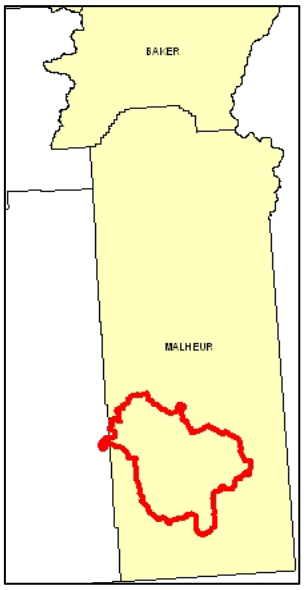
Crooked/Rattlesnake – 17050109

8-Digit Hydrologic Unit Profile

FINAL

NOVEMBER 2005



Introduction

The Crooked/Rattlesnake 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 853,000 acres in Malheur County. Ninety percent of the subbasin is rangeland, and the remainder is hayland and pastureland. Resource concerns include concentrated flow, streambank, and irrigation-induced erosion; invasive weeds; and insufficient water to meet livestock, wildlife, and irrigation needs. Rangeland in this subbasin provides significant habitat for sage grouse nesting and strutting.

There are only 17 ranches and about 29 ranchers in the subbasin. The ranching community is strong, but the remoteness of the subbasin limits the ability of conservationists to provide technical assistance to ranchers and increases the capital costs of many conservation practices.

The Ontario NRCS Service Center, Malheur County Soil and Water Conservation District, and Owyhee Watershed Council provide much of the conservation assistance in the subbasin.

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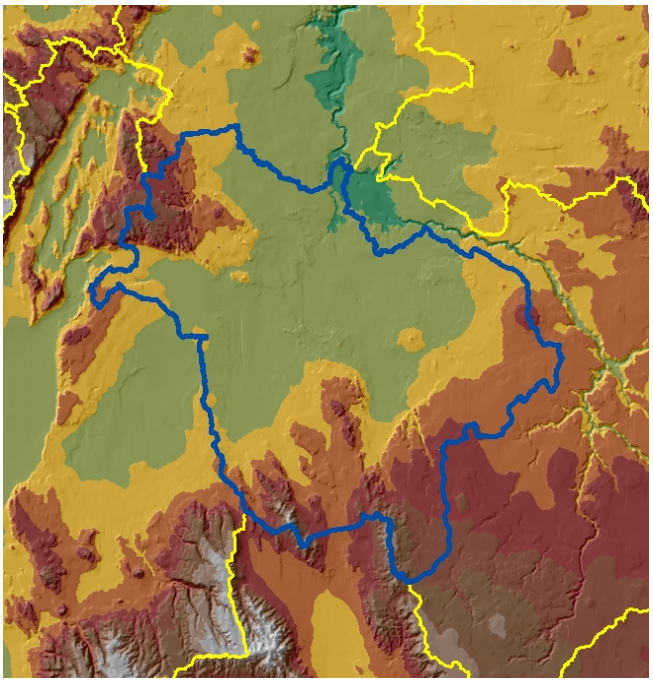

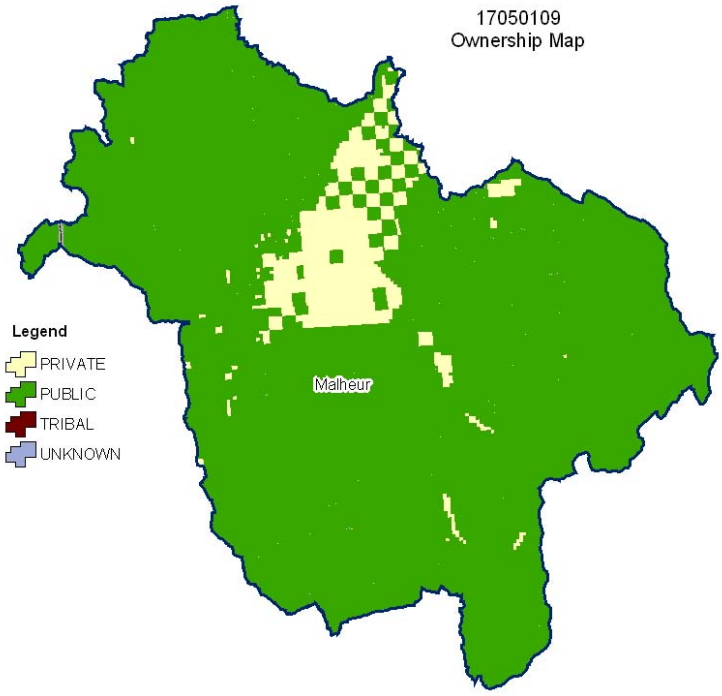

Produced by the Water Resources Planning Team Portland, OR

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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	*	---	*	---	0	0%	*	---
Grain Crops	*	---	*	---	0	0%	*	---
Conservation Reserve Program Land [a]	0	0%	0	0%	0	0%	0	0%
Grass/Pasture/Hay	74,800	9%	10,300	1%	0	0%	85,100	10%
Orchards/Vineyards	0	0%	0	0%	0	0%	0	0%
Row Crops	*	---	*	---	0	0%	*	---
Shrub/Rangelands	710,100	83%	54,400	6%	0	0%	764,600	90%
Water/Wetlands/Developed/Barren	*	---	*	---	0	0%	*	---
Oregon HUC Totals [b]	**787,100**	**92%**	**65,900**	**8%**	**0**	**0%**	**853,000**	**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:

- Most, if not all, ranchers have grazing allotments on public lands.

Irrigated Lands (1997 NRI[13] Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	0	0%	0%
	Uncultivated Cropland	0	0%	0%
	Pastureland	0	0%	0%
	Total Irrigated Lands	**0**	**0%**	**0%**

(Continued on the following pages)

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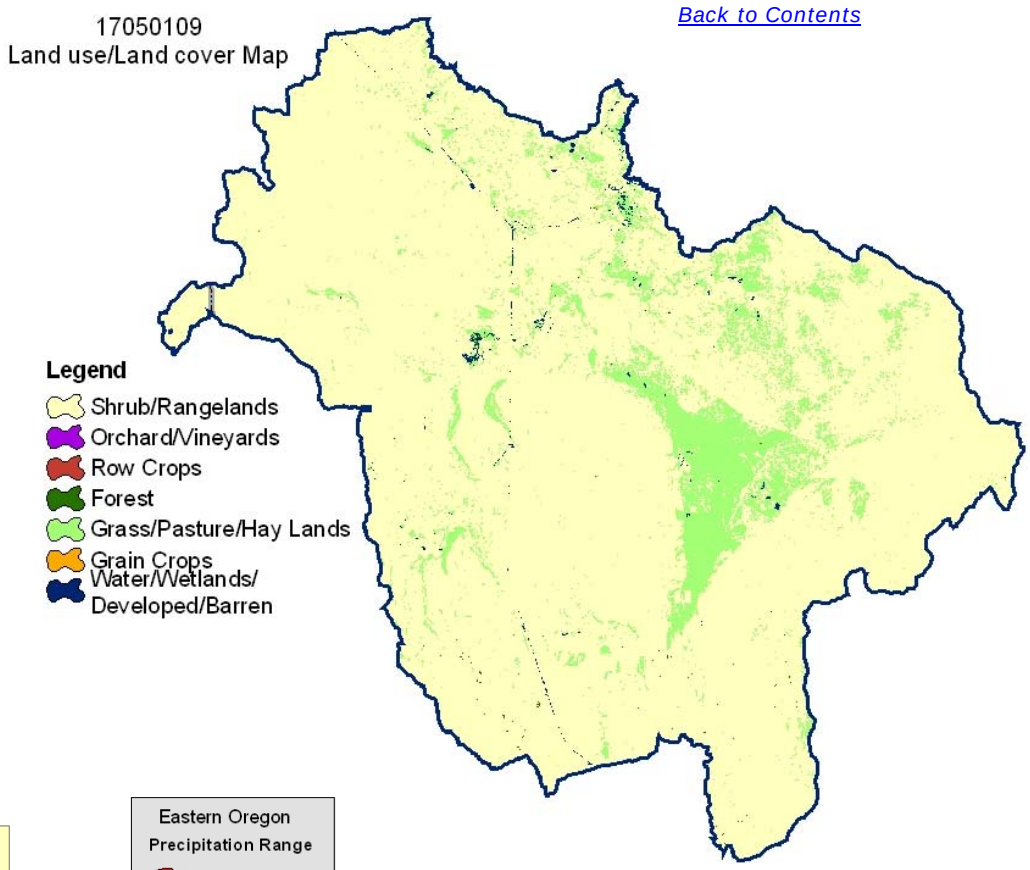

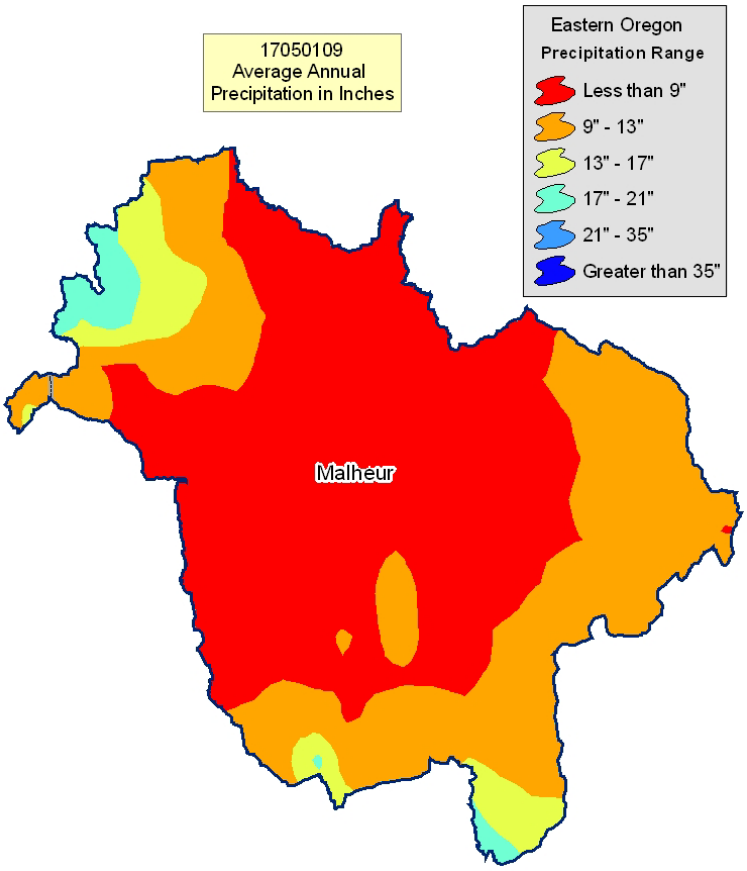

Common Resource Area Map

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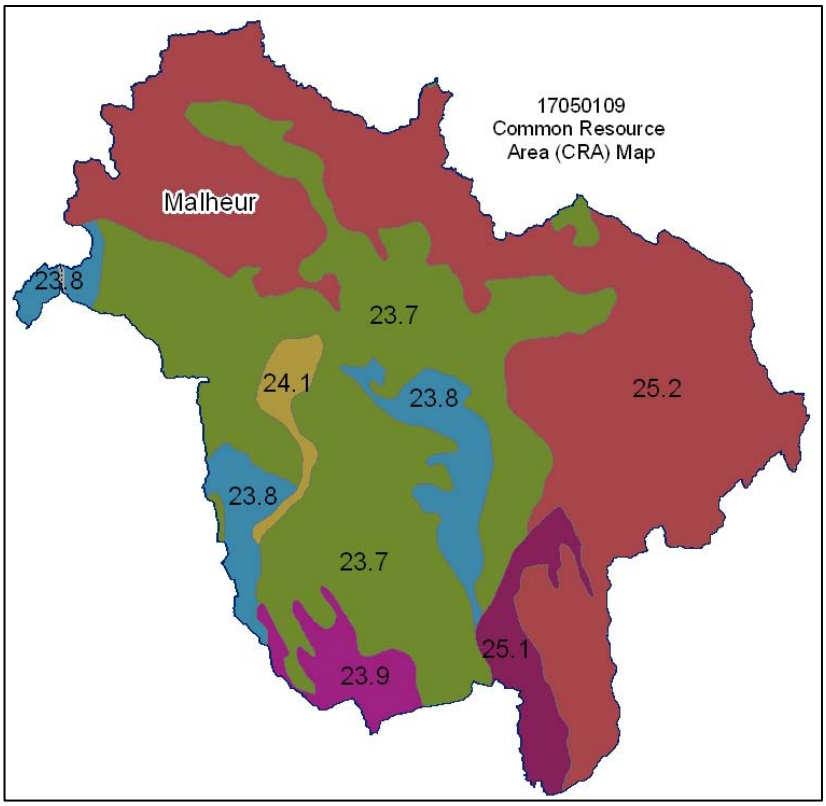
Only the major units are described below - for descriptions of all units within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



23.7 – Malheur High Plateau - Alluvial Fans and Pluvial Lake Terraces: This unit is characterized by warm soils on lake terraces. Wetlands and saline-sodic soils are typically absent. The soils typically have a cemented pan within a depth of 40 inches, but they do not have bedrock within a depth of 60 inches. The temperature regime is mesic but near frigid, and the moisture regime is aridic. The dominant soils include those of the Deppy, McConnel, Spangenburg, and Norad series.

23.8 – Malheur High Plateau - Low Lava Plains: This unit is on basalt plateaus and the escarpments of fault block mountains. The temperature regime is mainly mesic, and the moisture regime is aridic. The soils typically are shallow or moderately deep to bedrock or a cemented pan and have a strongly developed argillic horizon. The vegetation is dominantly low sagebrush, Wyoming big sagebrush, Idaho fescue, Thurber needlegrass, and bluebunch wheatgrass. Playas, small intermittent lakes, and clay that has a high shrink-swell potential are common in depressions.

23.9 – Malheur High Plateau - Semiarid Uplands: This unit is characterized by hills and mountains. The temperature regime is mesic or frigid with cryic areas on north-facing aspects and high peaks. The moisture regime typically is aridic bordering on xeric or is xeric. The soils are very shallow to very deep, although most are shallow or moderately deep. The typical vegetation is mountain big sagebrush, low sagebrush, Idaho fescue, bluebunch wheatgrass, and snowberry. Aspen woodland is common at the high elevations.

24.1 – Humboldt Area - Salt Shrub Valleys: This unit is characterized by saline-sodic lake basins. Wetlands are numerous. The temperature regime is dominantly mesic, and the moisture regime is aridic. Large playas are typical. The vegetation typically is black greasewood, inland saltgrass, and basin wildrye with spiny hopsage, budsage, shadscale, and Wyoming big sagebrush.

25.1 – Owyhee High Plateau - High Lava Plains and Canyon: This unit consists of dissected volcanic plateaus, escarpments, and mountain slopes and includes deeply cut canyons. The soils typically are frigid, but they range from mesic to cryic. The moisture regime is dominantly aridic bordering on xeric. The soils typically are shallow or moderately deep over bedrock or a hardpan. Common vegetation includes Wyoming big sagebrush, mountain big sagebrush, low sagebrush, Idaho fescue, bluebunch wheatgrass, and snowberry. Curl-leaf mountain mahogany and aspen are at the high elevations.

25.2 - Owyhee High Plateau - Dissected High Lava Plateau: This unit consists of alluvial fans, rolling plains, and shear-walled canyons that are cut into extrusive rock. Sagebrush grassland is common, and scattered areas of woodland are on the rocky uplands. This unit supports cooler season grasses than do the valleys to the south, and it does not support saltbush and greasewood. Frigid and mesic Aridisols and Mollisols are in this unit. Grazing is the primary land use. Cropland is less common on this unit than it is on the Snake River Plain. High-quality water and native fish assemblages are in isolated canyons.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	4,925	15,138
	Well	0	0
	Total Irrigated Adjudicated Water Rights	4,925	15,138
Stream Flow Data	OWRD 13181500 CROOKED CR, NEAR ROME, OR	**Total Avg. Yield**	21,209
		May – Sept. Yield	8,080
		MILES	**PERCENT**
Stream Data[5] **Percent of Total Miles of Streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	23	---
	303d/TMDL Listed Streams (DEQ)	0	0%
	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	82	0%
	Grain Crops	2	0%
	Grass/Pasture/Hay	5,538	11%
	Orchards/Vineyards	0	0%
	Row Crops	0	0%
	Shrub/Rangelands – Includes CRP Lands	42,650	88%
	Water/Wetlands/Developed/Barren	245	<1%
	Total Acres of 100-Foot Stream Buffers	**48,516**	**---**
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**1** – slight limitations	0	0%
	2 – moderate limitations	0	0%
	3 – severe limitations	0	0%
	4 – very severe limitations	0	0%
	5 – no erosion hazard, but other limitations	0	0%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	0	0%
	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	**0**	**0%**

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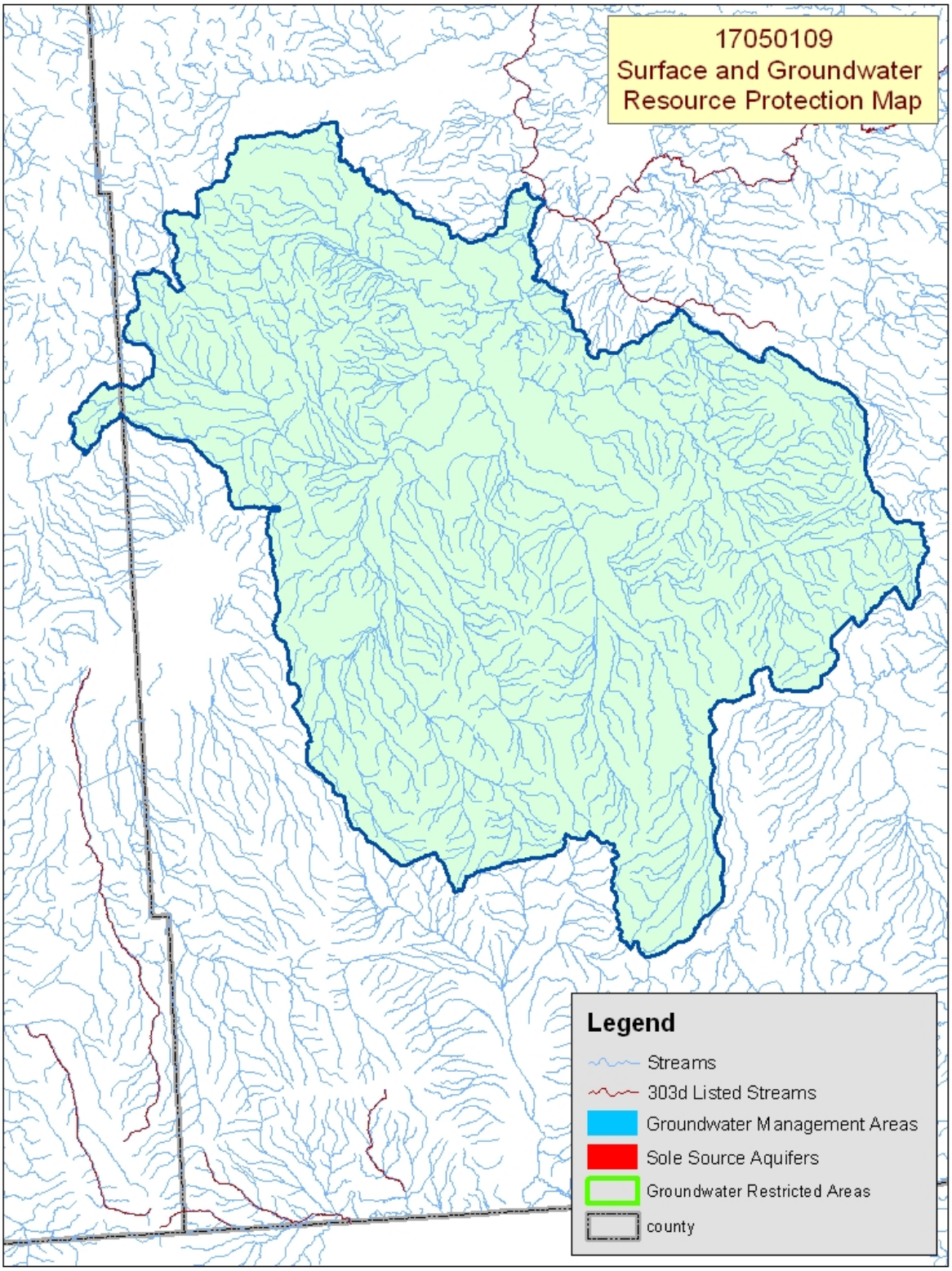
Tons of Soil Loss by Water Erosion: Due to the limited amount of non-Federal cropland and pastureland within this HUC, no reliable NRI soil loss estimates are available.

303d/TMDL Listed Streams (DEQ): Oregon Department of Environmental Quality does not list any stream reaches in the Crooked/Rattlesnake subbasin as having limited water quality or needing a TMDL.

Watershed Projects, Plans, Studies, and Assessments			
NRCS Watershed Projects[6]		NRCS Watershed Plans, Studies, and Assessments[7]	
Name	Status	Name	Status
None	None	None	None
ODEQ TMDL's[8]		ODA Agricultural Water Quality Management Plans[9]	
Name	Status	Name	Status
None	None	Owyhee	Completed
OWEB Watershed Council[10]	Watershed Council Assessments[11]	NWPCC Subbasin Plans and Assessments[18]	
Owyhee Watershed Council	None	Owyhee	

(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**	**Pasture\Hay**	**Grain Crops**	**Row Crops**	**Perennial Crops (Orch/Vine/Berries)**	**Shrub/Range**	**Forest**
Soil Erosion	Concentrated Flow or Gully					X	
	Streambank	X				X	
	Irrigation Induced	X					
Water Quantity	Water Management For Irrigated Land	X					
Water Quality, Surface	Suspended Sediments & Turbidity	X					
Plant Suitability	Site & Intended Use Suitability	X				X	
	Invasive Weeds	X				X	
Plant Condition	Productivity, Health, & Vigor	X					
Animal Habitat, Domestic	Water - Quantity & Quality					X	
Animal Habitat, Wildlife	Food, Cover, &/or Shelter					X	
	Water - Quantity & Quality					X	
	Management					X	
Human, Economics	High Capital/Financial Costs	X				X	
	High Labor Costs or Availability					X	
Human, Other	Remote Location	X				X	

Pasture/Hay

- Streambank and irrigation-induced erosion might occur unless proper grazing management is used to maintain vegetation.
- Sufficient water commonly is not available to meet pasture irrigation requirements.
- Grass/hay species that would maximize production given the local soils and climate commonly are not selected.
- Invasive weeds and poor overall pasture health limits forage productivity.
- The high capital costs of improving water storage and irrigation water management hinder further pasture improvements.

Range

- Concentrated flow and irrigation-induced erosion occur in areas of range, especially where cattle congregate.
- Invasive weeds, such as star thistle, medusahead, and leafy spurge, limit range productivity.
- Sufficient water commonly is not available for livestock and wildlife.
- Important areas need to be protected as habitat for sage grouse nesting and strutting.

Other

- The remote location hinders the ability to provide technical assistance to area ranchers and increases capital costs of conservation practices.

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

Census and Social Data[/14]

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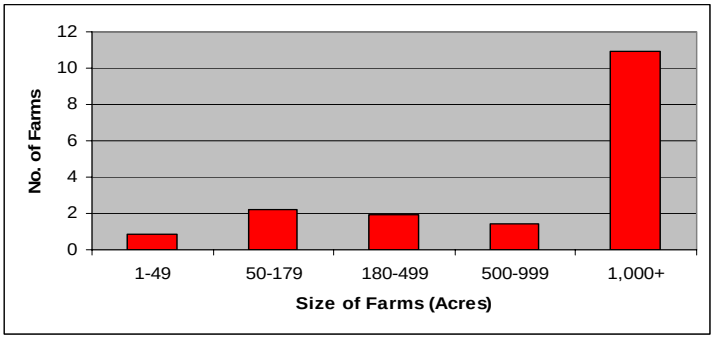
Number of Farms: 17

Number of Operators: 29

- Full-Time Operators: **11**
- Part-Time Operators: **18**

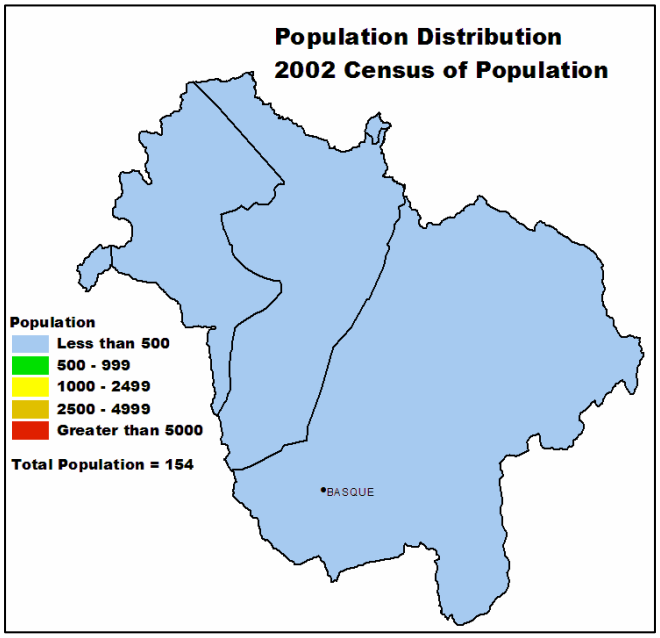


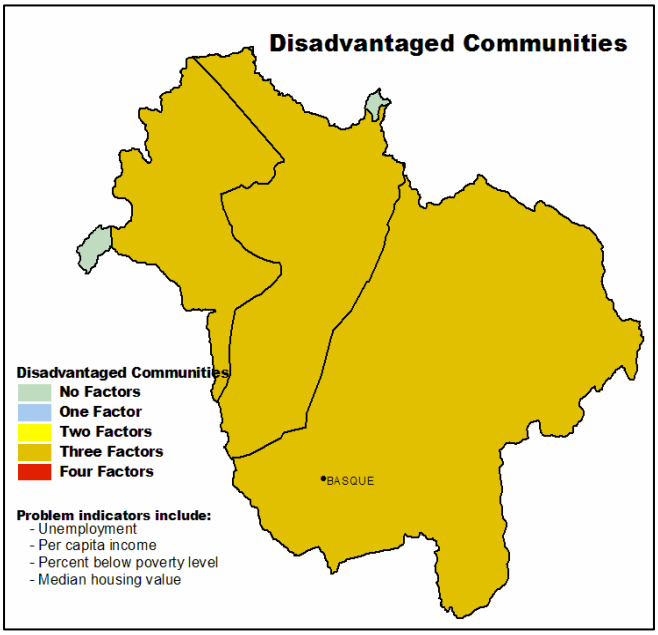
Estimated Level of Willingness and Ability to Participate in Conservation[/15]: Moderate

Ranchers in the Crooked/Rattlesnake subbasin are generally able and willing to adopt conservation and resource management systems. Due to the remoteness of the region and the independent nature of a ranch community, people do not readily seek technical or financial outside assistance. They are aware of the local natural resource concerns in their area, however, and commonly are willing to address issues as their own resources permit. Unfortunately, ranching in the subbasin is not highly profitable and although most ranchers believe conservation is good, they also perceive it to be too costly. There is a need for additional technical and financial assistance to increase conservation adoption among ranchers in this subbasin.

Evaluation of Social Capital[/16]: Moderate

The community has the ability to solve problems, but because it has a small population and is in a remote area far from government and business decision-making centers, effecting change is difficult. On the other hand, the community is quite active in local school, church, and agricultural activities. Most of the ranchers know and support one another. Most of the community participates in activities and issues that they believe will affect their families and livelihood. Conservation systems will become more widely diffused in the subbasin as local resource concerns are acknowledged as critical to the survival of the ranching community.





Progress/Status

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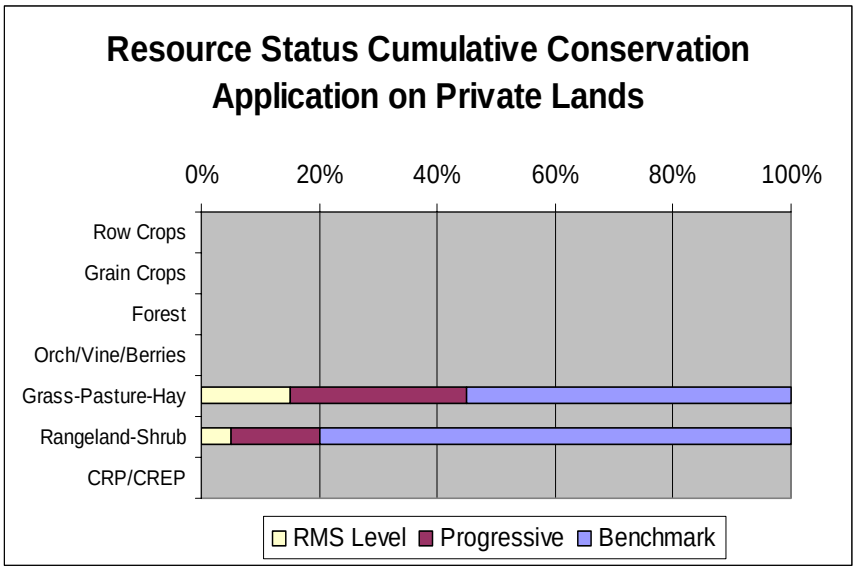
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg/Year	Total
Total Conservation Systems Planned (Acres)	0	0	0	0	0	0	0
Total Conservation Systems Applied (Acres)	0	0	0	0	1,500	300	1,500
Conservation Treatment (Acres)							
Waste Management	0	0	0	0	0	0	
Buffers	0	0	0	0	0	0	0
Erosion Control	0	0	0	0	0	0	0
Irrigation Water Management	0	0	0	0	0	0	0
Nutrient Management	0	0	90	0	0	18	90
Pest Management	0	0	0	0	0	0	0
Prescribed Grazing	0	0	0	0	0	0	0
Trees & Shrubs	0	0	0	0	0	0	0
Conservation Tillage	0	0	0	0	0	0	0
Wildlife Habitat	0	0	0	0	0	0	0
Wetlands	0	0	0	0	0	0	0



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

- Progress over the last 5 years has been limited.
- Management of invasive weeds and proper management of forage and grazing are needed.
- Lack of proper grazing management and insufficient watering facilities for livestock and wildlife are common in areas of rangeland.
- Areas of rangeland are important as habitat for sage grouse nesting and strutting.

Lands Removed from Production through Farm Bill Programs

- Conservation Reserve Program (CRP): **None**
- 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.