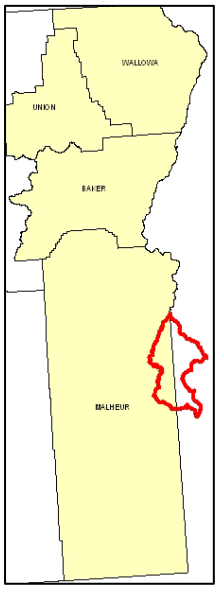
Middle Snake/Succor – 17050103

8-Digit Hydrologic Unit Profile

FINAL

SWCD	Acres
Malheur	207,368



Introduction

The Oregon part of the Middle Snake/Succor 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 207,285 acres in Malheur County. Seventy-two percent of the subbasin is rangeland, twenty percent is hayland and pastureland, and the remainder is used mainly for grain and row crops. There are four permitted Confined Animal Feeding Operations (CAFOs) and about 2,000 permitted animals in the subbasin. Some resource concerns include concentrated flow, 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 profits, and inadequate incentives limit conservation adoption among the farmers and ranchers in the subbasin.

There are 68 operations and about 112 farmers and ranchers in the subbasin. Most operators are well educated, aware of local resource concerns, and good stewards of the natural resources. Unfortunately, the perceived expense and risk limits implementation of conservation systems. There is a need for additional risk-reducing incentives and greater community support to increase the diffusion of conservation in the subbasin.

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

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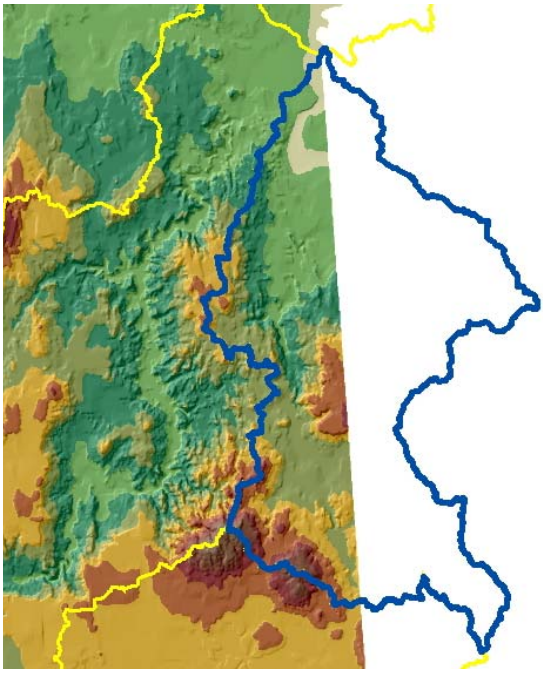
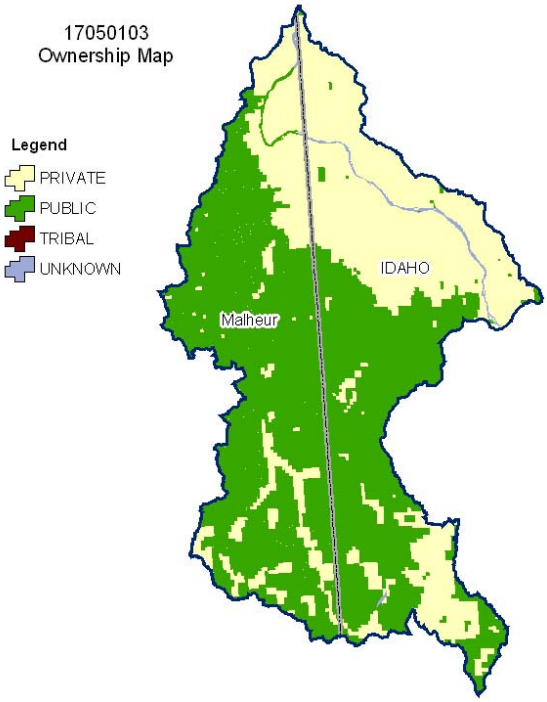
Relief Map





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	*	---	8,500	4%	0	0%	8,500	4%
Conservation Reserve Program Land [a]	0	0%	0	0%	0	0%	0	0%
Grass/Pasture/Hay	25,300	12%	16,100	8%	0	0%	41,400	20%
Orchards/Vineyards	0	0%	0	0%	0	0%	0	0%
Row Crops	*	---	*	---	0	0%	*	---
Shrub/Rangelands	131,800	64%	18,100	9%	0	0%	149,900	72%
Water/Wetlands/Developed/Barren	*	---	*	---	0	0%	3,900	2%
Oregon HUC Totals [b]	**159,300**	**77%**	**47,400**	**23%**	**0**	**0%**	**207,100**	**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 land.

Irrigated Lands (1997 NRI[13] Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	21,600	76%	10%
	Uncultivated Cropland	1,100	4%	1%
	Pastureland	5,600	20%	3%
	Total Irrigated Lands	**28,300**	**100%**	**14%**

(Continued on the following pages)

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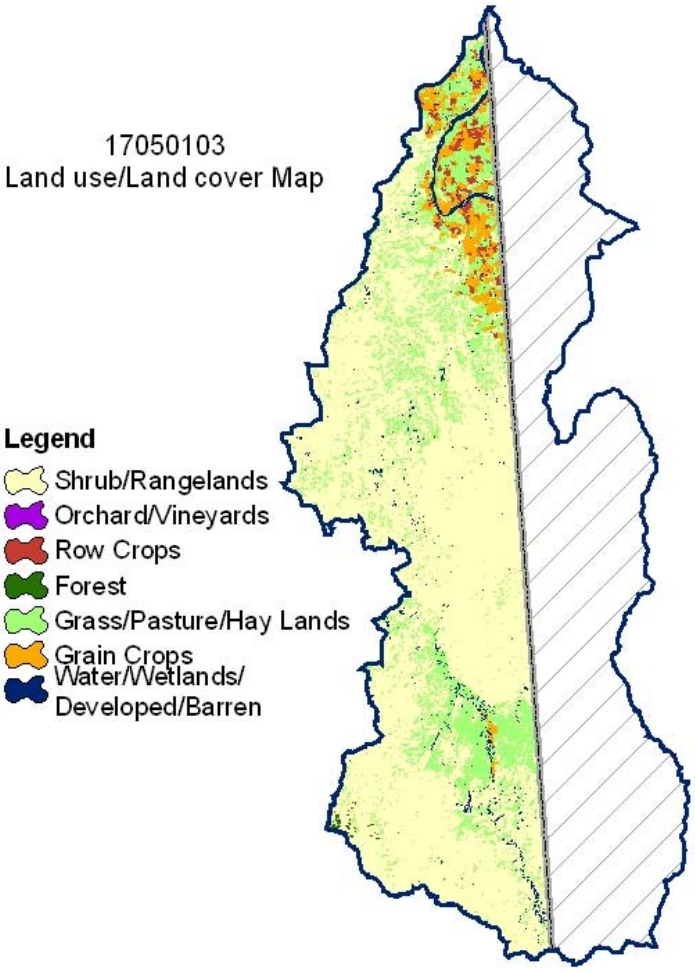

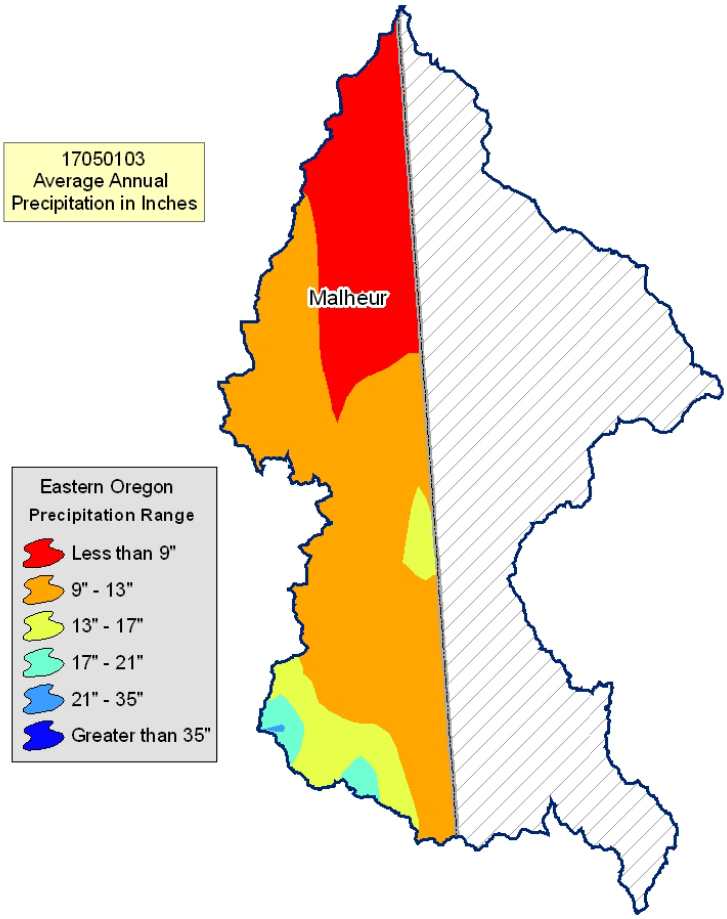

Common Resource Area Map

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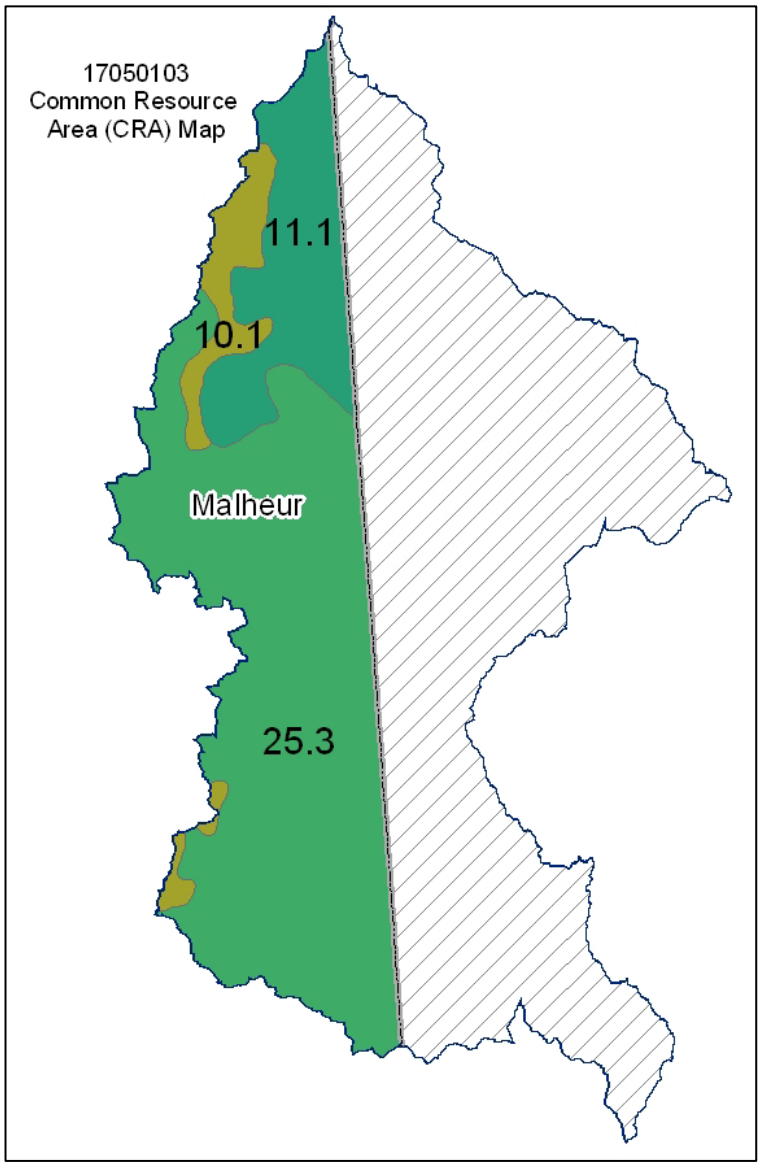
Only the major units are described below - for descriptions of all units within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



10.1 – Central Rocky and Blue Mountains Foothills – Warm, Dry Blue and Seven Devils Mountains Foothills: This unit lies between Oregon's Blue and Wallowa Mountains and the northwestern Snake River Plain. It is characterized by rangeland soils on hills and mountains associated with basalt and exposed tuffaceous sediment. The combined masses of the Cascade Range and the Blue and Wallowa Mountains block any maritime influence, creating a continental climate. As a result, plants are subject to a wide range in temperature, 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 dominantly Wyoming big sagebrush and bluebunch wheatgrass (warm, dry climate).

11.1 – Snake River Plains - Treasure Valley: This unit is characterized by irrigated cropland, pastureland, and rapidly growing cities, suburbs, and industries. Many canals, reservoirs, and diversions are present. Aridic soils are dominant. Irrigation is required to grow commercial crops. Surface water quality has been significantly affected by channel alteration, dams, irrigation return flow, and urban, industrial, and agricultural pollution. Crops include wheat, barley, alfalfa, sugar beets, potatoes, and beans. Crop diversity is greater, temperatures are warmer, and the mean frost-free season is longer on this unit than they are in other CRA units. Also, the population density is much higher than in nearby units that are dominantly rangeland.

25.3 – Malheur High Plateau - Cold High Lava Plains: This unit is characterized by dissected mountains, including the high elevation peaks of Steens and Hart Mountains. The temperature regime is cryic or frigid, and the moisture regime is xeric. The dominant soils include those of the Harcany, Baconcamp, Hackwood, and Clamp series. Precipitation is about 14 to 25 inches. The dominant vegetation is mountain big sagebrush, Idaho fescue, and aspen groves.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	2,332	9,029
	Well	138	443
	Total Irrigated Adjudicated Water Rights	2,470	9,471
Stream Flow Data	USGS 13173000 SUCCOR CREEK, NEAR HOMEDALE, ID	**Total Avg. Yield**	23,174
		May – Sept. Yield	6,291
		MILES	**PERCENT**
Stream Data[5] **Percent of Total Miles of Streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	0	---
	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	60	0%
	Grain Crops	586	4%
	Grass/Pasture/Hay	2,722	21%
	Orchards/Vineyards	0	0%
	Row Crops	198	1%
	Shrub/Rangelands – Includes CRP Lands	9,187	70%
	Water/Wetlands/Developed/Barren	523	4%
	Total Acres of 100-Foot Stream Buffers	**13,276**	**---**
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**1** – slight limitations	2,200	7%
	2 – moderate limitations	3,100	10%
	3 – severe limitations	21,200	69%
	4 – very severe limitations	1,800	6%
	5 – no erosion hazard, but other limitations	0	0%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	2,300	8%
	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	**30,600**	**---**

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

Animal Type	Dairy	Feedlot	Poultry	Swine	Mink	Other
No. of Permitted Farms	2	2	0	0	0	0
No. of Permitted Animals	360	1,750	0	0	0	0

Resource Concerns

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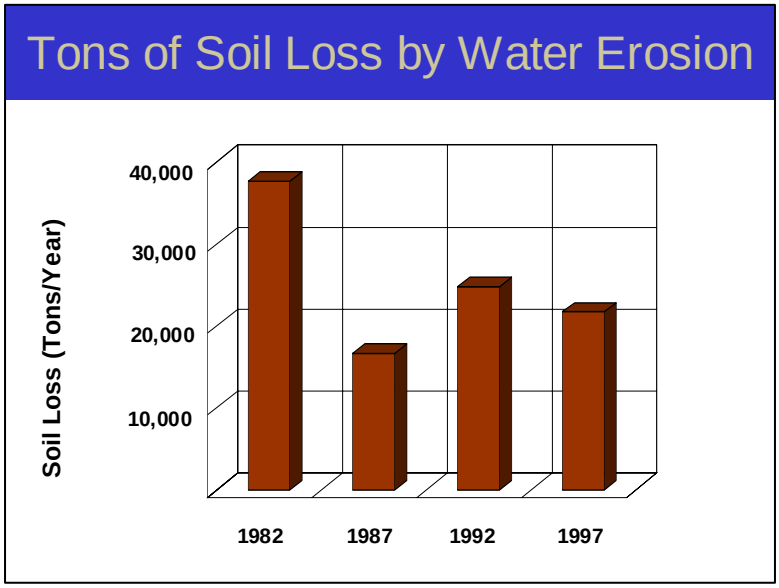


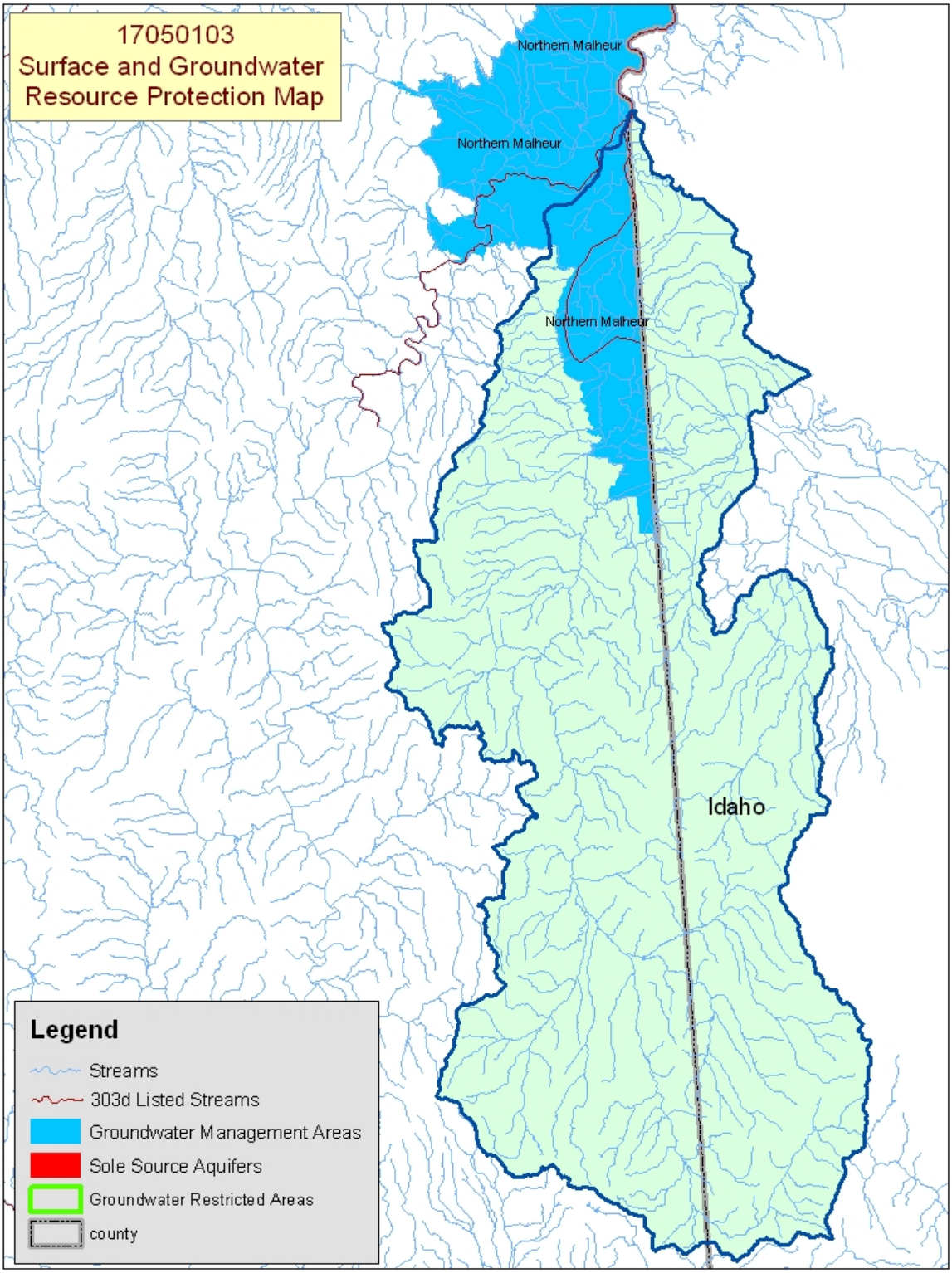
- Sheet and rill erosion by water on the cropland and pastureland have been reduced by nearly 16,000 tons of soil per year from 1982 to 1997.
- NRI estimates indicate that 3,500 acres of the agricultural land still had water erosion rates above a sustainable level in 1997.
- Controlling erosion not only sustains the long-term productivity of the land, but it also affects the amount of soil, pesticides, fertilizer, and other substances that move into the Nation's waters.
- Through NRCS programs, many farmers and ranchers have applied conservation practices to reduce the effects of erosion by water. As a result, erosion rates on the cropland and pastureland fell 42 percent, from 1.2 tons/acre/year to 0.7 ton/acre/year from 1982 to 1997.

303d/TMDL Listed Streams (DEQ): No streams are listed by the Oregon Department of Environmental Quality as having limited water quality.

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 & Assessments[18]	
Owyhee Watershed Council	None	Upper Middle Snake	

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	

(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**	**Confined Feeding Operations**
Soil Erosion	Concentrated Flow or Gully					X		
	Streambank					X		
	Irrigation Induced	X	X	X	X			
Soil Condition	Tilth, Crusting, Infiltration, Organic Matter		X	X				
Soil Contamination	Excess Fertilizers & Pesticides			X	X			X
Water Quantity	Water Management For Irrigated Land	X	X	X	X			
	Water Management For Nonirrigated Land					X		
Water Quality, Groundwater	Pesticides			X				
	Nutrients & Organics		X	X				
Water Quality, Surface	Pesticides			X				
	Nutrients & Organics		X	X				X
	Suspended Sediments & Turbidity	X	X	X		X		
	Pathogens		X	X	X			X
Air Quality	Undesirable Odors from Agricultural Sources							X
Plant Suitability	Site & Intended Use Suitability	X						
	Invasive and Noxious Weeds	X	X	X		X		
Plant Condition	Productivity, Health, & Vigor	X				X		
Plant Management	Establishment, Growth, & Harvest					X		
Animal Habitat, Domestic	Water - Quantity & Quality					X		
	Management							
Animal Habitat, Wildlife	Food, Cover, &/or Shelter	X	X	X		X		
Human, Economics	Land Use Constraints/Restrictions							X
	High Risk & Uncertainty			X	X			X
	High Capital/Financial Costs	X	X	X	X	X		X
	High Management Level Required			X	X			X
	Low or Unreliable Profitability	X	X	X	X			
Human, Political	Inadequate Availability of Cost Share Programs					X		
	High Degree of Controversy							X

Pasture / Hay

- Better irrigation water management generally is practiced on the areas of alfalfa than on the pasture.
- In some areas, the pasture is in poor condition because of a lack of proper grazing management.
- Areas of pasture commonly are adjacent to streams, which can contribute to streambank erosion and sedimentation due to the loss of riparian vegetation.

Grain and Row Crops

- Most grain is produced in rotation with other crops (potatoes, onions, corn, alfalfa, etc.)
- Irrigation-induced erosion can occur on fields used to produce crops such as potatoes or corn.
- Surface-irrigated grain is prone to irrigation-induced erosion.
- Surface irrigation of crops generates tailwater returns high in content of nutrients and sediment.
- Water conservation is always a concern with irrigated crops, although irrigation water management on row crops is better than that on pastures.

Orchard Crops

- A few apple orchards and other fruit orchards remain in the watershed; however, they are not as intensively managed as orchards across the Snake River in Idaho.

Confined Animal Feeding Operations (CAFOs)

- Livestock manure, pathogens, and odors are continuing issues surrounding CAFOs.
- Winter feeding of cow-calf herds can result in erosion and contribute to poor water quality.

Rangeland

- Rangeland can become infested with noxious weeds, annual grasses, and shrubs due to inadequate forage and grazing management.
- Loss of riparian vegetation contributes to the warming and nutrient-loading of streams.

Census and Social Data[/14]

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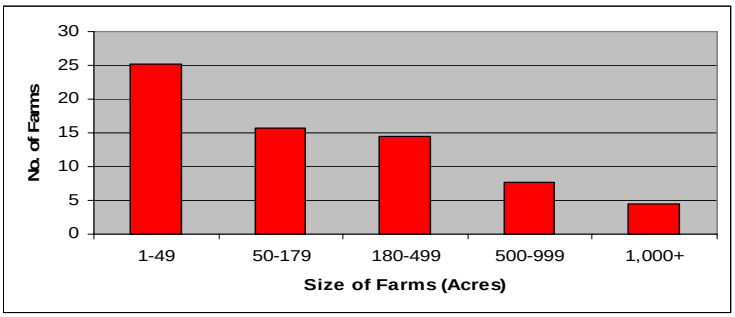
Number of Farms: 68

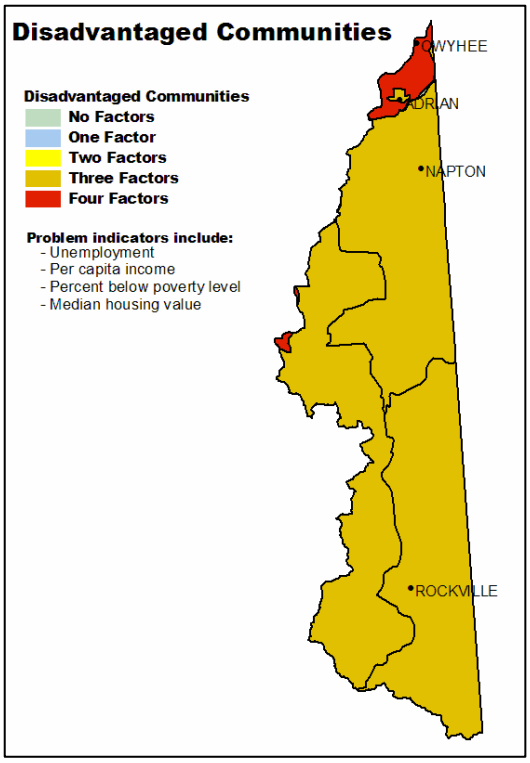
Number of Operators: 112

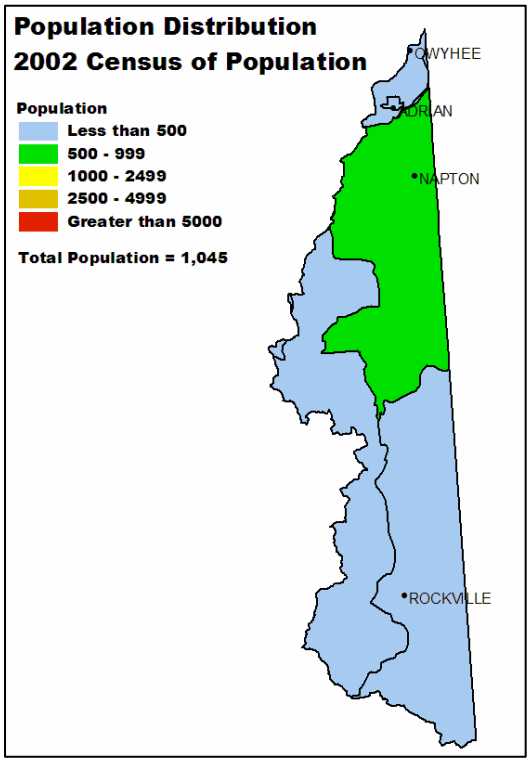
- Full-Time Operators: **47**
- Part-Time Operators: **65**



Estimated Level of Willingness and Ability to Participate in Conservation[/15]:
Moderate to High: Most operators in the Middle Snake/Succor subbasin are well educated, are aware of local resource concerns, are likely to have conservation plans, have adopted some conservation practices, and understand the economic and environmental benefits of conservation. Most recommended conservation practices can be implemented incrementally and are compatible with local management systems and equipment. The perceived high capital costs of conservation and risks associated with intense irrigated agriculture discourages many operators from adopting conservation systems. Additional financial incentives and other risk-reducing incentives may increase the adoption of conservation in the 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 active in school, church, and 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 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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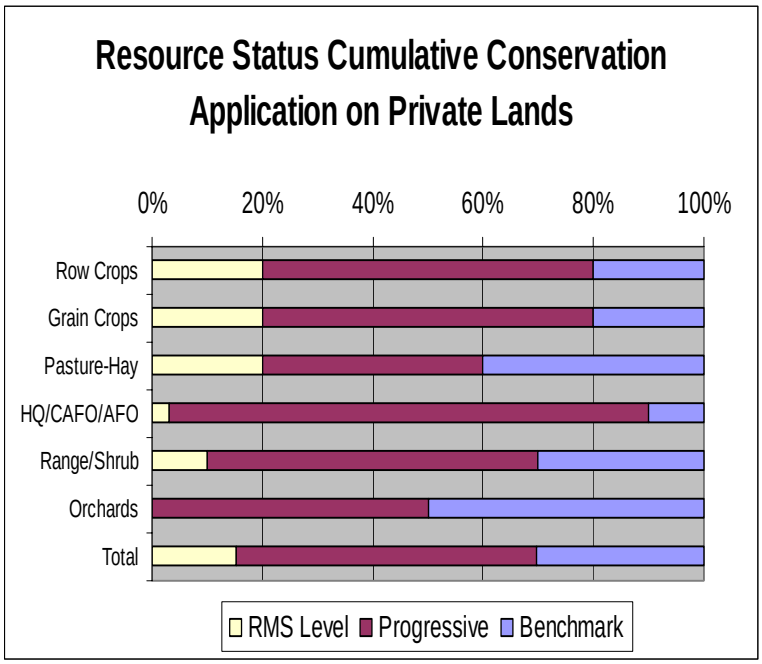
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg/Year	Total
Total Conservation Systems Planned (Acres)	0	146	74	0	276	99	496
Total Conservation Systems Applied (Acres)	0	146	5	0	300	90	451
Conservation Treatment (Acres)							
Waste Management	0	0	0	0	0	0	0
Buffers	0	0	0	0	0	0	0
Erosion Control	0	116	0	0	0	23	116
Irrigation Water Management	0	0	0	0	433	87	433
Nutrient Management	0	156	0	0	0	31	156
Pest Management	0	0	0	0	0	0	0
Prescribed Grazing	0	0	0	0	0	0	0
Trees & Shrubs	0	0	5	0	0	1	5
Conservation Tillage	0	0	0	0	0	0	0
Wildlife Habitat	0	25	45	0	0	14	70
Wetlands	0	0	5	0	0	1	5



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

- Progress over the last 5 years has been focused on:
  - Erosion control and irrigation water management in areas of grain and row crops.
  - Nutrient management.
  - Wildlife habitat management including buffers, trees, and shrubs in riparian areas.
- Most grain and row crop producers practice conservation cropping and residue management.
- Most hay producers practice good irrigation water management; however, inadequate grazing and water management is common on pastures.
- Most livestock operations are at the progressive level. Focus has been placed on meeting State CAFO regulations. High capital cost has hindered conservation adoption to the RMS level.

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.