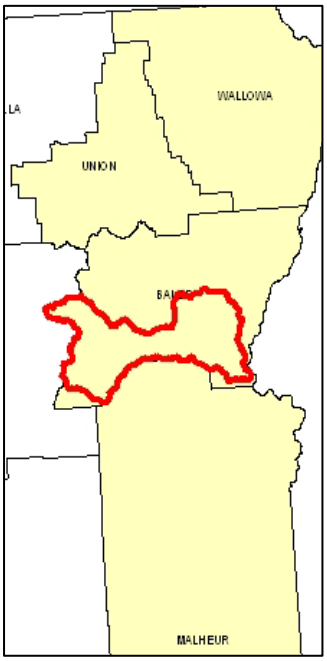
Burnt River – 17050202

8-Digit Hydrologic Unit Profile

FINAL

SWCD	Acres	SWCD	Acres
Burnt River	701,209	Grant	166
Malheur	3,993	Keating	50
Baker Valley	447		



Introduction

The Burnt River 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 705,600 acres, mostly in Baker County. Fifty-two percent of the subbasin is rangeland, thirty-three percent is forestland, and fourteen percent is hayland and pastureland. About seventy-five percent of the forestland is grazed. One-half of the subbasin is privately owned, and the other one-half is publicly owned. Major resource concerns include streambank and irrigation-induced erosion; invasive and noxious weeds; insufficient water to meet livestock, wildlife, and irrigation needs; impaired water quality; and loss of wildlife habitat. High costs, unreliable markets, and inadequate incentives limit conservation adoption among the ranchers in the Burnt River subbasin.

There are 96 operations and 162 ranchers in the subbasin. Most ranchers are well educated, aware of local resource concerns, have experience with conservation, seek out conservation information, and have a positive stewardship attitude. They also perceive, however, that the cost of conservation systems is prohibitively high, thereby limiting their adoption. There is a need for additional risk-reducing incentives and greater community support for conservation to increase the diffusion of conservation in the subbasin.

The Baker NRCS Service Center and the Burnt River Soil and Water Conservation District provide much of the conservation assistance in the subbasin.

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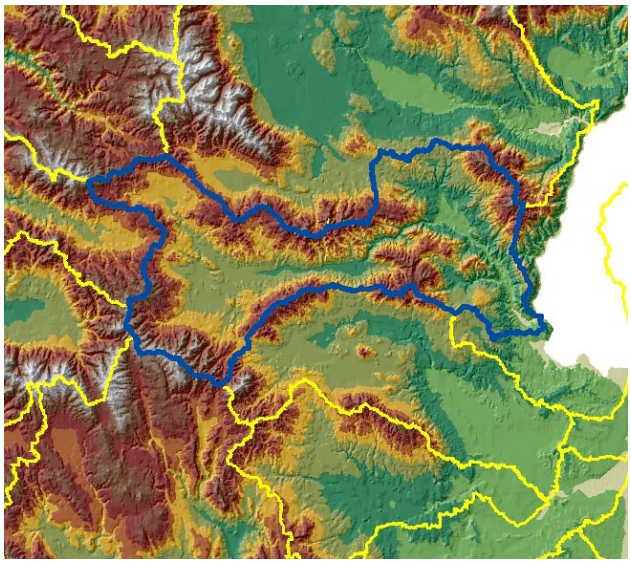

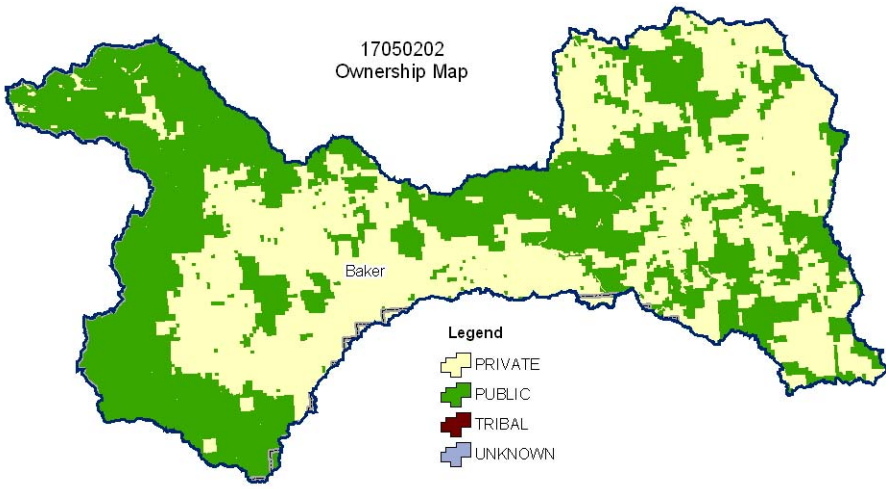

Produced by the Water Resources Planning Team Portland, OR

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Physical Description

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ALL NUMBERS IN THIS PROFILE ARE FOR OREGON ONLY

Land Cover/Land Use (NLCD[12])	Ownership - (2003 Draft BLM Surface Map Set[11])							
	Public		Private		Tribal		Totals	%
	Acres	%	Acres	%	Acres	%		
Forest	177,000	25%	54,500	8%	0	0%	**231,500**	**33%**
Grain Crops	*	---	*	---	0	0%	*	---
Conservation Reserve Program Land [a]	*	---	*	---	0	0%	*	---
Grass/Pasture/Hay	33,800	5%	65,800	9%	0	0%	**99,600**	**14%**
Orchards/Vineyards	0	0%	0	0%	0	0%	**0**	**0%**
Row Crops	0	0%	*	---	0	0%	*	---
Shrub/Rangelands	141,200	20%	227,200	32%	0	0%	**368,400**	**52%**
Water/Wetlands/Developed/Barren	*	---	*	---	0	0%	*	---
Oregon HUC Totals [b]	**353,100**	**50%**	**352,600**	**50%**	**0**	**0%**	**705,700**	**100%**

**: Less than 1 percent of total acres. See below for special considerations.*
a: Estimate from Farm Service Agency records and includes CRP/CREP.
b: Totals are approximate due to rounding and small unknown acreages.

Special Considerations for This 8-Digit HUC:

Field Office estimates:

- Ten percent of the private forestland is under industrial ownership and management.
- Seventy-five percent of the forestland is grazed by livestock.

Irrigated Lands (1997 NRI[13] Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	600	3%	0%
	Uncultivated Cropland	13,600	79%	2%
	Pastureland	3,100	18%	0%
	Total Irrigated Lands	**17,300**	**100%**	**2%**

(Continued on the following pages)

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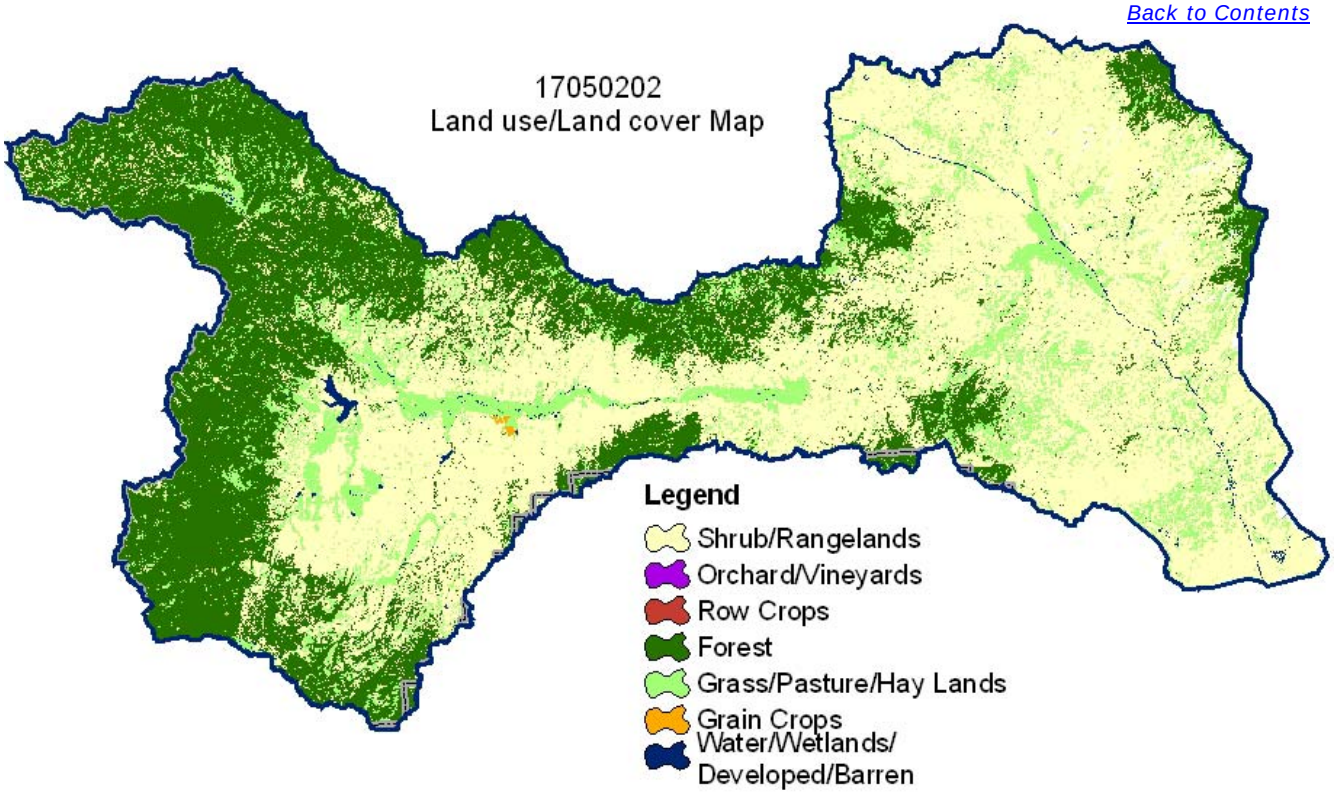

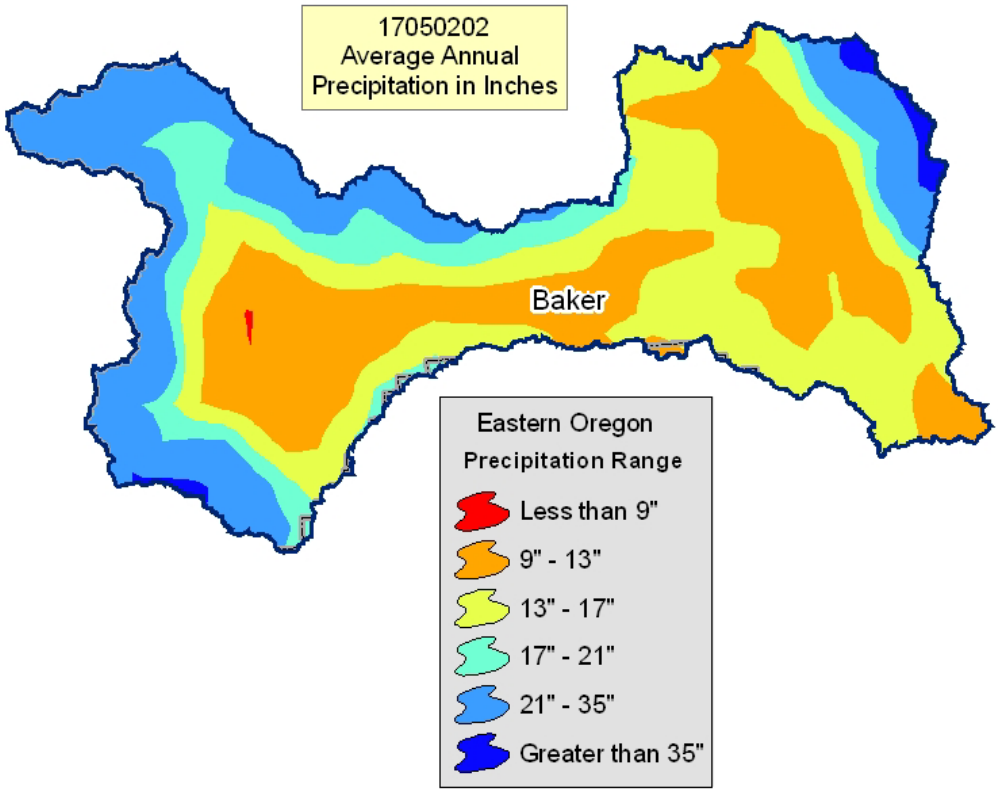

Common Resource Area Map

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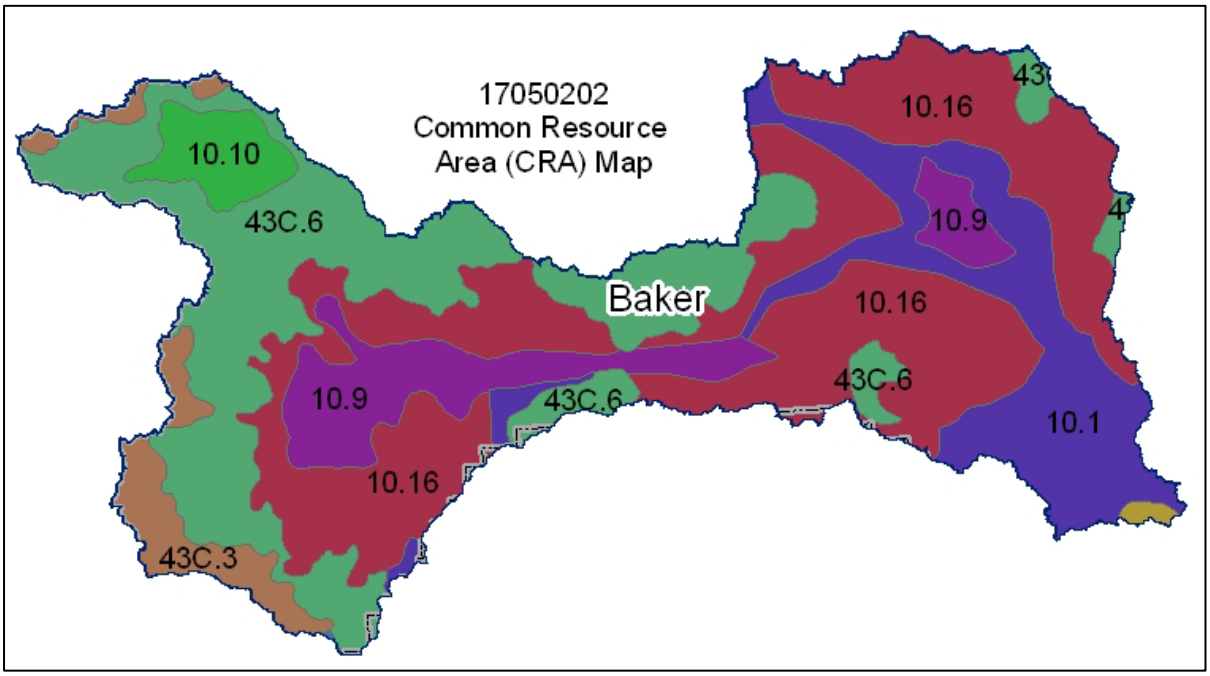
Only the major units are described below - for descriptions of all units within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



10.1 – Central Rocky and Blue Mountains Foothills - Warm Dry Blue and Seven Devils Mountains Foothills: This unit is between the Blue and Wallowa Mountains in Oregon and the northwestern part of the Snake River Plain. It is characterized by rangeland soils on hills and mountains associated with basalt and exposed tuffaceous sediment. The Cascade Range and the Blue and Wallowa Mountains block any maritime influence, creating a continental climate. As a result, plants are subject to wide temperature ranges, a high rate of evapotranspiration, and high early-season moisture stress. The dominant soils are those of the Brogan, Simas, Ruckles, and Ruclick series. The temperature regime is mesic, and the moisture regime is aridic. The mean annual precipitation is 9 to 12 inches. The vegetation is Wyoming big sagebrush and bluebunch wheatgrass (warm, dry climate).

10.9 – Central Rocky and Blue Mountains Foothills - Blue Mountains Valleys: This unit is characterized by terraces, flood plains, and fans in the Powder River and Burnt River Valleys. The dominant soils are those of the Baker, Wingville, Powder, and Jett series. The temperature regime is mesic, and the moisture regime is aridic. Precipitation is about 9 to 12 inches.

10.16 – Central Rocky and Blue Mountains Foothills – Cool, Moist Blue Mountains Foothills: This unit is characterized by rangeland soils on hills and mountains associated with basalt. It is similar to the Lava Fields unit except that this unit has higher precipitation and a xeric soil moisture regime. The temperature regime is frigid. The mean annual precipitation is 12 to 20 inches. The dominant soils are those of the Ateron, Durkee, Menbo, Merlin, and Observation series. The vegetation is dominantly mountain big sagebrush and Idaho fescue (cool, moist climate).

43C.6 - Blue and Seven Devils Mountains – Melange: This unit is characterized by a melange of bedrock types, including limestone, mudstone, greenstone, and schist. The temperature regime is frigid or cryic, and moisture regime is xeric or udic. The forests dominantly support Douglas-fir, ponderosa pine, and lodgepole pine. Shrubland and grassland also occur in the unit. Lithology affects soil, vegetation, and the quantity and quality of surficial water. Grazing is common, but logging is limited by the difficulty of reforesting the droughty soils.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	48,385	158,241
	Well	380	1,243
	Total Irrigated Adjudicated Water Rights	48,765	159,484
Stream Flow Data	USGS 13273000 BURNT RIVER, NEAR HEREFORD, OR	**Total Avg. Yield**	61,416
		May – Sept. Yield	32,574
		MILES	**PERCENT**
Stream Data[5] **Percent of Total Miles of Streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	839	---
	303d/TMDL Listed Streams (DEQ)	199	24%
	Anadromous Fish Presence (StreamNet)	0	0%
	Bull Trout Presence (StreamNet)	0	0%
		ACRES	**PERCENT**
Land Cover/Use[2] Based on a 100-foot stretch on both sides of all streams in the 100K Hydro GIS Layer	Forest	14,535	34%
	Grain Crops	38	0%
	Grass/Pasture/Hay	6,613	15%
	Orchards/Vineyards	0	0%
	Row Crops	2	0%
	Shrub/Rangelands – Includes CRP Lands	20,464	48%
	Water/Wetlands/Developed/Barren	646	2%
	Total Acres of 100-Foot Stream Buffers	**42,297**	**---**
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**1** – slight limitations	0	0%
	2 – moderate limitations	2,300	12%
	3 – severe limitations	12,900	66%
	4 – very severe limitations	2,900	15%
	5 – no erosion hazard, but other limitations	0	0%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	1,300	7%
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	0	0%
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0	0%
	Total Croplands & Pasturelands	**19,400**	**---**

Confined Animal Feeding Operations – Oregon CAFO Permit – 12/2004

Animal Type	Dairy	Feedlot	Poultry	Swine	Mink	Other
No. of Permitted Farms	0	0	0	0	0	0
No. of Permitted Animals	0	0	0	0	0	0

Resource Concerns

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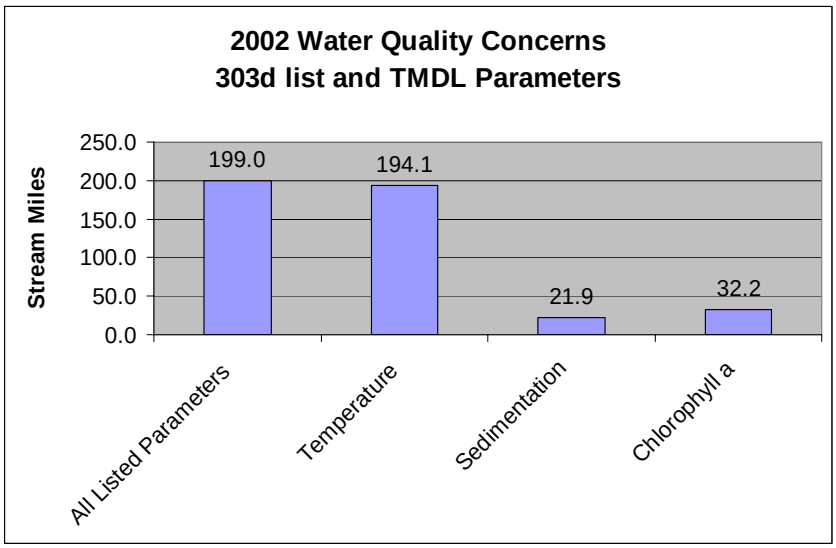
Tons of Soil Loss by Water Erosion: Due to the limited amount of non-Federal cropland and pastureland within this HUC, no reliable NRI soil loss estimates are available.

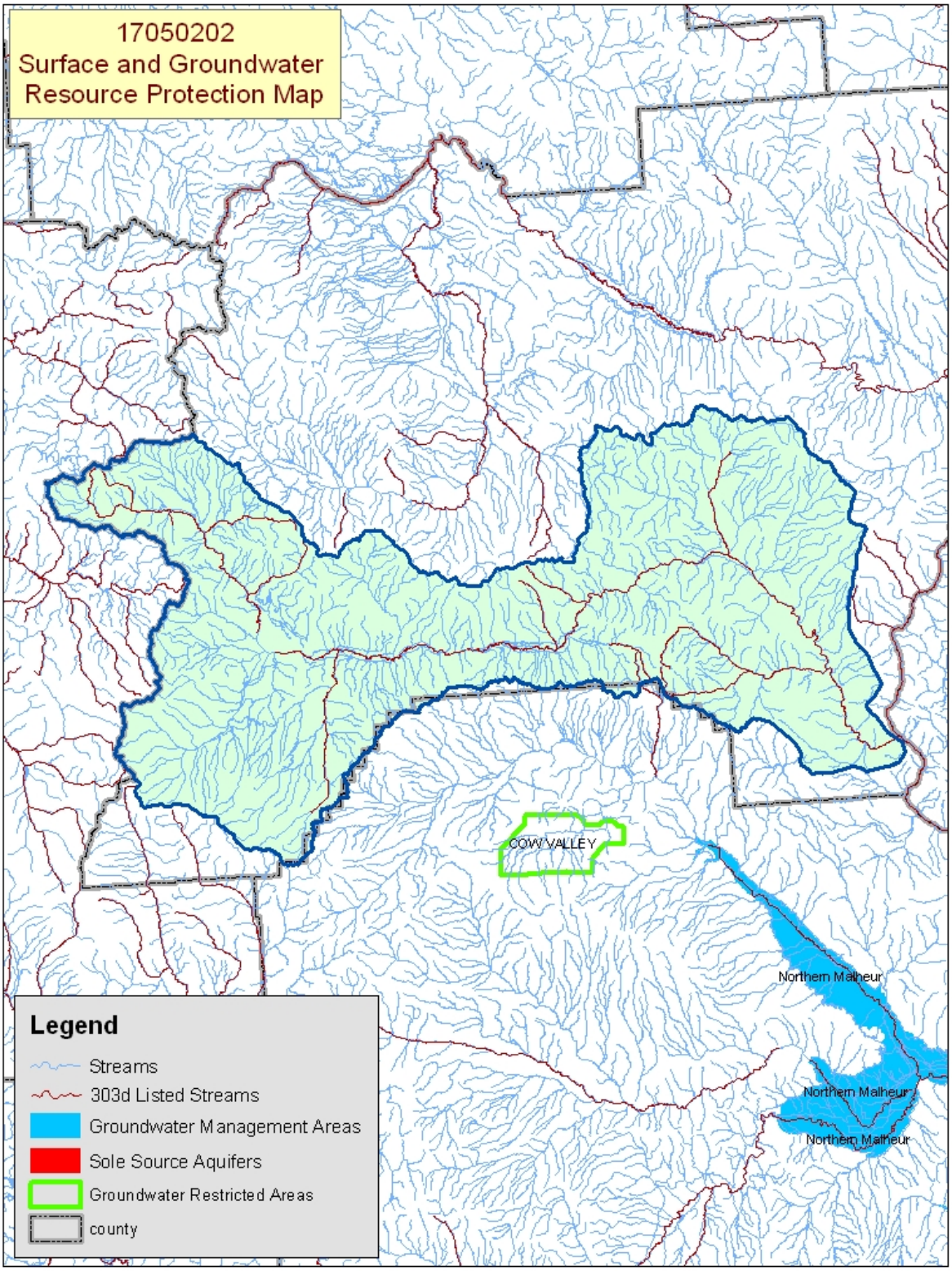


- Ninety-seven percent of the listed stream miles exceed State water quality standards for temperatures. Elevated stream temperatures may be due to inadequate riparian shade, stream channel widening, and other anthropogenic or natural causes.
- Conservation practices that can be used to address these water quality issues include irrigation water management, grazing management, use of riparian buffers, and stream restoration.

Watershed Projects, Plans, Studies, and Assessments			
NRCS Watershed Projects[6]		NRCS Watershed Plans, Studies, and Assessments[7]	
Name	Status	Name	Status
Pine Valley	Deauthorized 1970	None	None
ODEQ TMDL's[8]		ODA Agricultural Water Quality Management Plans[9]	
Name	Status	Name	Status
None	None	Burnt River	Completed
OWEB Watershed Council[10]	Watershed Council Assessments[11]	NWPCC Subbasin Plans and Assessments[18]	
Powder Basin Watershed Council	Upper Powder River Watershed Assessment	Burnt River	

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES[12]	
THREATENED SPECIES	CANDIDATE SPECIES
Mammals-Canada lynx **Birds –** Bald eagle **Fish –** Bull trout **Plants –** Howell's spectacular thelypody	**Birds –** Yellow-billed cuckoo **Amphibians and Reptiles –** Columbia spotted frog **Plants-** Slender moonwort **PROPOSED SPECIES** None
ESSENTIAL FISH HABITAT[13] – None	

(Continued on page 8)



Map Footnote [17]

Resource Concerns - Continued

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Resource Concerns / Issues by Land Use							
SWAPA +H Concerns	Specific Resource Concern / Issue	Grass \ Pasture \ Hay	Grain Crops	Row Crops	Perennial Crops (Orch / Vine / Berries)	Shrub / Range	Forest
Soil Erosion	Streambank	X				X	X
	Irrigation Induced	X	X				
Water Quantity	Water Management For Irrigated Land	X	X				
	Water Management For Nonirrigated Land					X	
Water Quality, Surface	Suspended Sediments and Turbidity	X	X			X	X
	Temperature	X	X			X	X
	Aquatic Habitat Suitability	X					
Plant Suitability	Site & Intended Use Suitability	X				X	
	Invasive Weeds	X				X	
Plant Condition	Productivity, Health, and Vigor	X				X	X
Plant Management	Establishment, Growth, and Harvest						X
Animal Habitat, Domestic	Water - Quantity and Quality	X				X	
Animal Habitat, Wildlife	Food, Cover, and/or Shelter					X	X
Human Economics	High Risk and Uncertainty						
	High Capital/Financial Costs	X	X				
	High Management Level Required						
	Low or Unreliable Profitability					X	X
Human, Political	Inadequate Availability of Cost Share Programs	X	X			X	X
	Lack of Technical Assistance	X	X			X	X

Pasture / Hay

- Better irrigation water management is practiced in areas used for alfalfa than in areas of pasture.
- In some areas of pasture, a lack of proper grazing management has lead to its poor condition.
- Areas of pasture commonly are adjacent to streams, which can contribute to streambank erosion, sedimentation, and elevated temperatures as a result of loss of riparian vegetation.

Grain Crops

- Most grain is produced in rotation with other crops (potatoes, corn, alfalfa, etc.)
- Irrigation-induced erosion may occur on fields used for corn or other row crops.
- Surface-irrigated areas of grain are also prone to irrigation-induced erosion.
- Water management is always a concern with irrigated crops, but irrigation water management is better in areas used for row crops and alfalfa than it is in areas used as pasture.

Rangeland / Forestland

- Juniper encroachment and invasive weeds reduce the health and vigor of range grasses and forbs.
- Juniper also increases evapotranspiration, reducing the availability of water for range grasses and reducing downstream subsurface discharge to the river.
- Loss of riparian vegetation contributes to the warming and nutrient-loading of streams.
- About 30 percent of the private forestland is managed by private industrial owners, who generally comply with State forest practice requirements.
- Private non-industrial forestland commonly is associated with grazed woodland; it is not managed primarily for timber production.
- Private forests are subject to damage from insects and disease, overstocking, and fuel buildup. Thinning is needed to increase productivity and reduce the risk of catastrophic fire.
- High cost, unreliable markets, and inadequate incentive programs limit forestland management activities.

Census and Social Data[/14]

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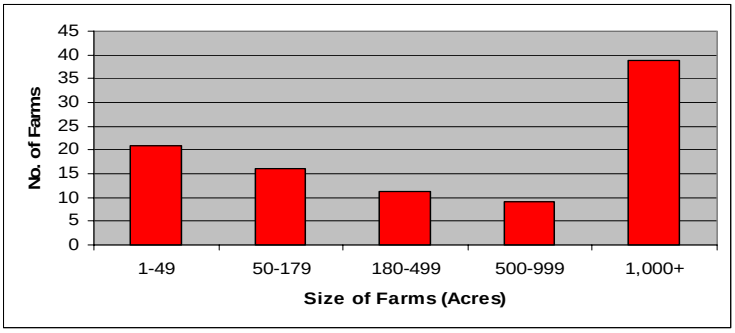


Number of Farms: 96

Number of Operators: 162

- Full-Time Operators: **61**
- Part-Time Operators: **101**

Estimated Level of Willingness and Ability to Participate in Conservation[/15]: High

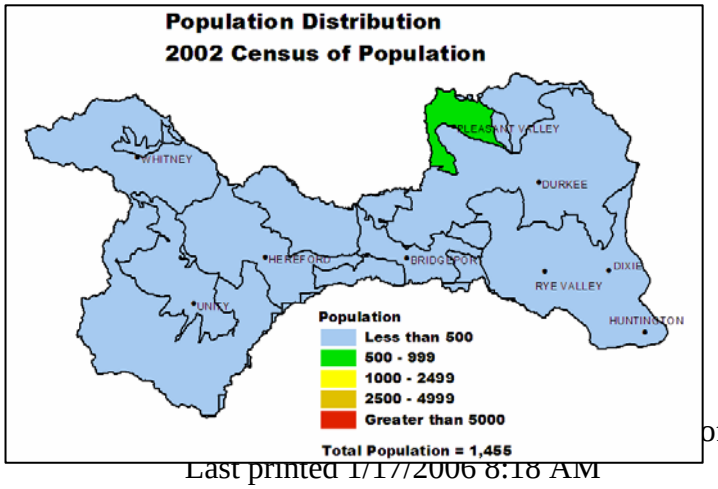
Most operators in the Burnt River subbasin are full-time ranchers, well educated, and aware of local resource concerns; have already adopted some conservation practices; seek out conservation information, and have a positive stewardship attitude. While they tend to perceive a positive effect of conservation on local resource concerns, they also perceive the cost of conservation to be prohibitively high. Furthermore, many ranchers perceive government regulations threaten their ability to autonomously manage the resources on their land.

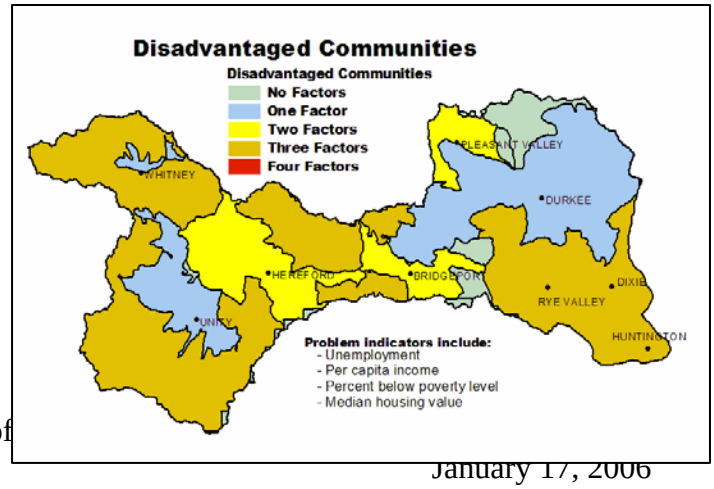
Additional financial incentives and other risk-reducing incentives would increase the adoption of conservation in the subbasin.

Evaluation of Social Capital[/16]: Moderate to High

Social capital and the ability of the community to solve problems and support conservation are estimated to be moderate throughout most of the subbasin; they are somewhat higher near towns and rural community centers. Because the subbasin is a remote area far from government and business decision-making centers and has only a small population, it is difficult for members of these communities to effect change regionally or statewide. On the other hand, local communities commonly are quite active with schools and churches and in agricultural activities. Most residents are ranchers who know and support one another. Most of the community participates in activities and issues that they believe will affect their families and livelihoods.

As conservation becomes more important to the members of the communities in the Burnt River subbasin, the diffusion of conservation throughout the subbasin will increase.





Progress / Status

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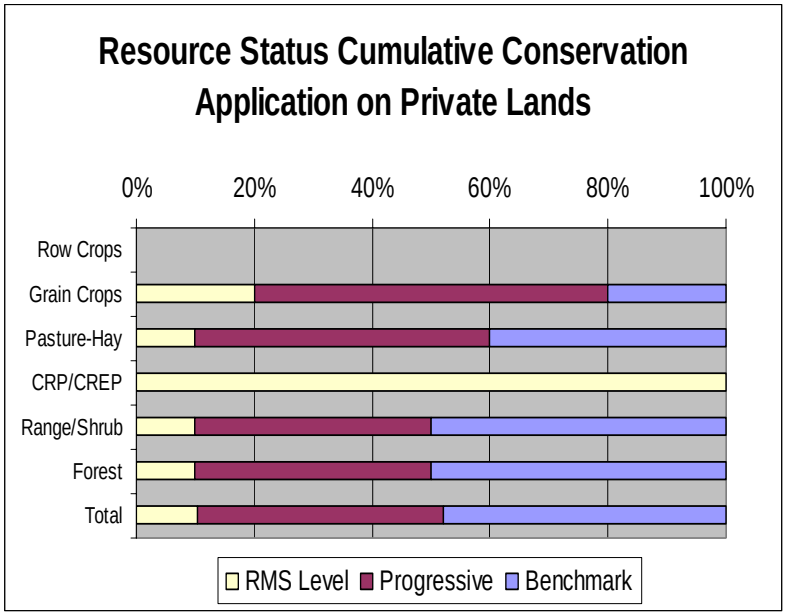
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg / Year	Total
Total Conservation Systems Planned (Acres)	494	2,143	2,023	6,171	9,594	4,085	20,425
Total Conservation Systems Applied (Acres)	0	0	0	13,573	5,406	3,796	18,979
Conservation Treatment (Acres)							
Waste Management	0	0	0	0	0	0	0
Buffers	0	207	0	298	268	155	773
Erosion Control	4	3	0	0	0	1	7
Irrigation Water Management	0	120	0	0	60	36	180
Nutrient Management	0	0	0	0	0	0	0
Pest Management	0	0	0	0	0	0	0
Prescribed Grazing	0	1,075	0	0	494	314	1,569
Trees & Shrubs	0	0	0	135	36	34	171
Conservation Tillage	0	0	0	0	0	0	0
Wildlife Habitat	0	10	582	714	1,241	509	2,547
Wetlands	0	0	92	0	0	18	92



Estimates are based on information received from local conservationists in the watershed.

- Progress over the last 5 years has been focused on:
  - Prescribed grazing on grazing land.
  - Wildlife habitat management, including use of buffers, trees, and shrubs in riparian areas.
- Most grain producers practice conservation cropping and residue management.
- Most producers of row crops and hay practice irrigation water management; however, grazing and livestock water management commonly is inadequate on pastureland and hayland.
- Most private industrial timber owners are doing good conservation work and are satisfying State forest practice requirements.
- Most private non-industrial woodlots are associated with forest grazing allotments that are not primarily managed for timber production.

Lands Removed from Production through Farm Bill Programs

- Conservation Reserve Program (CRP): **1,420 acres**
- Wetland Restoration Program (WRP): **None**
- Conservation Reserve Enhancement Program (CREP): **None**

Footnotes/Bibliography

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1. Ownership Layer – Source: The 1:24,000 scale public ownership layer is the land ownership/management for public entities, including Federal, Tribal, State, and local entities. This is a seamless, statewide Oregon Public Ownership vector layer composed of fee ownership of lands by Federal, State, Tribal, county, and city agencies. The layer is comprised of the best available data compiled at 1:24,000 scale or larger, and the line work matches GCDB boundary locations and ORMAP standards where possible. The layer is available from the State of Oregon GIS Service Center: http://www.gis.state.or.us/data/alphalist.html. For current ownership status, consult official records at appropriate Federal, State, and county offices. Ownership classes grouped to calculate Federal ownership vs. non-Federal ownership by the Water Resources Planning Team.

2. National Land Cover Dataset (NLCD) - Originator: U.S. Geological Survey (USGS); Publication date: 19990631; Title: Oregon Land Cover Data Set, Edition: 1; Geospatial data presentation form: Raster digital data; Publisher: U.S. Geological Survey, Sioux Falls, SD, USA; Online linkage: http://edcwww.cr.usgs.gov/programs/lccp/nationallandcover.html; Abstract: These data can be used in a geographic information system (GIS) for any number of purposes, such as assessing wildlife habitat, water quality, pesticide runoff, land use change, etc. The State data sets are provided with a 300-meter buffer beyond the State border to facilitate combining the State files into larger regions.

3. ESTIMATES FROM THE 1997 NRI DATABASE (REVISED DECEMBER 2000) REPLACE ALL PREVIOUS REPORTS AND ESTIMATES. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is because of changes in statistical estimation protocols and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. All definitions are available in the glossary. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information: http://www.nrcs.usda.gov/technical/NRI/

4. Irrigated Adjudicated Water Rights – Water Rights Information System (WRIS), Oregon Water Resources Department, http://www.wrd.state.or.us/maps/wrexport.shtml

5. StreamNet is a cooperative venture of the Pacific Northwest's fish and wildlife agencies and tribes and is administered by the Pacific States Marine Fisheries Commission. StreamNet provided data and data services in support of the region's fish and wildlife program and other efforts to manage and restore the region's aquatic resources. Official StreamNet website: http://www.streamnet.org/

6. Natural Resources Conservation Service, Watershed Projects Planned and Authorized, http://www.nrcs.usda.gov/programs/watershed/Purpose.

7. Natural Resources Conservation Service, Watershed Plans, Studies, and Assessments completed, http://www.nrcs.usda.gov/programs/watershed/Surveys_Plng.html#Watershed%20Surveys%20and%20Plan

8. Oregon Department of Environmental Quality Total Maximum Daily Loads, http://www.deq.state.or.us/wq/TMDLs/TMDLs.htm

9. Oregon Department of Agriculture, Agricultural Water Quality Management Plans, http://www.oregon.gov/ODA/NRD/water_agplans.shtml

Footnotes/Bibliography Continued

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10. Oregon Watershed Enhancement Board, http://oregon.gov/OWEB/WSHEDS/index.shtml

11. Watershed Assessments completed by local watershed councils following the Oregon Watershed Assessment Manual, http://oregon.gov/OWEB/docs/pubs/ws_assess_manual.shtml.

12. NRCS Field Office Technical Guide, Section II, Threatened and Endangered List.

13. Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265. As amended through October 11, 1996.

14. Data were taken from the 2002 Agricultural Census and adjusted by percent of HUC in the county or by percent of zip code area in the HUC, depending on the level of data available. Data were also taken from the U.S. Population Census, 2000.

15. Conservation participation was estimated using NRCS Social Sciences Technical Note 1801, Guide for Estimating Participation in Conservation, 2004. Four categories of indicators were evaluated: Personal characteristics, farm structural characteristics, perceptions of conservation, and community context. Estimates are based on information received from local conservationists in the watershed.

16. Social capital is an indicator of the community's ability and willingness to work together to solve problems. A high amount of social capital helps a community to be physically healthy, socially progressive, and economically vigorous. A low amount of social capital typically results in community conflict, lack of trust and respect, and unsuccessful attempts to solve problems. The evaluation is based on NRCS Technical Report Release 4.1, March, 2002: Adding Up Social Capital: An Investment in Communities. Local conservationists provided information to measure social capital. Scores range from 0 to 76.

17. Surface and Groundwater Resource Protection Map
    a. 2002 303d Listed Streams designated by Oregon Department of Environmental Quality and approved by the Environmental Protection Agency, Section 303d Clean Water Act, http://www.deq.state.or.us/wq/303dlist/303dpage.htm
    b. Groundwater Management Areas designated by the Oregon Department of Environmental Quality, Oregon Revised Statutes – Ground Water ORS 468B.150 to ORS 468B.190, http://www.deq.state.or.us/wq/groundwa/wqgw.htm
    c. Groundwater Restricted Areas designated by Oregon Water Resources Commission, Oregon Department of Water Resources, http://egov.oregon.gov/OWRD/PUBS/aquabook_protections.shtml
    d. The Sole Source Aquifer (SSA) Protection Program is authorized by Section 1424(e) of the Safe Drinking Water Act of 1974 (Public Law 93-523, 42 U.S.C. 300 et. seq), http://www.epa.gov/safewater/ssanp.html

18. Subbasin assessments and plans are developed by local groups (SWCDs, watershed councils, tribes, and others) as part of the Northwest Power and Conservation Council's fish and wildlife program in the Columbia River Basin. This program is funded and implemented by the Bonneville Power Administration. http://www.nwcouncil.org/fw/subbasinplanning/Default.htm.