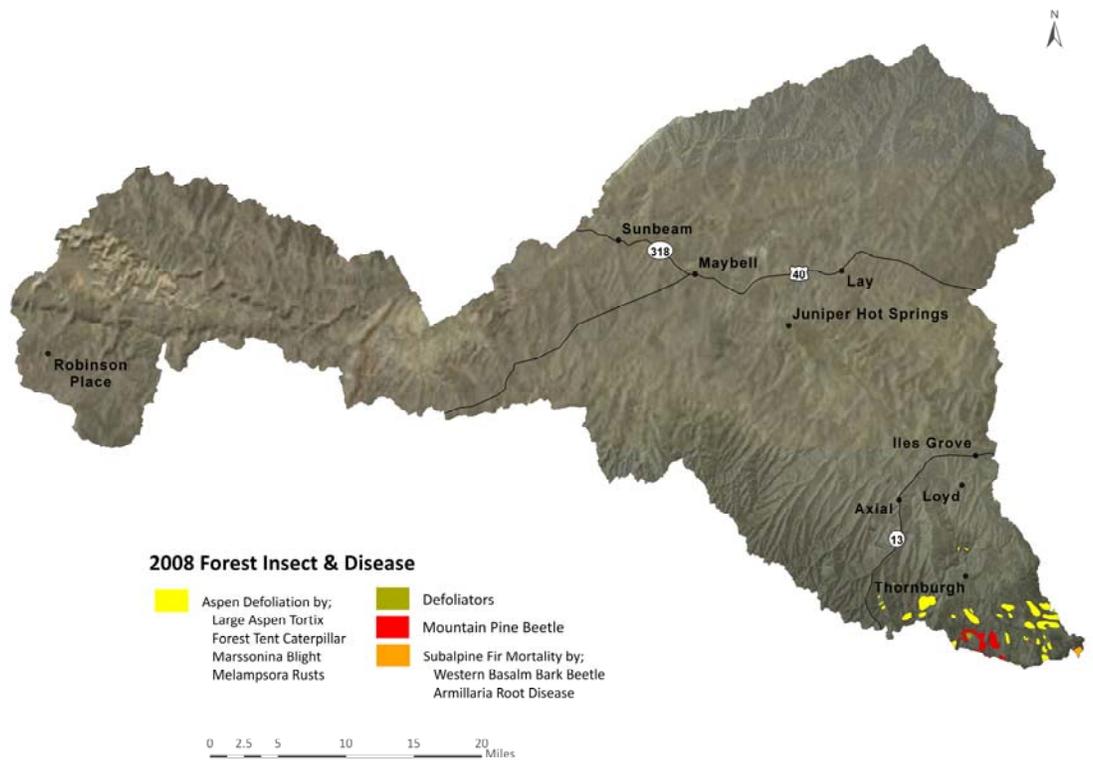
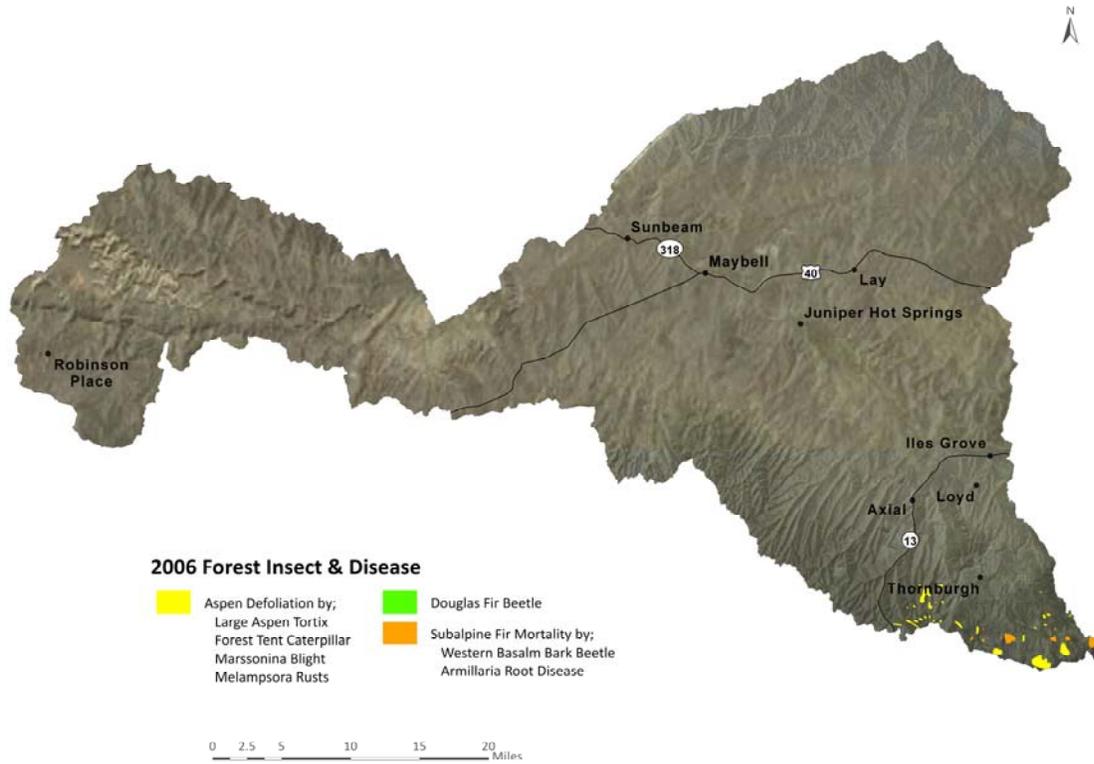
**Class 8** - soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or aesthetic purposes.



**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 Lower Yampa Watershed

Common Name	Scientific Name	Class	State Status/Federal Status	Comments
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	Birds	Concern/None	Nests in the watershed
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Birds	Threatened/None	Occurs year-round in the watershed
Bonytail	<i>Gila elegans</i>	Fish	Endangered/Endangered	Critical habitat in the watershed
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	Fish	Threatened/Endangered	Critical habitat in the watershed
Canada Lynx	<i>Lynx canadensis</i>	Mammals	Endangered/Threatened	May occur in the watershed
Colorado River Cutthroat Trout	<i>Oncorhynchus clarki pleuriticus</i>	Fish	Concern/None	May occur in the watershed
Colorado Roundtail Chub	<i>Gila robusta</i>	Fish	Concern/None	May occur in the watershed
Columbian Sharp-tailed Grouse	<i>Tympanuchus phasianellus columbianus</i>	Birds	Concern/None	Occurs in the watershed
Greater Sage Grouse	<i>Centrocercus urophasianus</i>	Birds	Concern/None	Occurs in the watershed
Greater Sandhill Crane	<i>Grus canadensis tabida</i>	Birds	Concern/None	May occur in the watershed
Humpback Chub	<i>Gila cypha</i>	Fish	Threatened/Endangered	Critical habitat in the watershed
Mountain Sucker	<i>Catostomus platyrhynchus</i>	Fish	Concern/None	May occur in the watershed
Northern Leopard Frog	<i>Rana pipiens</i>	Amphibians	Concern/None	Occurs in the watershed
Northern River Otter	<i>Lontra canadensis</i>	Mammals	Threatened/None	Occurs in the watershed
Razorback Sucker	<i>Xyrauchen texanus</i>	Fish	Endangered/Endangered	Critical habitat in the watershed
Townsend's big-eared bat (pale ssp)	<i>Corynorhinus townsendii pallescens</i>	Mammals	Concern/None	Occurs in the watershed
Ute Ladies'-tresses Orchid	<i>Spiranthes diluvialis</i>	Plants	None/Threatened	Occurs in the watershed
Western Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Birds	Concern/Candidate	May occur in the watershed

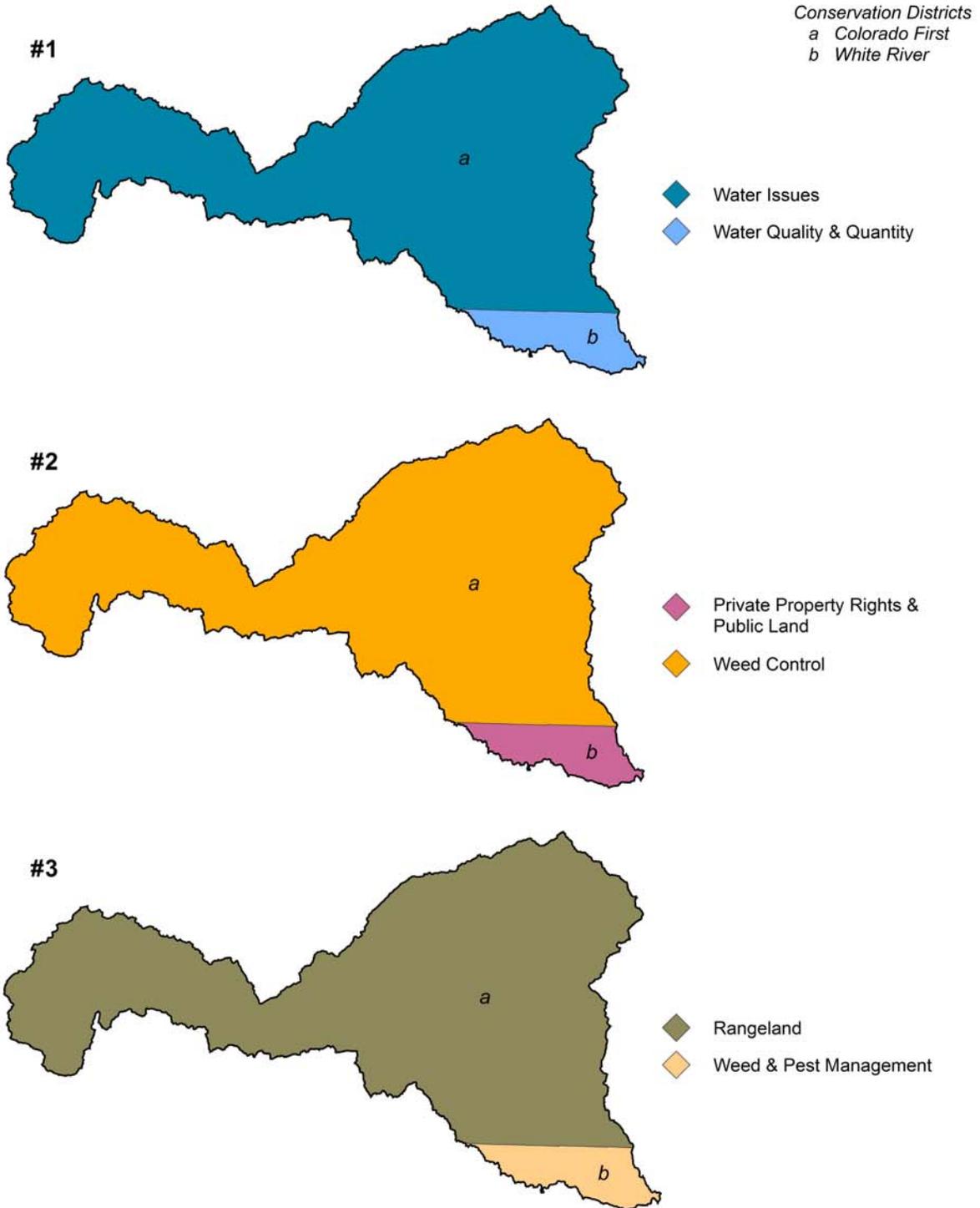
The terrestrial habitats in this watershed include small amounts of both irrigated and dry cropland; extensive acreage of big sagebrush; some oak, bitterbrush, and pinyon-juniper shrub habitats; a small amount of ponderosa pine forest habitats; and some grass meadows. Riparian areas, stock ponds, and a few lakes provide aquatic habitats in the watershed.

Bighorn sheep, marmot, and wild turkey are found in Dinosaur National Monument, a large part of which lies in this watershed. Economically important species in the watershed include: black bear, elk, mule deer, mountain lion, pronghorn, and sport fish, throughout large parts of the watershed; and snow geese in the Yampa and associated riparian areas.

Social Data	Rio Blanco	Moffat
<b>Demographics (US Census, American Factfinder)</b>		
Total population	5,986	13,184
Male	3,021	6,836
Female	2,965	6,348
Median age (years)	37.5	35.4
White	5,687	12,341
Black or African American	11	28
American Indian and Alaska Native	46	116
Asian	17	44
Native Hawaiian and Other Pacific Islander	0	3
Some other race	121	418
Hispanic or Latino (of any race)	296	1247
<b>Economic Characteristics (US Census, American Factfinder)</b>		
In labor force (population 16 years and over)	3,143	6,875
Median household income (dollars)	37,711	41,528
Median family income (dollars)	44,425	45,511
Per capita income (dollars)	17,344	18,540
Families below poverty level	112	249
Individuals below poverty level	556	1086
<b>County Agricultural Characteristics (Colorado Agricultural Census, county data tables)</b>		
Farms (number)	245	443
Land in farms/ranches (acres)	376,509	1,017,612
Average size farm/ranch (acres)	1,537	2,297
Median size farm (acres)	305	400
Average age of farmer or rancher	56.5	52.7
Net cash return from ag sales (\$1,000)	2,081	1,407
Cattle and calves (number)	21,000	32,000

# Identified Long Range Resource Concerns

## Top Three Concerns within Conservation Districts



## Selected Conservation Practices Applied, FY 2005 through FY 2009

Practice Code	Practice Name	Practice Unit	Applied Amount	Applied Count
645	Upland Wildlife Habitat Management	ac	45,310	101
449	Irrigation Water Management	ac	80	4
528	Prescribed Grazing	ac	59,655	85

### 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 34.1-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 understory of big sagebrush and perennial bunchgrasses. In some areas pinyon and juniper can increase and become a dominant species.	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
338 Prescribed Burning		
378 Pond		
382 Fence		
528 Prescribed Grazing		
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 34.1-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  Soil Erosion - Wind  Water Quantity - Inefficient Water Use on Irrigated Land
431 Above Ground, Multi-Outlet Pipeline		
443 Irrigation System, Surface and Subsurface		
449 Irrigation Water Management		
511 Forage Harvest Management		
587 Structure for Water Control		

**Pasture**—This system is a converted wild flood to gated pipe irrigation system. Prescribed Grazing, Forage Harvest Management, Upland Wildlife Habitat Mgt., and IWM are applied to improve plant health and production.

CO 34.1-PA-Gated—R-01

<i>Practices</i>	<i>Description</i>	<i>Resource Concerns Addressed</i>
382 Fence	Pasture consists of cool season grasses or a mix of cool season grasses and legumes. Pasture is often grazed during or after the growing season but sometimes one cutting of hay harvested and the regrowth is grazed in the fall or winter. The Irrigation system is improved by installing a structure and gated pipe. The system efficiency is 35% with a net irrigation requirement of 16 inches.	Soil Erosion - Sheet and Rill
430DD Irr. Water Conveyance, Pipeline, H		Soil Erosion - Wind
431 Above Ground, Multi-Outlet Pipeline		Water Quantity - Inefficient Water Use on Irrigated Land
443 Irrigation System, Surface and Subsurface		
449 Irrigation Water Management		
511 Forage Harvest Management		
528 Prescribed Grazing		
587 Structure for Water Control		
614 Watering Facility		
645 Upland Wildlife Habitat Management		

### Estimated Costs of Application of Conservation Systems

Landuse	Estimated Acres Need to be Treated	Estimated Average Cost per Acre (\$)	Costs (\$)
Range	130,000	30	3,900,000
Hayland	7,000	880	6,160,000
			<b>Total Costs: \$10,060,000</b>

## 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:

Rio Blanco County Area (CO685) Published 2/4/2008

Moffat County Area CO686) Published 2/4/2008

Dinosaur National Monument (CO692) Published 1/13/2007

**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](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](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/>