

United States Department  
of Agriculture



Natural Resources  
Conservation Service

Lakewood, Colorado

RWA 11080001

# Canadian Headwaters Watershed

Hydrologic Unit Code 11080001

June 2010

## 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 land-owners and local leaders set priorities and determine the best actions to achieve their goals.

### Benefits of these Activities

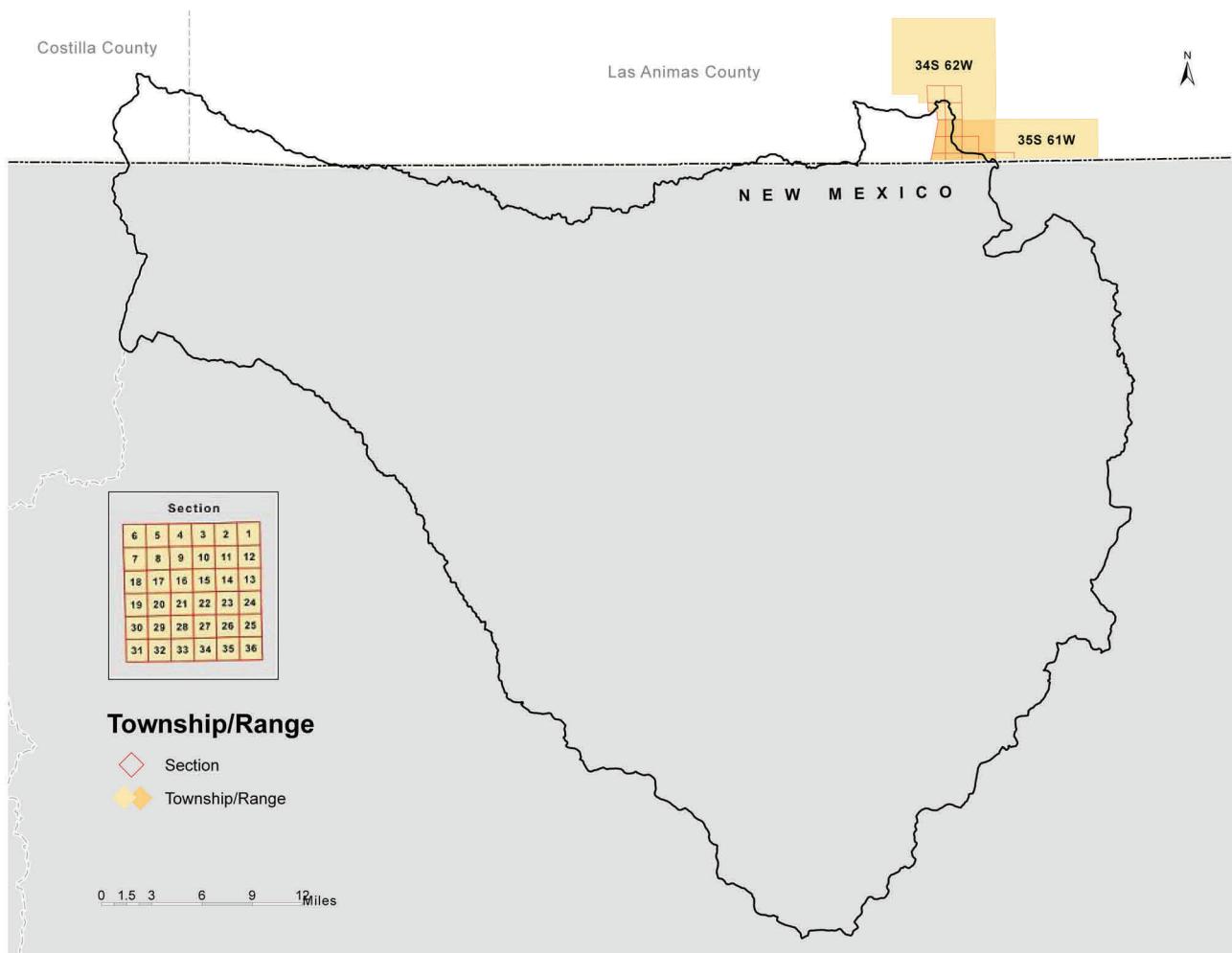
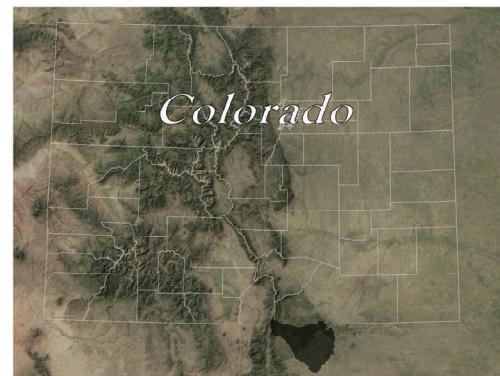
While rapid assessments provide less detail and analysis than full-blown studies and plans, they do provide the benefits of NRCS locally-led planning in less time and at a reduced cost. The benefits include:

- 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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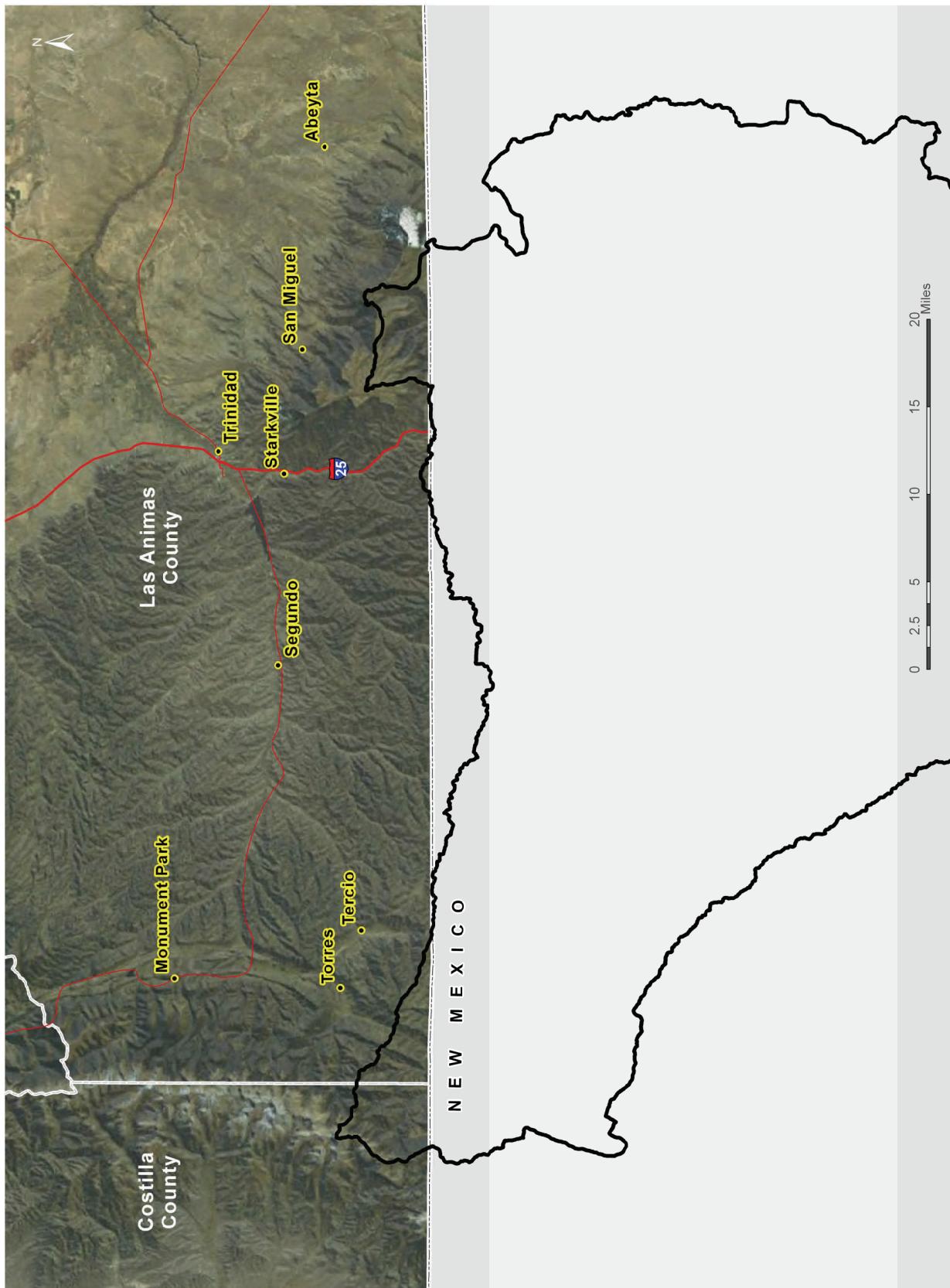


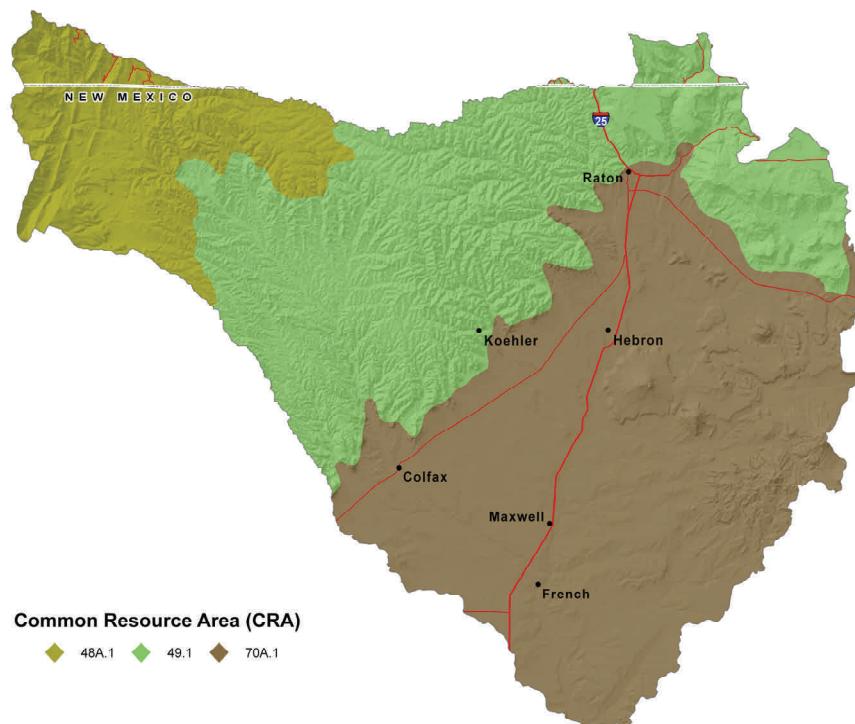
COLORADO County	County Acres	County Acres in CANADIAN HEADWATERS Watershed	% of County in the Watershed	% of Watershed in the County
Costilla	786,788	11,625	1.48%	1.05%
Las Animas	3,054,517	22,565	0.74%	2.05%

**NEW MEXICO**

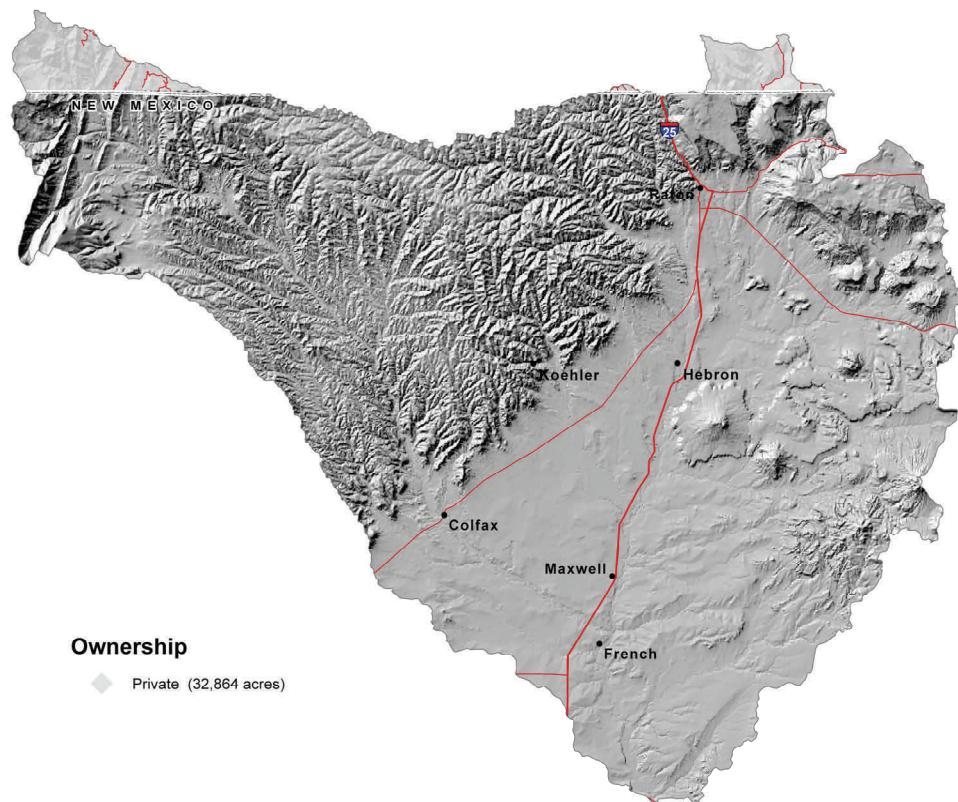
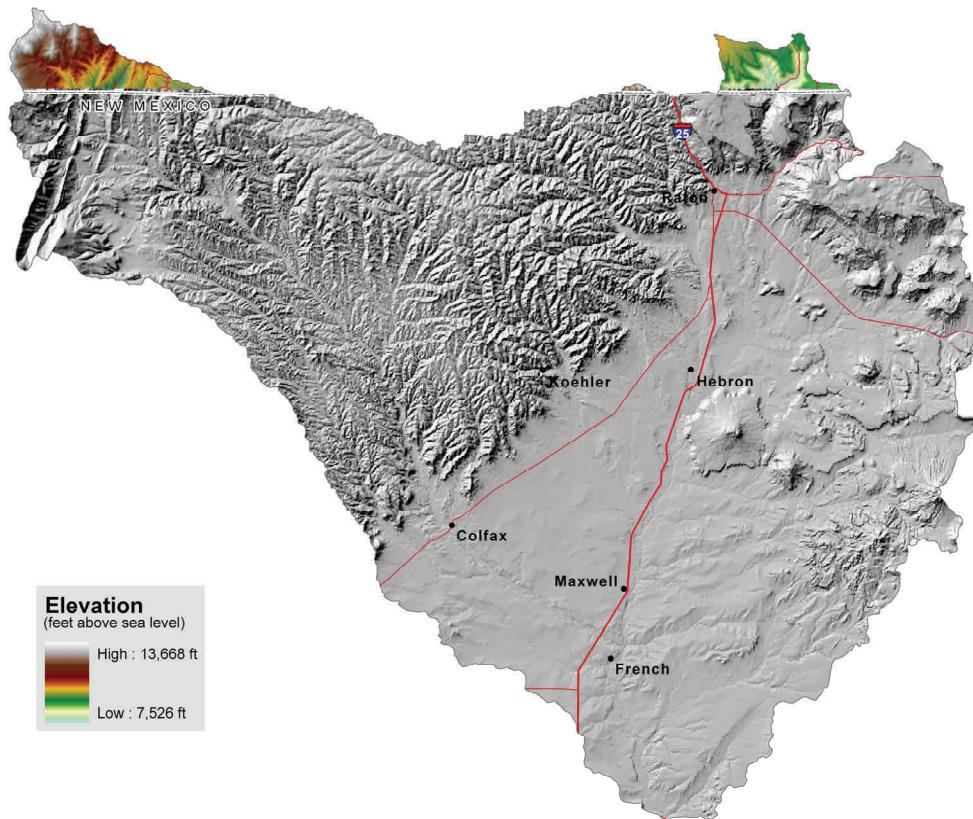
Colfax	2,409,715	1,069,038	44.36%	96.90%
		1,103,228		

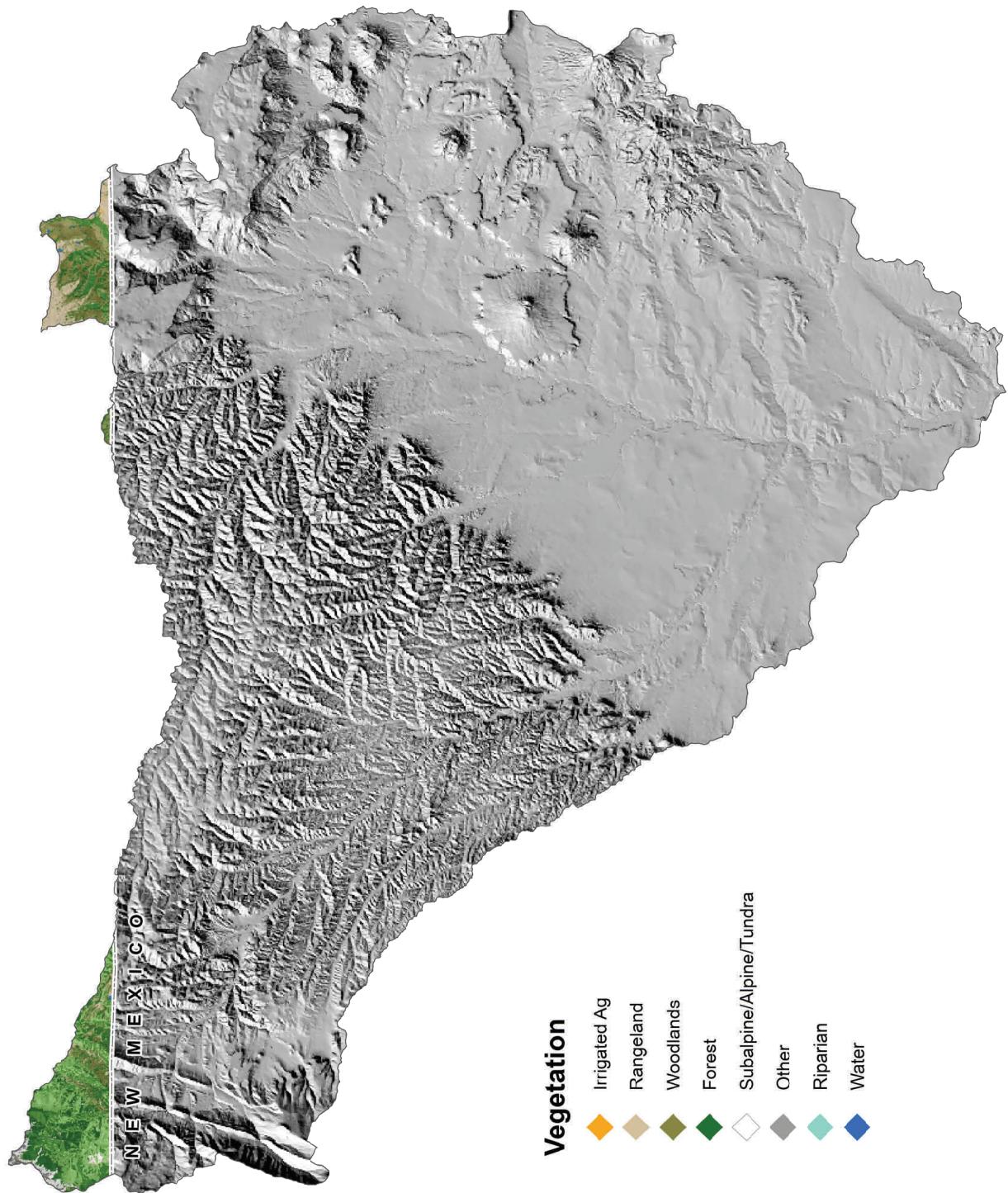
Canadian Headwaters Watershed - 11080001





MLRA	CRA	CRA NAME	CRA DESCRIPTION
48A	<b>48A.1</b>	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	<b>49.1</b>	Southern Rocky Mountain Foothills	<p>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.</p> <p>Fifty percent of this area is privately owned farms and ranches. The remainder is mostly federal. About five percent of the area is irrigated cropland. Major crops are small grains and hay. The native rangeland is grazed in the spring and summer. Firewood and fence posts are products of the woodland.</p> <p>The major soil resource concerns are water erosion, steep slopes, shallow and rocky soils, and high shrink-swell soils.</p> <p>Conservation practices on cropland generally include residue, nutrient, pesticide, and irrigation water management. Forage harvest management is important on rangeland and pastureland in this area.</p>

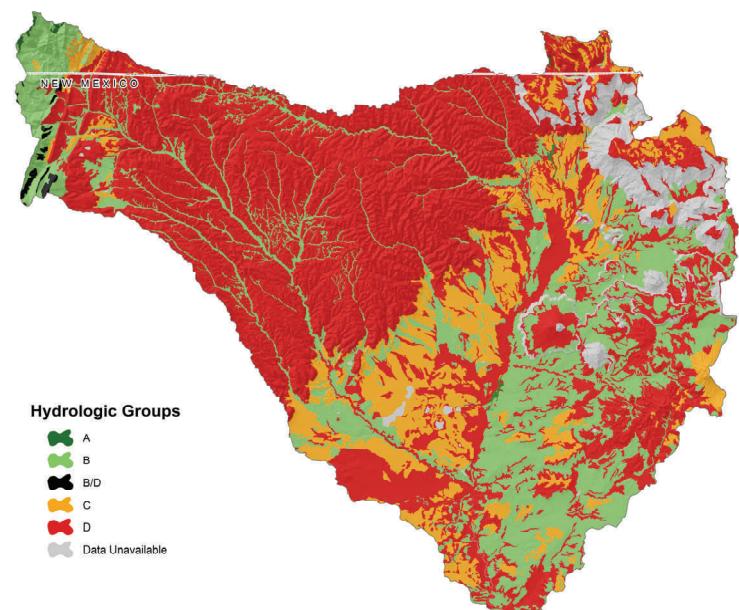
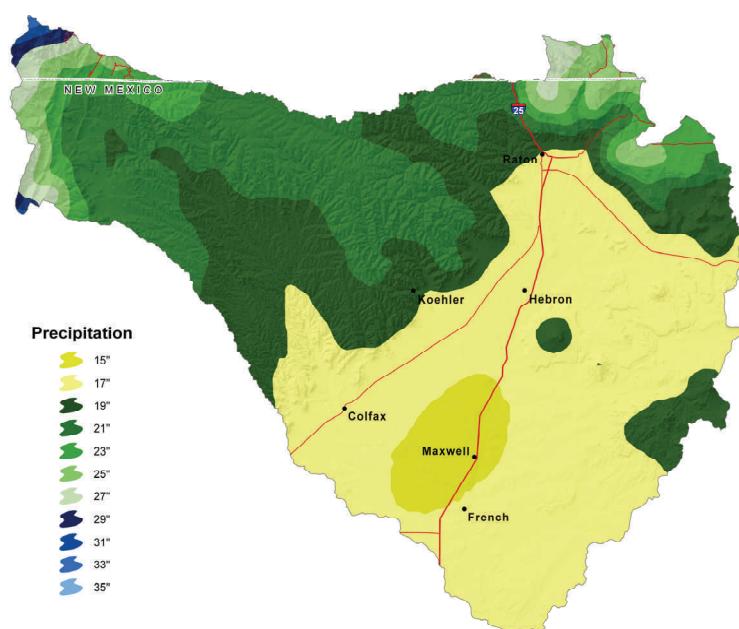


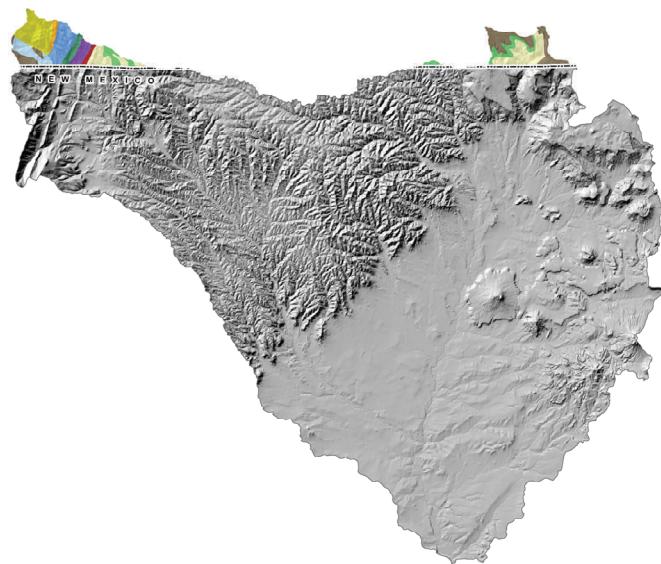
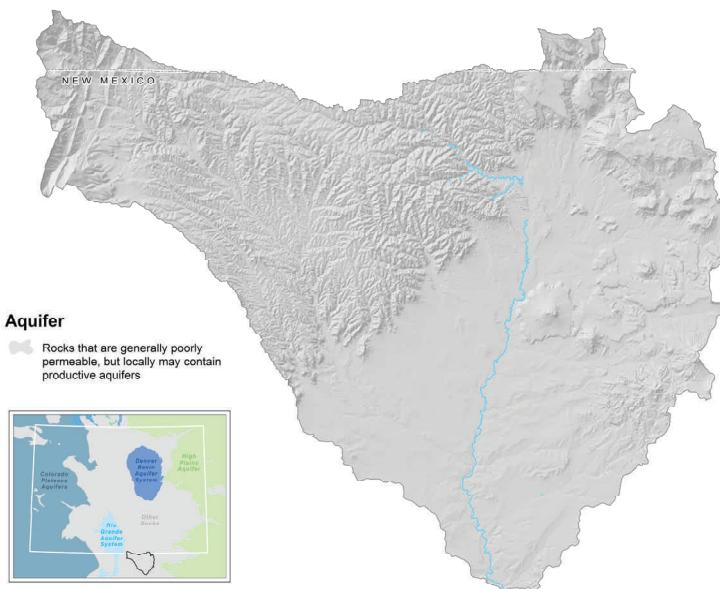


<u>CANADIAN HEADWATERS WATER-SHED Land Use</u>	Total Acreage	Vegetation	Acreage
Cropland	76	Irrigated Ag	76.3
Rangeland/Grassland	11,285	Gambel Oak	7,679.7
		Greasewood	2.6
		Grass Dominated	1,821.6
		Grass/Forb Mix	1,594.3
		PJ-Oak Mix	2.8
		Sagebrush Community	0.3
		Shrub/Grass/Forb Mix	0.3
		Sparse Grass (Blowouts)	5.9
		Sparse PJ/Shrub/Rock Mix	0.6
		Subalpine Grass/Forb Mix	175.4
		SubAlpine Shrub Community	0.9
Forest	18,894	Douglas Fir	2,046.3
		Douglas Fir/Aspen Mix	674.1
		Englemann Spruce/Fir Mix	6,845.1
		P. Pine/Gambel Oak Mix	454.2
		Ponderosa Pine	1,933.3
		Ponderosa Pine/Douglas Fir Mix	1,737.0
		Spruce/Fir/Aspen Mix	5,096.2
		Upland Willow/Shrub Mix	108.1
Riparian	0	Cottonwood	0.3
Water	81	Water	81.1
Other	1,248	Alpine Grass Dominated	550.1
		Alpine Grass/Forb Mix	303.0
		Rock	394.4
<b>~Total Watershed Acres</b>			<b>31,584</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. Rainfall occurs as frontal storms in the spring and early summer and high intensity, convective thunderstorms in late summer.





## Geology

- ◆ BASALT FLOWS AND ASSOCIATED TUFF, BRECCIA, AND CONGLOMERATE OF LATE-VOLCANIC BIMODAL SUITE
- ◆ BIOTITIC GNEISS, SCHIST, AND MIGMATITE
- ◆ DAKOTA, PURGATOIRE, MORRISON, RALSTON CREEK, AND ENTRADA FORMATIONS
- ◆ GRANITIC ROCKS OF 1,400-M.Y. AGE GROUP (AGE 1,350-1,480 M.Y.)
- ◆ MIDDLE TERTIARY INTRUSIVE ROCKS (AGE 20-40 M.Y.)
- ◆ MINTURN FORMATION IN WEST-CENTRAL AND SOUTH-CENTRAL AND OTHER UNITS OF MIDDLE PENNSYLVANIAN AGE
- ◆ PIERRE SHALE (Kp), NIOBRARA (Kn), AND CARLILE, GREENHORN, AND GRANEROS (Kcg) FORMATIONS, UNDIVIDED
- ◆ POISON CANYON FORMATION
- ◆ RATON FORMATION
- ◆ SANGRE DE CRISTO FORMATION
- ◆ SOUTH PARK FORMATION
- ◆ VERMEJO FORMATION (SHALE, SANDSTONE, AND MAJOR COAL BEDS) AND TRINIDAD SANDSTONE

**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.

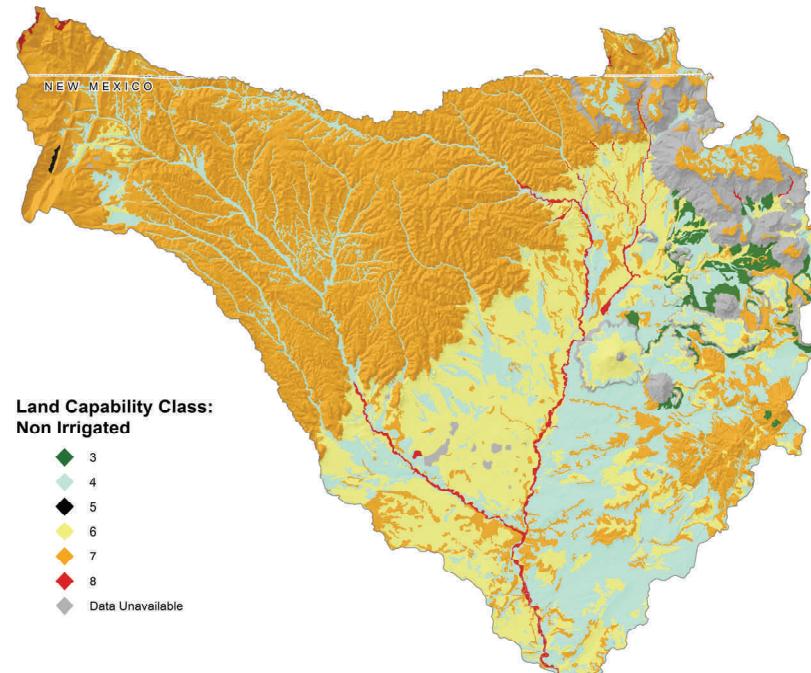
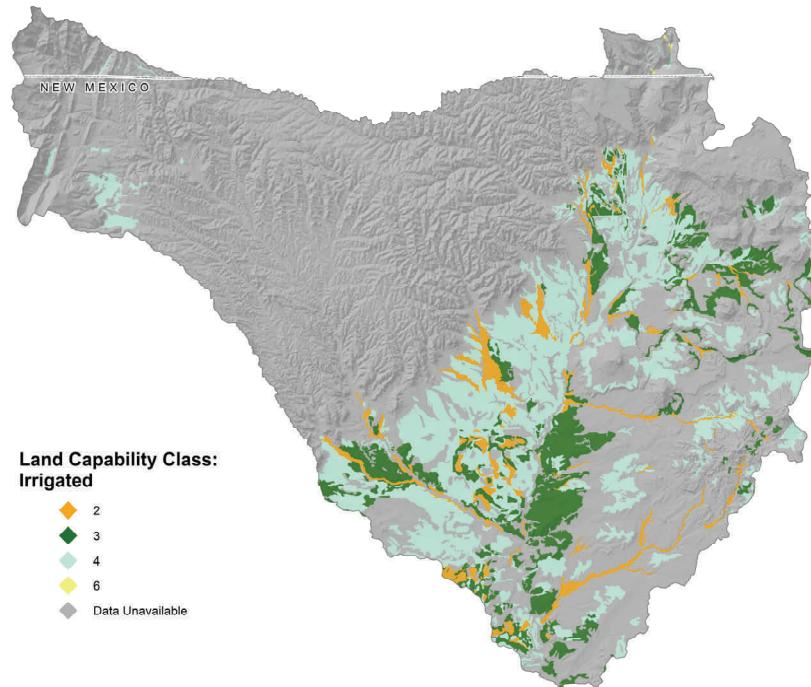
**Class 4** - soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

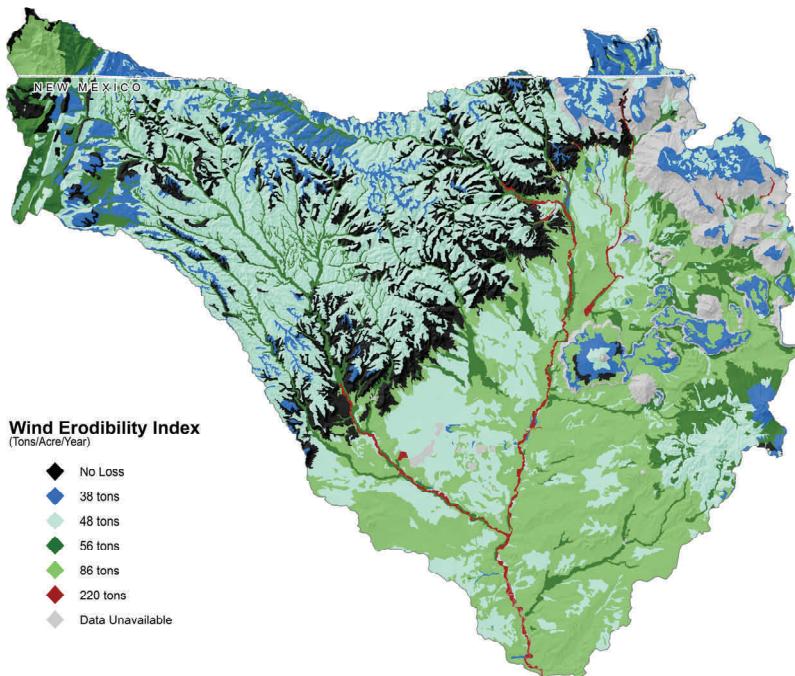
**Class 5** - soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

**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.

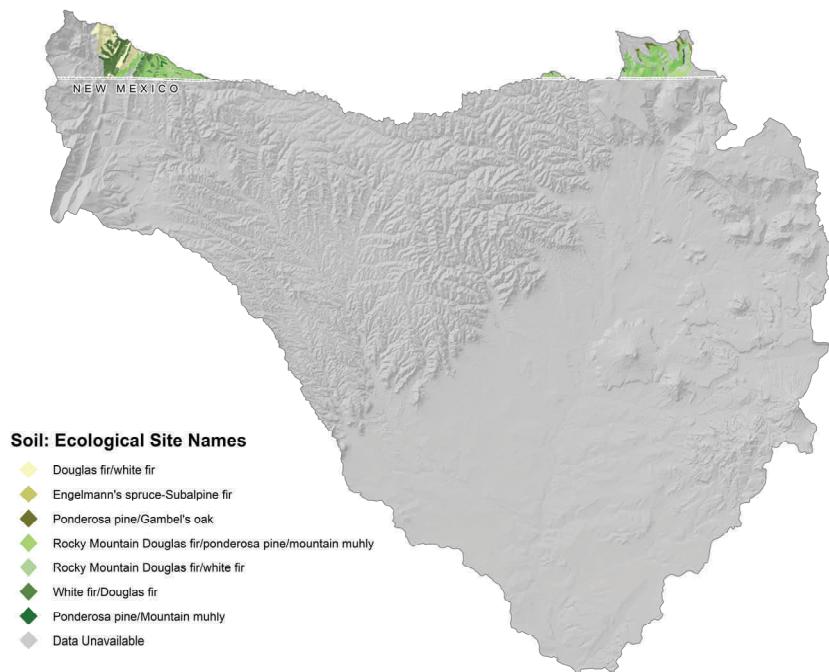
**Class 8** - soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or aesthetic purposes.

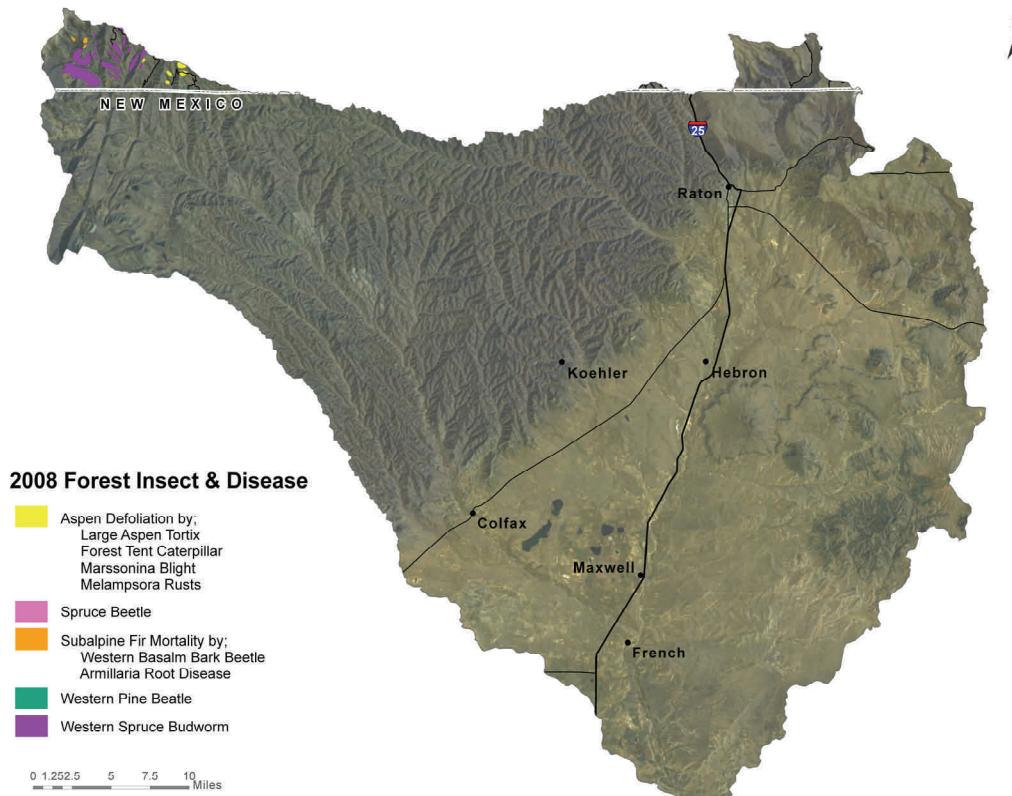
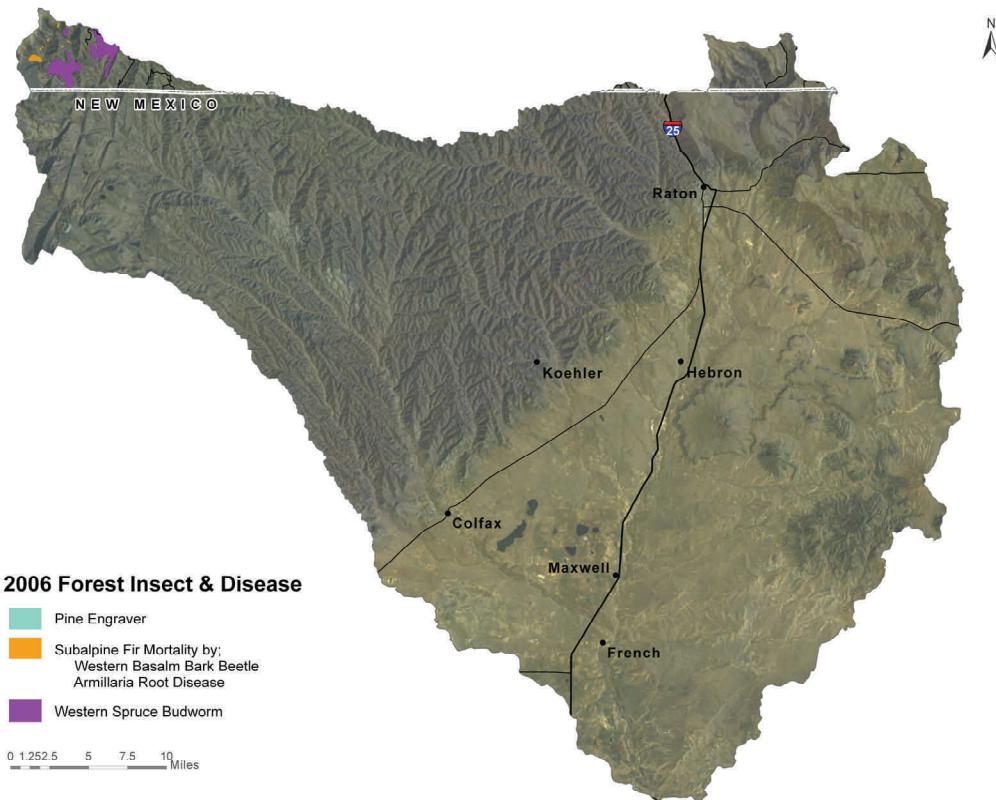




**The Wind Erodibility Index (WEI):** numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion if it is assumed there is no vegetative cover or management.

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





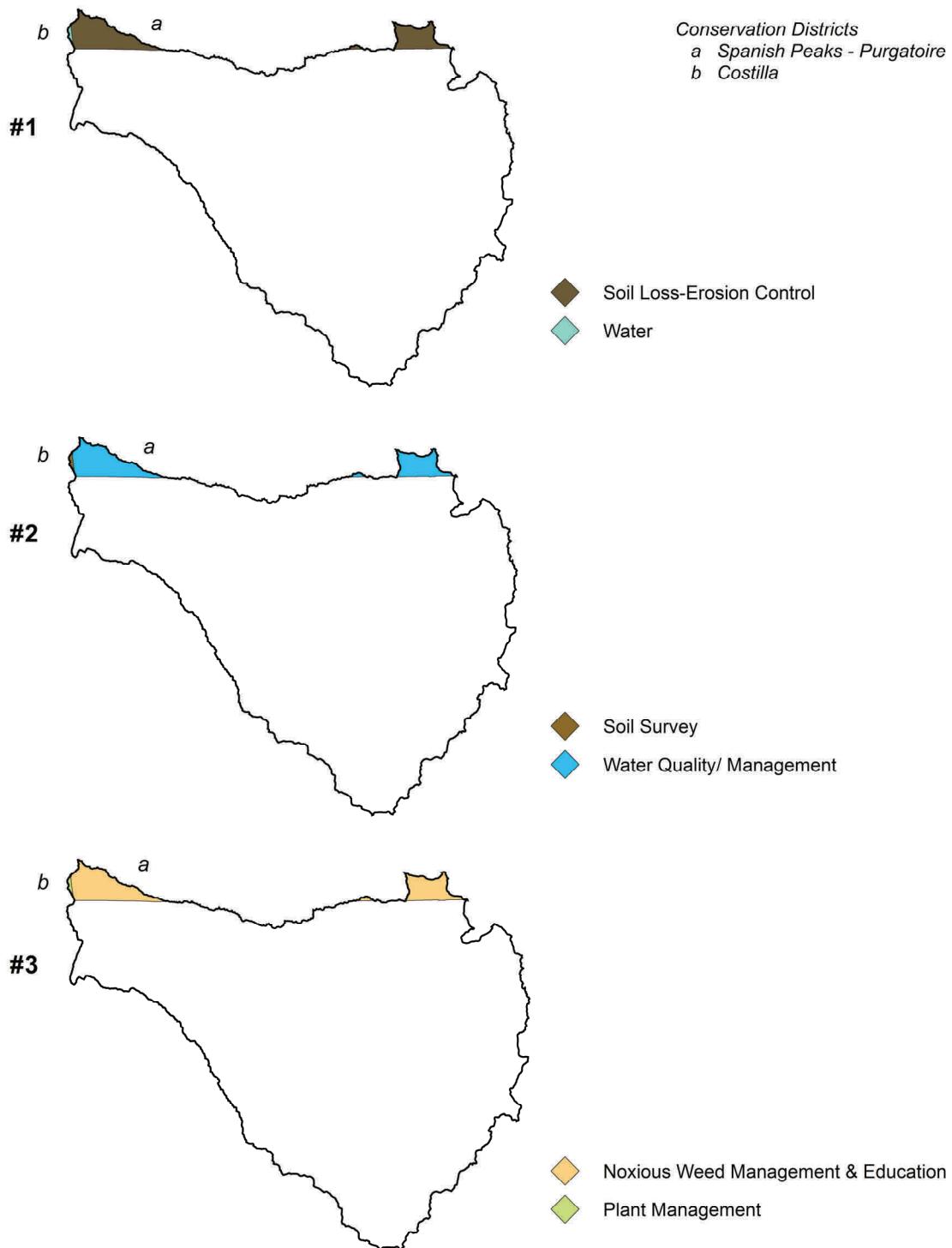
## State and Federal Threatened, Endangered, and Candidate Species and Species of Special Concern in Canadian Headwaters Watershed

Common Name	Scientific Name	Class	State Status/Federal Status	Comments
American Peregrine Falcon	<i>Falco anadensis anatum</i>	Birds	Concern/None	Occurs in the watershed
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Birds	Threatened/None	May migrate through watershed
Black-footed Ferret	<i>Mustela nigripes</i>	Mammals	Endangered/Endangered	No current records of occurrence
Canada Lynx	<i>Lynx canadensis</i>	Mammals	Endangered/Threatened	May occur in the watershed
Ferruginous Hawk	<i>Buteo regalis</i>	Birds	Concern/None	May occur in the watershed
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	Birds	Threatened/Threatened	May occur in the watershed
New Mexico Meadow Jumping Mouse	<i>Zapus hudsonius luteus</i>	Mammals	None/Candidate	May occur in the watershed
Northern Leopard Frog	<i>Rana pipiens</i>	Amphibians	Concern/None	May occur in the watershed
Rio Grande Cutthroat	<i>Oncorhynchus clarkii virginalis</i>	Fish	Concern/None	Occurs in the watershed
Townsend's big-eared bat (pale ssp)	<i>Corynorhinus townsendii pallescens</i>	Mammals	Concern/None	May occur in the watershed

The terrestrial habitat types in this watershed are varied and include: oak shrublands; aspen, ponderosa pine, and mixed conifer forest; subalpine meadows; and mid-grass grasslands. Streams with associated riparian areas provide aquatic habitats. At high elevations in the watershed, in the shrub and forest habitats, species such as elk, Canada lynx, and white-tailed ptarmigan may be found. Economically important wildlife species that occur in the watershed include black bullhead, sunfish, black bear, elk, mountain lion, mule deer, and turkey.

## Identified Long Range Resource Concerns

Top Three Concerns within Conservation Districts



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## 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 & Border State surveys:

Costilla County Area (CO023) Published 9/20/2007

Las Animas County Area (CO628) Published 8/21/2007

Colfax County (NM007) Published 4/10/2006

**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.nrcc.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.nrcc.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/>