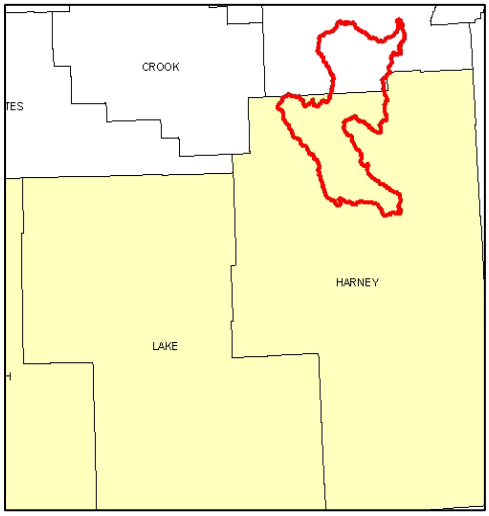
Silvies – 17120002

8-Digit Hydrologic Unit Profile

FINAL

FEBRUARY 2006



Introduction

The Silvies 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 815,000 acres in Harney and Grant Counties. Forty-seven percent of the subbasin is forestland, thirty-five percent is rangeland, and fifteen percent is grassland, hayland, and pastureland. There are three permitted CAFOs and about 6,000 permitted animals in the subbasin. Resource concerns include invasive, noxious weeds; sheet and rill erosion; insufficient water for irrigated lands, and declining fish and wildlife habitat. Low profitability, public controversy, and a lack of readily available technical assistance are significant concerns to most agricultural landowners.

There are 87 farms and 147 operators in the subbasin. Many of the farmers and ranchers have adopted conservation practices but are limited in their ability to do more because of insufficient financial assistance. Local leadership and community organizations are able to, and sometimes do, play a role in facilitating the diffusion of conservation throughout the subbasin.

The NRCS Hines and John Day Service Centers, Harney and Grant Soil and Water Conservation Districts, and Harney County Watershed Council provide conservation assistance in the subbasin.

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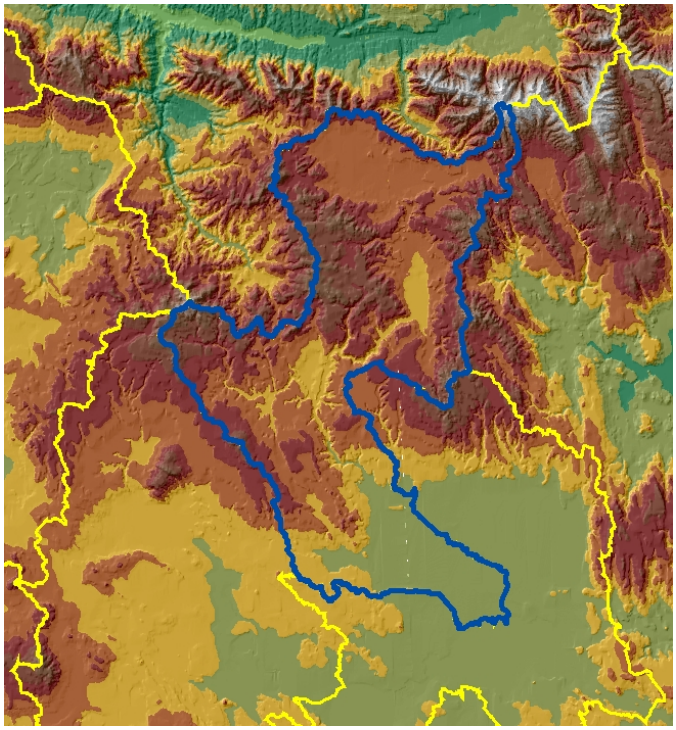

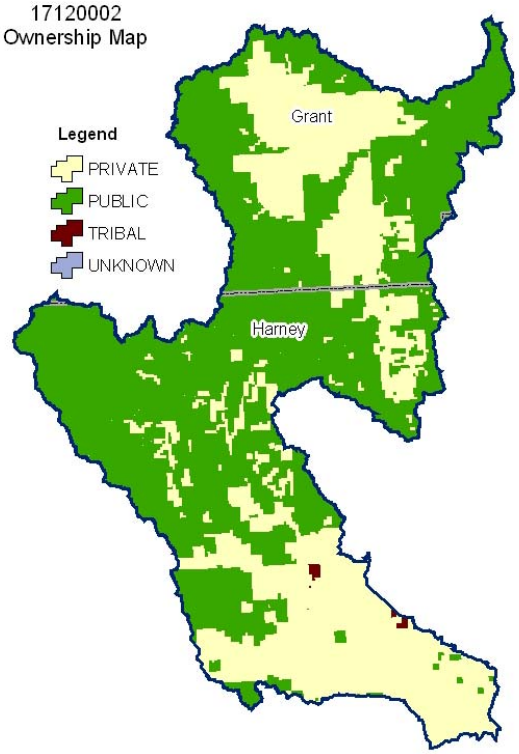

Produced by the Water Resources Planning Team Portland, OR

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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	330,600	41%	53,200	7%	*	---	383,800	47%
Grain Crops	*	---	*	---	0	0%	*	---
Conservation Reserve Program Land [a]	*	---	*	---	0	0%	*	---
Grass/Pasture/Hay	23,200	3%	94,400	12%	*	---	118,400	15%
Orchards/Vineyards	0	0%	0	0%	0	0%	0	0%
Row Crops	*	---	*	---	*	---	*	---
Shrub/Rangelands	149,100	18%	133,000	16%	*	---	282,600	35%
Water/Wetlands/Developed/Barren	*	---	26,400	3%	*	---	27,500	3%
Oregon HUC Totals [b]	**503,900**	**62%**	**309,600**	**38%**	*****	**---**	**814,900**	**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 of the private forestland is under non-industrial ownership and is used for grazing and timber production.
- Oats and peas are sometimes sown into new alfalfa stands for an early hay crop.

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	81,300	66%	10%
	Pastureland	42,700	34%	5%
	Total Irrigated Lands	**124,000**	**100%**	**15%**

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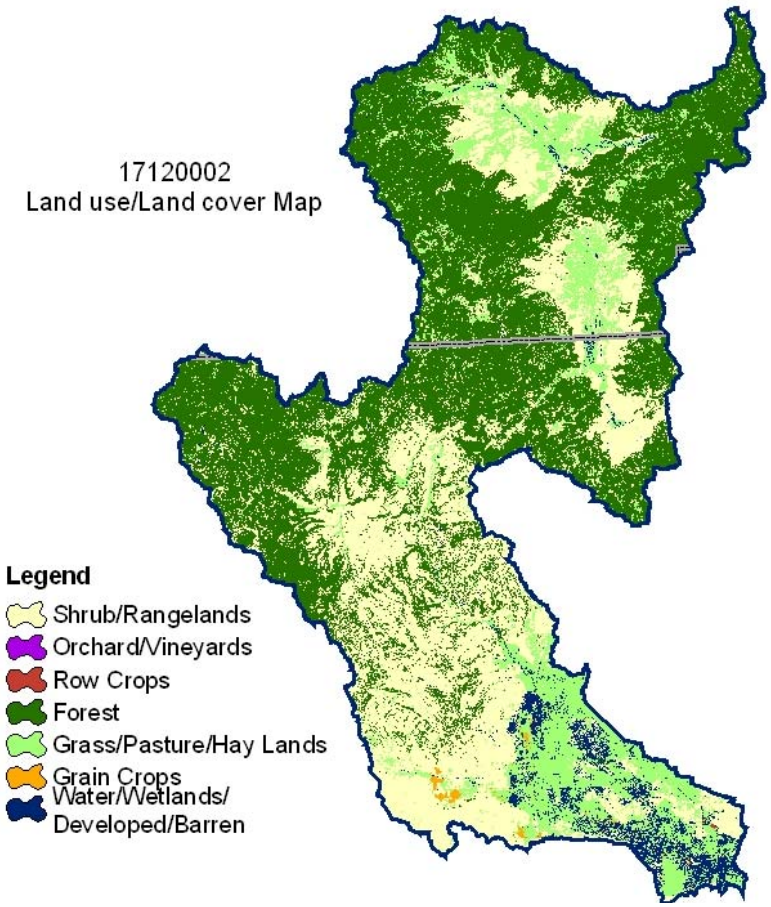

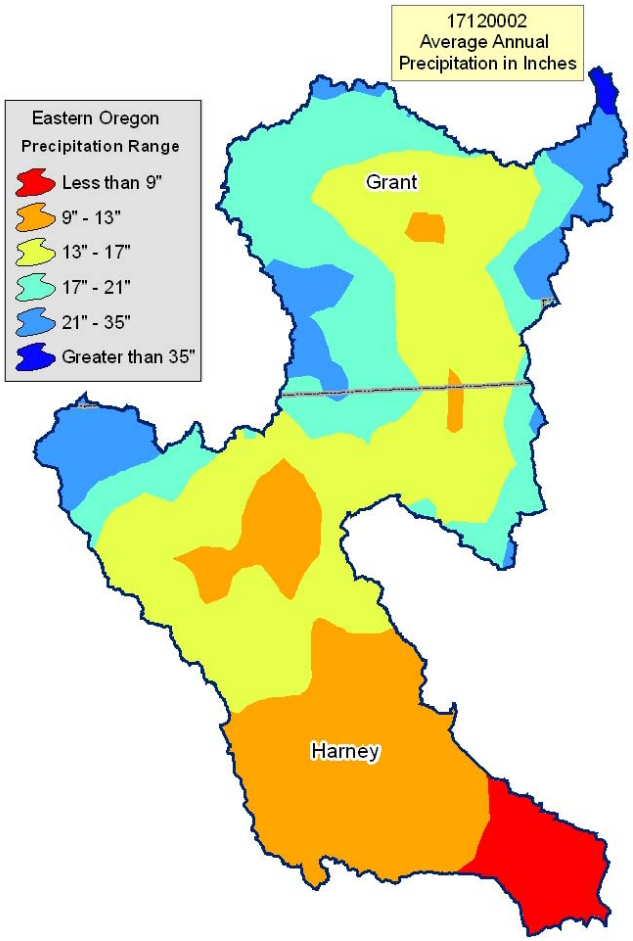

Common Resource Area Map

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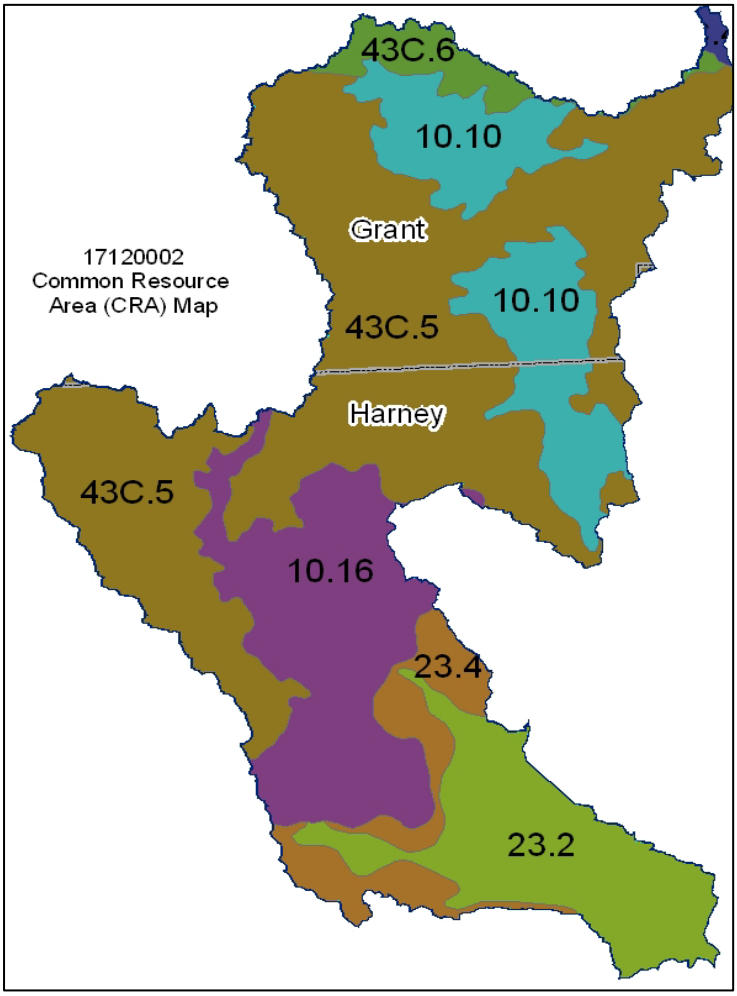
Only the major units are described below - for descriptions of all units within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



10.10 – Central Rocky and Blue Mountains Foothills - Cold Basins: This unit is characterized by cold basins surrounded by the forested 43C.5 unit. Examples include Silvies Valley, Big Summit Valley, Bear Valley and Logan Valley. The temperature regime is cryic or frigid, and the moisture regime is xeric.

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 receives more precipitation and has a xeric soil moisture regime. The dominant soils are those of the Ateron and Observation series. The temperature regime is frigid, and the moisture regime is xeric. The mean annual precipitation is 12 to 20 inches. The vegetation is dominantly mountain big sagebrush and Idaho fescue (cool, moist climate).

23.2 – Malheur High Plateau - Cool High Desert Wetlands: This unit is characterized by cold, wet basins that have a minimal amount of ash, if any. This unit is primarily in Harney Basin. The soils range from well drained to very poorly drained and from nonsaline and nonsodic to very strongly alkaline. Numerous ponded wetlands are present. The temperature regime is frigid, and the moisture regime is aridic with aquic soil conditions. The dominant soils are those of the Ausmus, Poujade, Widowspring, and Lawen series.

43C.5 – Blue and Seven Devils Mountains - Continental Zone Highlands: This unit is characterized by one of the lowest amounts of precipitation and warmest temperatures within the MLRA. The bedrock typically is basalt and rhyolite, which result in shallow, gravelly and cobbly soils. The temperature regime is frigid, and the moisture regime is xeric. The vegetation is dominantly ponderosa pine, scattered Douglas-fir, western juniper, bitterbrush, and mahogany. Ash-influenced soils typically are absent.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	12,438	34,434
	Well	12,408	37,066
	Total Irrigated Adjudicated Water Rights	24,846	71,500
Stream Flow Data	USGS 10393500 SILVIES RIVER, NEAR BURNS, OR	**Total Avg. Yield**	129,870
		May – Sept. Yield	40,572
		MILES	**PERCENT**
Stream Data[5] **Percent of Total Miles of Streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	595	---
	303d/TMDL Listed Streams (DEQ)	71	12%
	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	14,800	40%
	Grain Crops	69	0%
	Grass/Pasture/Hay	8,281	23%
	Orchards/Vineyards	0	0%
	Row Crops	10	0%
	Shrub/Rangelands – Includes CRP Lands	11,242	31%
	Water/Wetlands/Developed/Barren	2,232	6%
	Total Acres of 100-foot Stream Buffers	**36,635**	**---**
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	102,000	69%
	4 – very severe limitations	12,000	8%
	5 – no erosion hazard, but other limitations	11,000	7%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	23,100	16%
	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	**148,100**	**---**

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

Animal Type	Dairy	Feedlot	Poultry	Swine	Mink	Other
No. of Permitted Farms	1	2	0	0	0	0
No. of Permitted Animals	3,850	1,550	0	0	0	0

Resource Concerns

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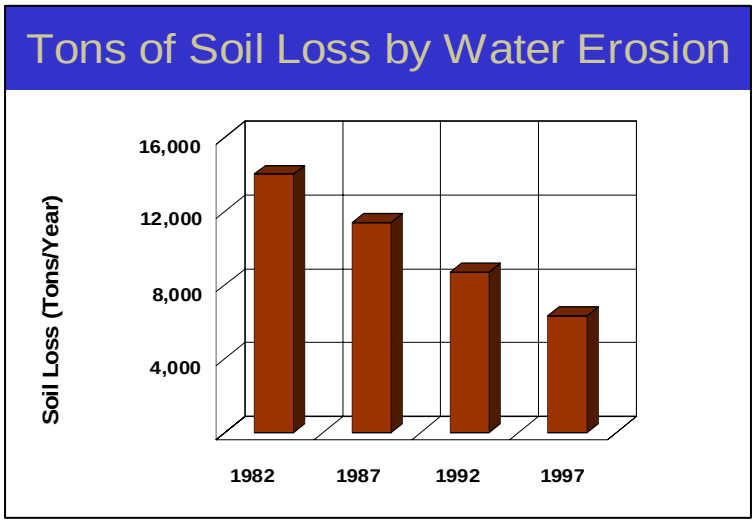
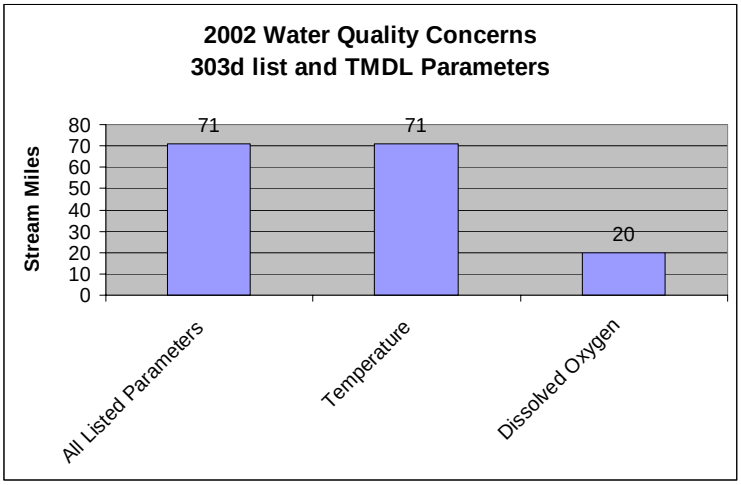


- Sheet and rill erosion by water on the cropland and pastureland have been reduced by nearly 8,000 tons of soil per year from 1982 to 1997.
- NRI estimates indicate that none of the agricultural lands still had water erosion rates above a sustainable level in 1997.
- Controlling erosion not only sustains 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.



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

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	Greater Harney Basin	Completed
OWEB Watershed Council[10]	Watershed Council Assessments[11]	NWPCC Subbasin Plans & Assessments[18]	
Harney County Watershed Council	Silvies Subbasin Assessment	None	

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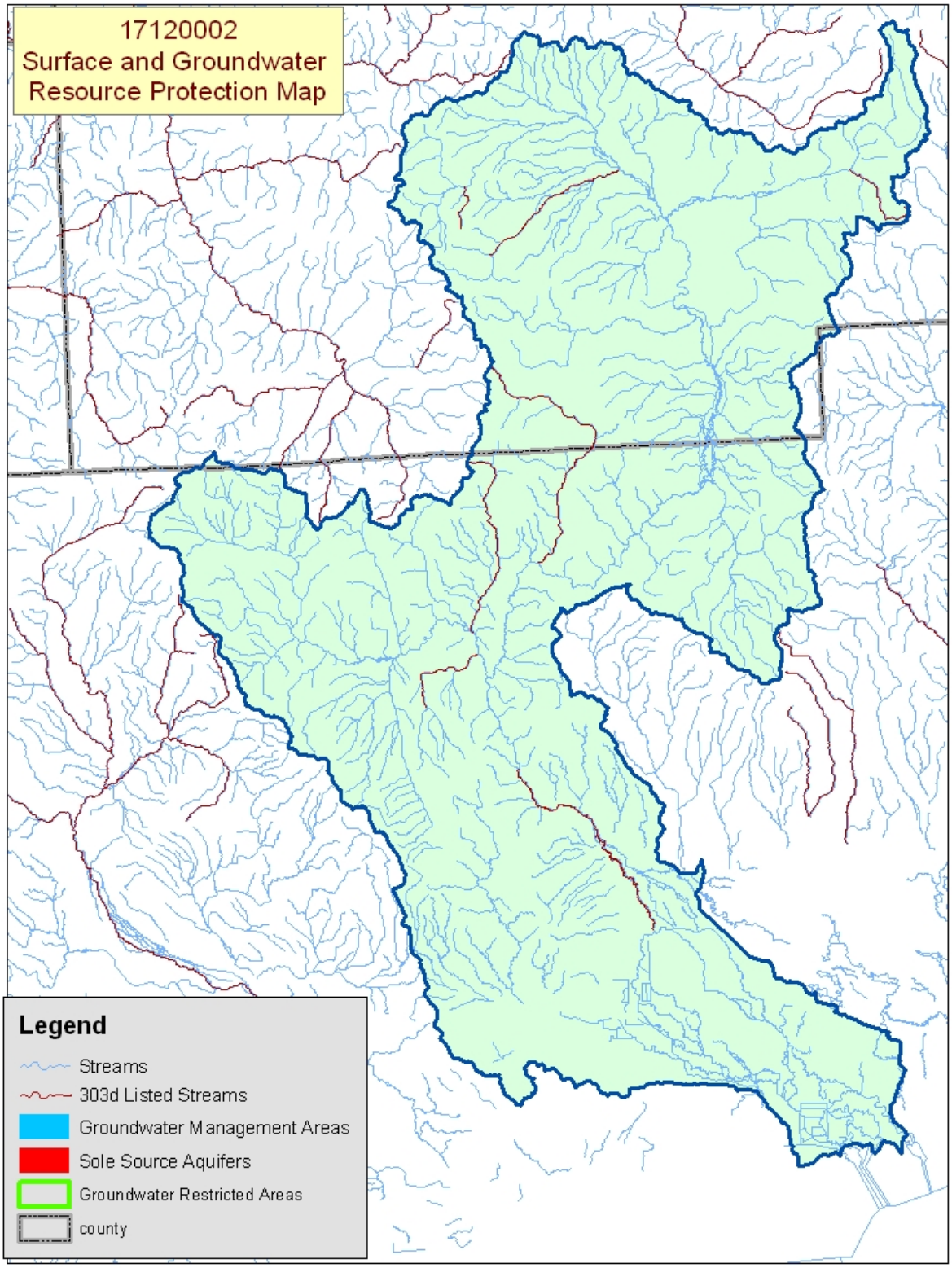

Map Footnote [17]

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	Sheet and Rill					X	
Water Quantity	Ponding and Flooding	X					
	Water Management for Irrigated Land	X					
Water Quality, Surface	Temperature					X	
Plant Suitability	Site & Intended Use Suitability	X				X	
Plant Condition	Productivity, Health, and Vigor	X					
Animal Habitat, Domestic	Water - Quantity and Quality					X	
Animal Habitat, Wildlife	Water - Quantity and Quality					X	
Human, Economics	Low or Unreliable Profitability	X				X	
Human, Political	Lack of Technical Assistance	X				X	X
	High Degree of Controversy	X				X	X

Grass / Pasture / Hay

- Water conservation is an issue in areas used for irrigated hay and pasture on most ranches.
- Wind erosion can be a concern in areas of sandy soils where the forage has not been properly managed as cover or for maximum production.
- A low economic return limits adoption of appropriate conservation practices.
- Recently, landowners have been very interested in practices (use of flow meters and soil moisture sensors and retrofitting of sprinklers) that would assist them with irrigation water management and scheduling.

Shrub / Rangeland

- Rangeland productivity can be reduced by the invasion of noxious weeds, annual grasses, brush, and juniper.
- Loss of riparian vegetation can contribute to stream warming.
- Low profit limits adoption of conservation practices.

Forestland

- Much of the private, non-industrial forestland has been thinned in the recent past. Poor markets and lack of nearby mills have reduced timber harvesting and limited the need for additional forest management activities at this time.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES[12]	
THREATENED SPECIES	**CANDIDATE SPECIES**
Mammals- Canada lynx **Birds –** Bald eagle **Fish –** Borax Lake chub, Lahontan cutthroat trout, Bull trout **Plants –** Malheur wire-lettuce	**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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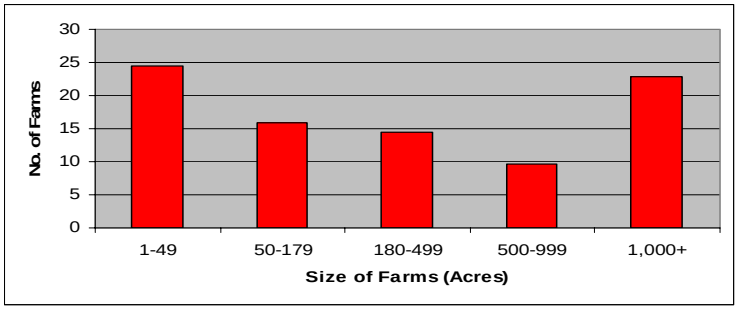
Number of Farms: 87

Number of Operators: 147

- Full-Time Operators: **54**
- Part-Time Operators: **93**



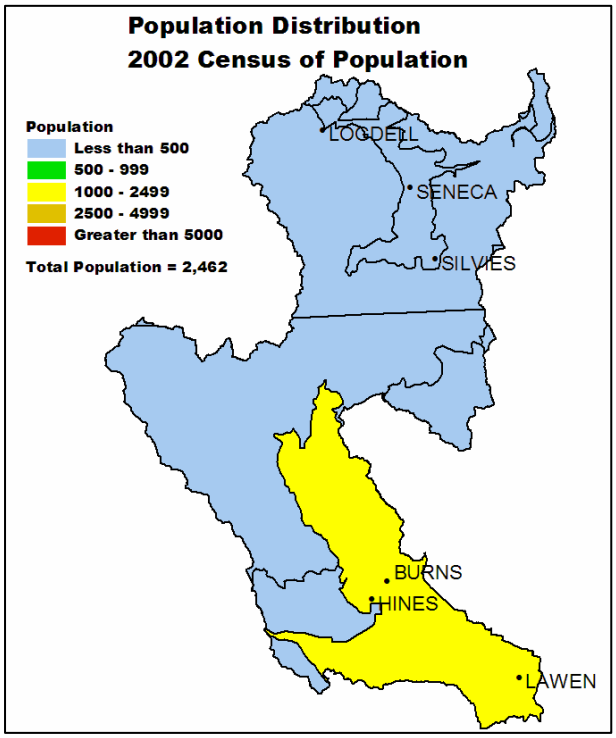
Estimated Level of Willingness and Ability to Participate in Conservation[15]: High

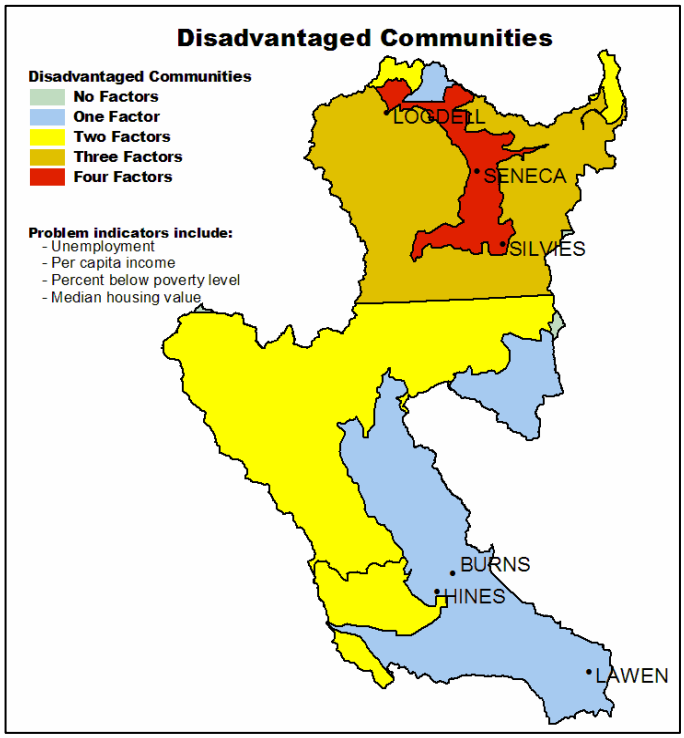
Most farmers and ranchers in the Silvies subbasin are aware of local resource concerns and manage their resources prudently. They are generally willing to adopt conservation and have a positive stewardship attitude. Conservation is not more widely diffused throughout the subbasin because of insufficient financial assistance and concern by some regarding the efficacy of conservation.

Evaluation of Social Capital[16]: Moderate

The geographic distance between community members, local businesses, schools, churches, parks, and other community amenities is great; getting together commonly requires a drive of an hour or more each way. Many of the residents regularly put forth the effort, drive the distance, and work together to solve problems and complete projects.

Local leadership and community organizations are able to, and sometimes do, play a role in facilitating the diffusion of conservation throughout the subbasin.





Progress / Status

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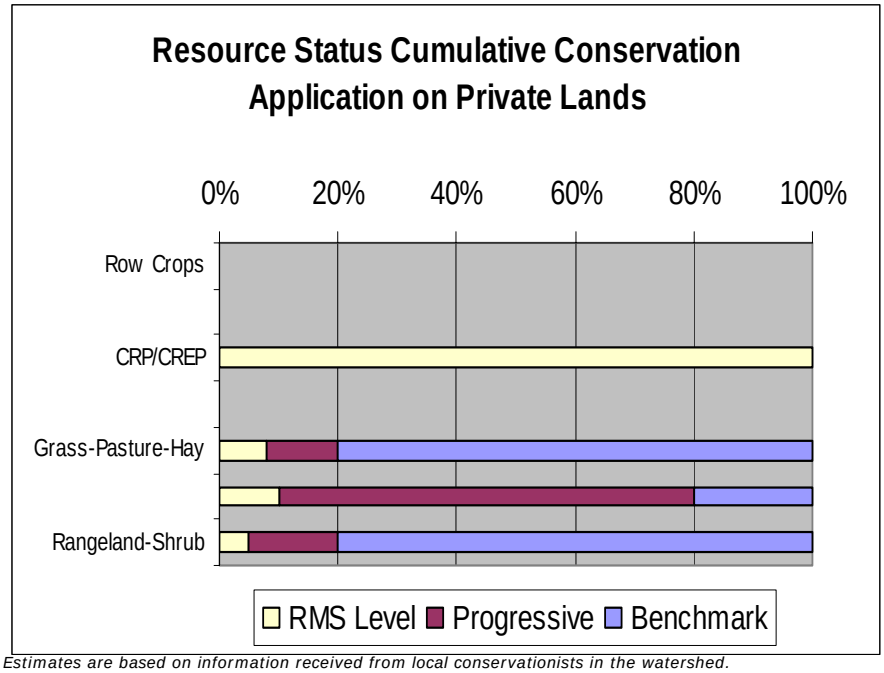
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg / Year	Total
Total Conservation Systems Planned (Acres)	7,090	2,934	1,284	242	2,100	2,730	13,650
Total Conservation Systems Applied (Acres)	2,460	0	9,751	446	4,742	3,480	17,399
Conservation Treatment (Acres)							
Waste Management	0	0	0	0	0	0	0
Buffers	0	0	0	0	0	0	0
Erosion Control	873	0	0	0	0	175	873
Irrigation Water Management	428	0	10	0	0	88	438
Nutrient Management	290	0	0	0	0	58	290
Pest Management	112	795	209	0	0	223	1,116
Prescribed Grazing	3,556	1,885	14,950	446	4,108	4,989	24,945
Trees and Shrubs	1	0	0	1	0	0	2
Conservation Tillage	0	0	0	0	0	0	0
Wildlife Habitat	6,991	1,272	9,655	566	0	3,697	18,484
Wetlands	26	0	0	0	0	5	26



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

Progress over the last 5 years has been focused on:

- ~ Pest management on cropland.
- ~ Prescribed grazing on pastureland and rangeland.
- ~ Wildlife habitat management in riparian areas and on uplands.

- ❖ Much of the pasture is flood irrigated and lacks proper forage and grazing management.
- ❖ Proper grazing management and watering facilities for livestock and wildlife commonly are lacking on the rangeland.
- ❖ Private forestland, largely non-industrial, has been thinned in the recent past.

Lands Removed from Production through Farm Bill Programs

- ❖ Conservation Reserve Program (CRP): **289 acres**
- ❖ Wetland Restoration Program (WRP): **2,224 acres**
- ❖ 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.