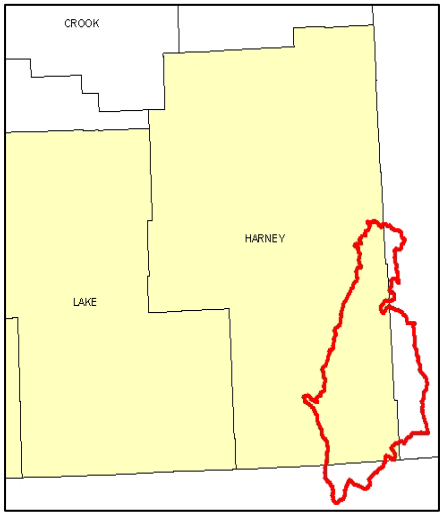
Alvord Lake – 17120009

8-Digit Hydrologic Unit Profile

FINAL

FEBRUARY 2006



Introduction

The Oregon part of the Alvord Lake 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 1.3 million acres, mostly public land, in Harney and Malheur Counties. Seventy-eight percent of the subbasin is rangeland and twelve percent is grassland, hayland, and pastureland. Resource concerns include invasive, noxious weeds; sheet and rill erosion; insufficient water for irrigated lands; and declining fish, wildlife, and domestic animal habitat. Low profitability, public controversy, and a lack of readily available technical assistance are significant concerns for most agricultural landowners. Increasing corporate and absentee ownership of large ranches and farms is a disturbing trend to many long-term residents.

There are 25 farms and 42 operators in the subbasin. Generally, it appears that landowners in the Alvord Lake subbasin are able but not willing to adopt conservation practices. Marketing of conservation, increasing availability of timely technical assistance, and modifying programs to meet the needs of large operations (such as those in this subbasin) may increase the diffusion of conservation in the subbasin.

The NRCS Hines Service Center and Harney Soil and Water Conservation District provide conservation assistance in the subbasin.

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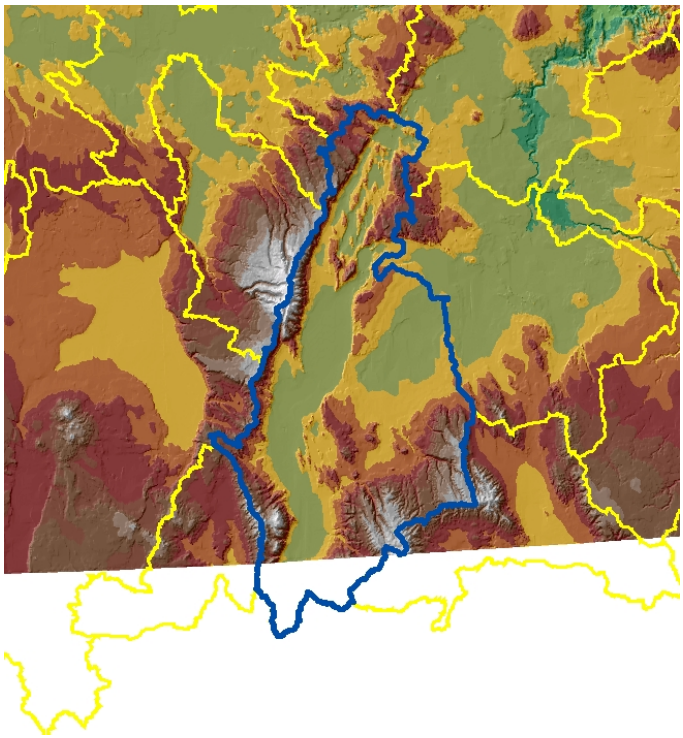

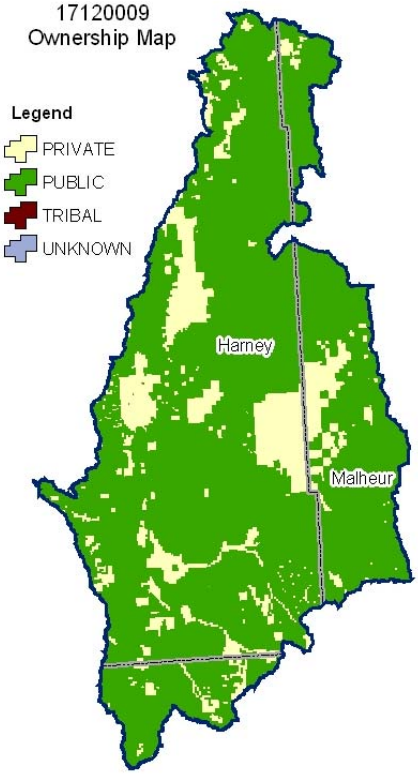

Produced by the Water Resources Planning Team Portland, OR

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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	13,300	1%	*	---	0	0%	**15,600**	**1%**
Grain Crops	*	---	*	---	0	0%	*****	**---**
Conservation Reserve Program Land [a]	0	0%	0	0%	0	0%	**0**	**0%**
Grass/Pasture/Hay	94,700	7%	58,100	5%	0	0%	**152,800**	**12%**
Orchards/Vineyards	0	0%	0	0%	0	0%	**0**	**0%**
Row Crops	*	---	*	---	0	0%	*****	**---**
Shrub/Rangelands	876,600	69%	123,700	10%	0	0%	**1,000,300**	**78%**
Water/Wetlands/Developed/Barren	93,400	7%	16,400	1%	0	0%	**109,800**	**9%**
Oregon HUC Totals [b]	**1,078,000**	**84%**	**201,500**	**16%**	**0**	**0%**	**1,279,600**	**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:

- Oats and peas sometimes are 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	900	5%	0%
	Pastureland	15,800	95%	1%
	Total Irrigated Lands	**16,700**	**100%**	**1%**

(Continued on the following pages)

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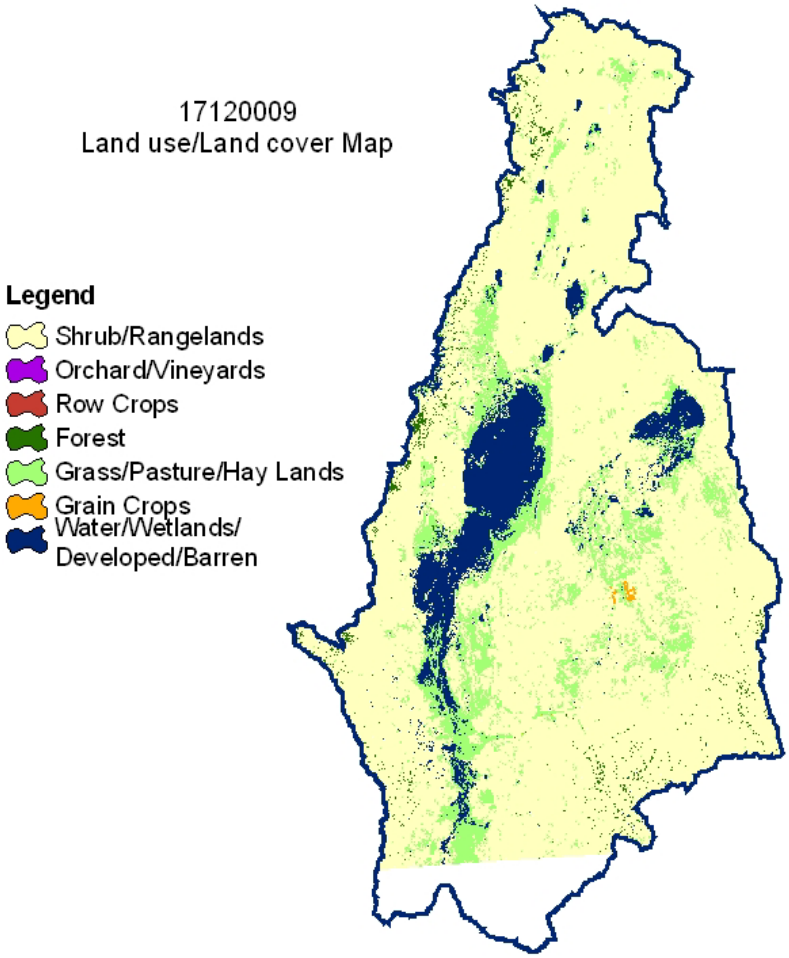

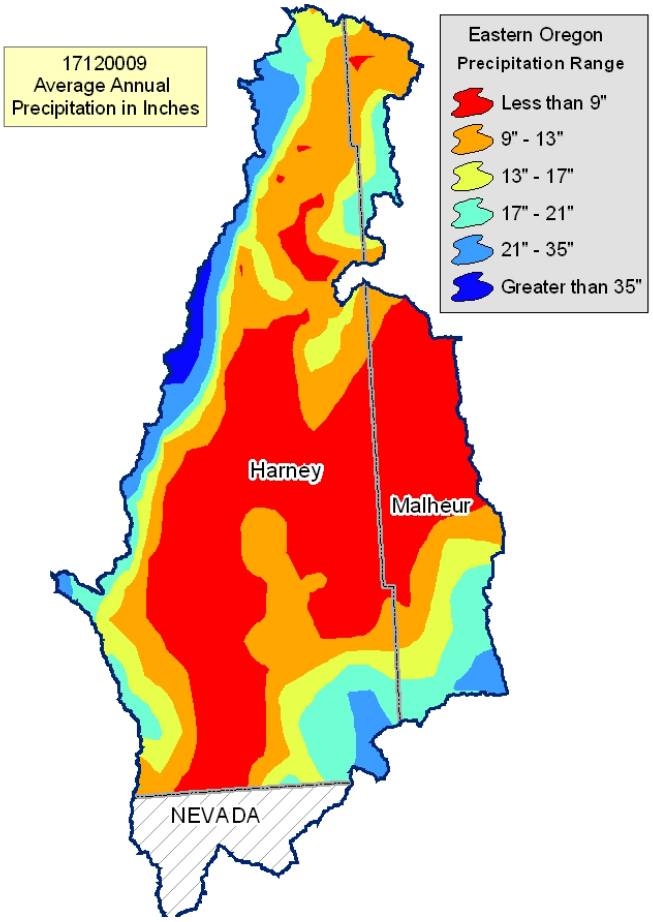

Common Resource Area Map

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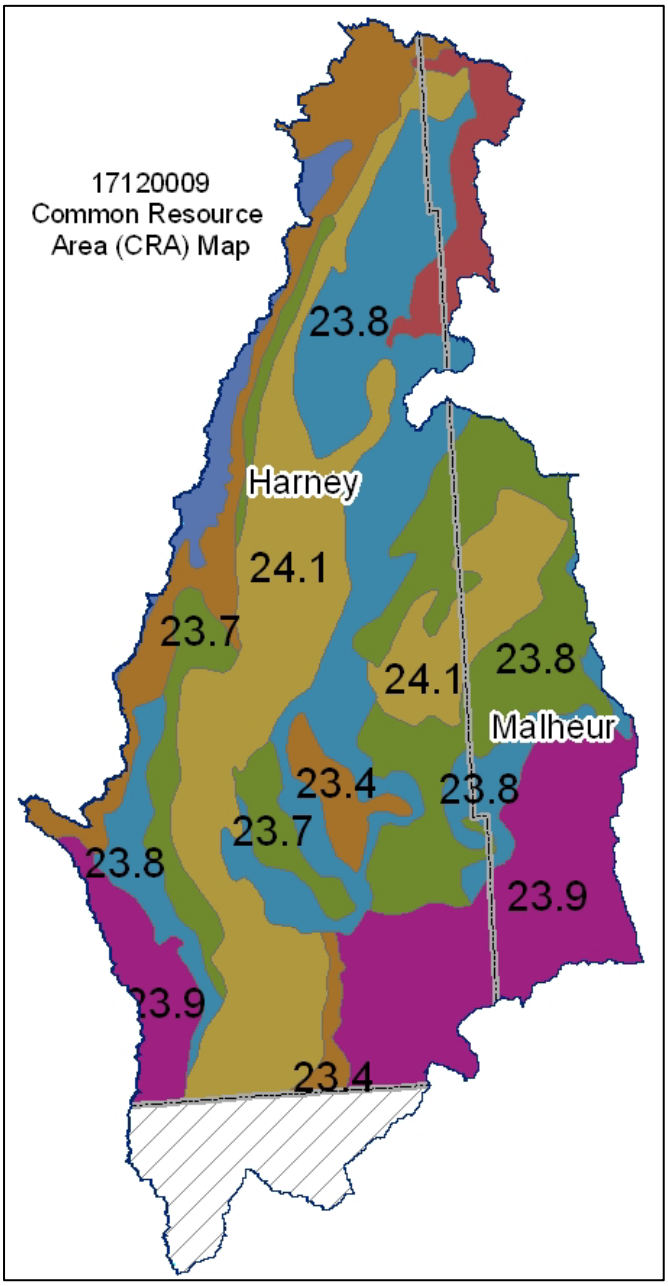
Only the major units are described below - for descriptions of all units within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



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 and are more than 60 inches deep to bedrock. The soil temperature regime is mesic but near frigid, and the moisture regime is aridic. The dominant soils are those of the Deppy, McConnel, Spangenburg, and Norad series.

23.8 – Malheur High Plateau - Low Lava Plains: This unit is on basalt plateaus and 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 soil temperature regime generally is mesic or frigid but is cryic on north-facing aspects and high peaks. The moisture regime typically is aridic bordering on xeric or is xeric. The soils range from very shallow to very deep, but they are dominantly shallow or moderately deep. The vegetation typically 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 mostly mesic, and the moisture regime is aridic. Large playas are typical. The vegetation typically is black greasewood, inland saltgrass, and basin wildrye along with spiny hopsage, budsage, shadscale, and Wyoming big sagebrush.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	18,880	55,494
	Well	11,549	34,648
	Total Irrigated Adjudicated Water Rights	30,429	90,142
Stream Flow Data	USGS 10406500 TROUT CREEK, NEAR DENIO, NV	**Total Avg. Yield**	12,022
		May – Sept. Yield	6,908
		MILES	**PERCENT**
Stream Data[5] **Percent of Total Miles of Streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	458	---
	303d/TMDL Listed Streams (DEQ)	72	16%
	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	1,108	2%
	Grain Crops	60	0%
	Grass/Pasture/Hay	6,360	11%
	Orchards/Vineyards	0	0%
	Row Crops	0	0%
	Shrub/Rangelands – Includes CRP Lands	46,996	82%
	Water/Wetlands/Developed/Barren	2,596	5%
	Total Acres of 100-foot Stream Buffers	**57,131**	**---**
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**1** – slight limitations	0	0%
	2 – moderate limitations	900	5%
	3 – severe limitations	8,200	49%
	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	7,600	46%
	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	**16,700**	**---**

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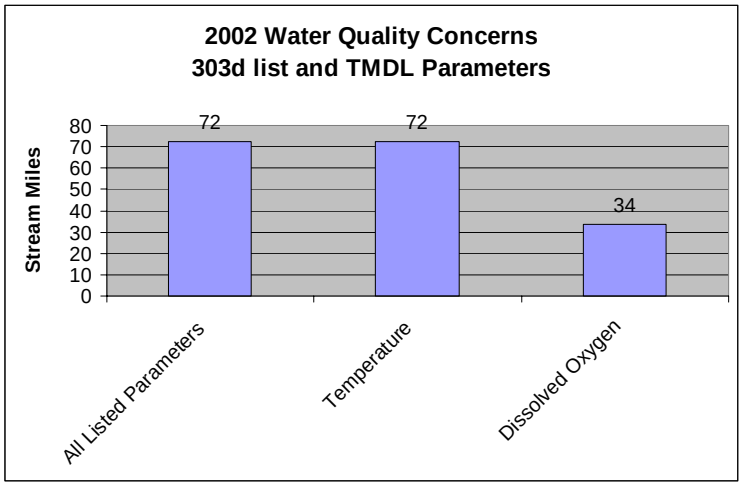
Tons of Soil Loss by Water Erosion: Due to the limited amount of non-Federal cropland and pastureland within this HUC, no reliable NRI soil loss estimates are available.



- 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
Alvord Lake Subbasin	Completed	Greater Harney Basin	Completed

OWEB Watershed Council[10]	Watershed Council Assessments[11]	NWPCC Subbasin Plans and Assessments[18]
Harney County Watershed Council, Owyhee Watershed Council	None	None

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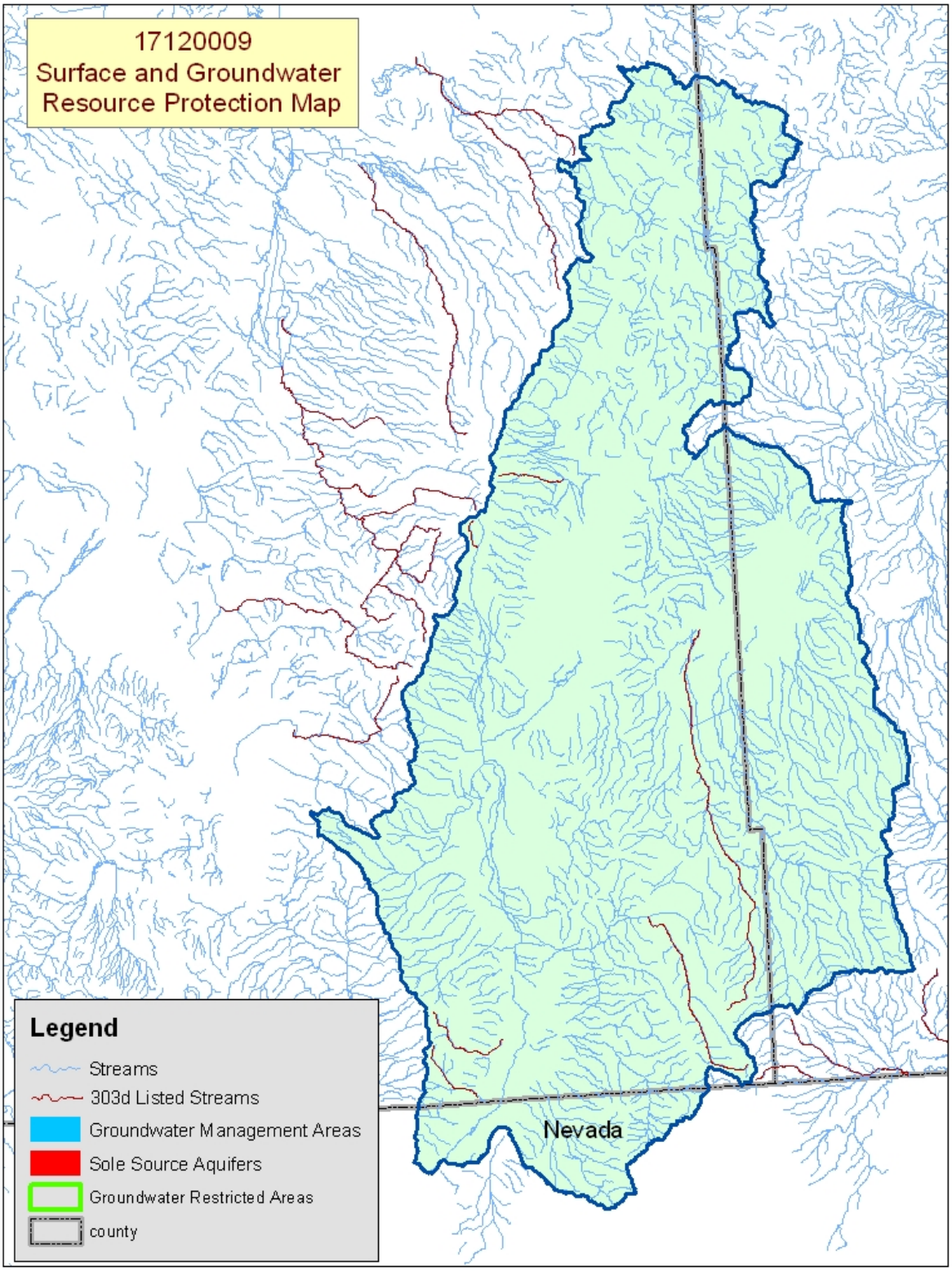

Map Footnote [17]

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 and 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	
	High Degree of Controversy	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.

Land Tenure

- Increasing corporate and absentee ownership of large ranches and farms is a disturbing trend to many long-term residents.

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

Census and Social Data[14]

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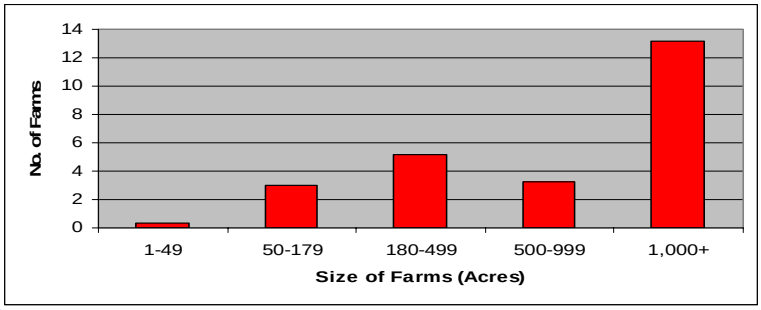
Number of Farms: 25

Number of Operators: 42

- Full-Time Operators: **16**
- Part-Time Operators: **26**



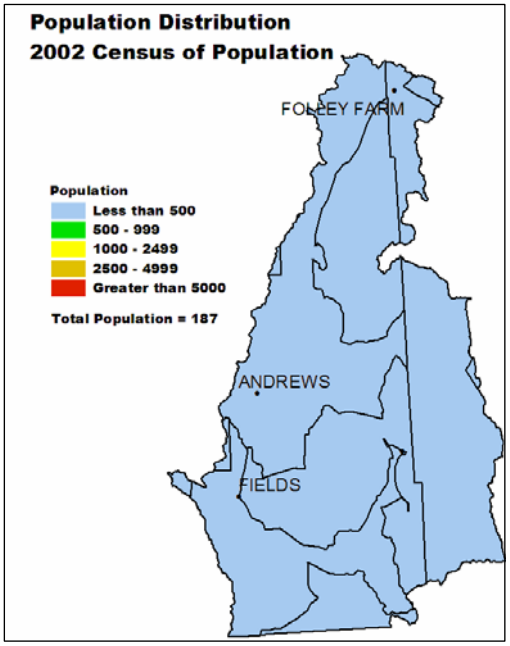
Estimated Level of Willingness and Ability to Participate in Conservation[15]: Low to Moderate

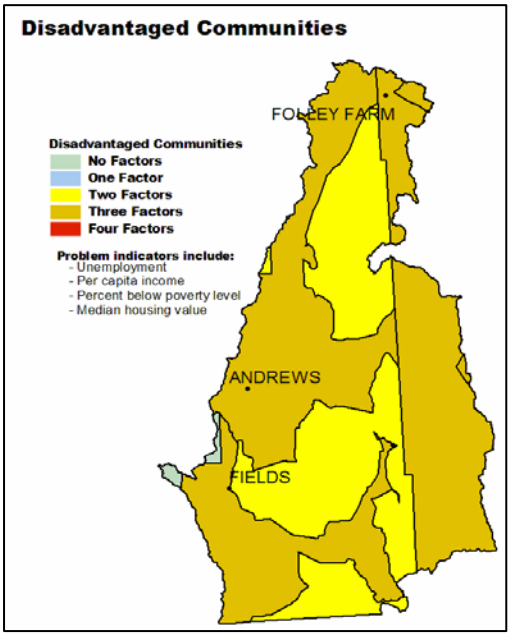
Most ranchers in the Alvord Lake subbasin are aware of local resource concerns and the relevance of their operation to these concerns. They are experienced resource managers, and their operations are in relatively good financial health. On the other hand, most of the ranchers are not early adopters of agricultural innovations and conservation practices; few have adopted conservation practices or systems. Generally, it appears that landowners in the Alvord Lake subbasin are able but not willing to adopt conservation practices.

Marketing of conservation, increasing availability of timely technical assistance, and modifying programs to meet the needs of large operations (such as those in this subbasin) may increase the diffusion of conservation in the subbasin.

In the Alvord Lake subbasin, there is a trend toward corporate and absentee ownership of very large ranches. If this trend continues, NRCS will need to make significant changes in the conservation assistance it delivers.

Evaluation of Social Capital[16]: 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. Occasionally residents will put forth the effort, drive the distance, and work together to solve problems and complete projects. As corporate and absentee ownership increases, however, the ability of the local community to be a force behind conservation may likely diminish.





Progress / Status

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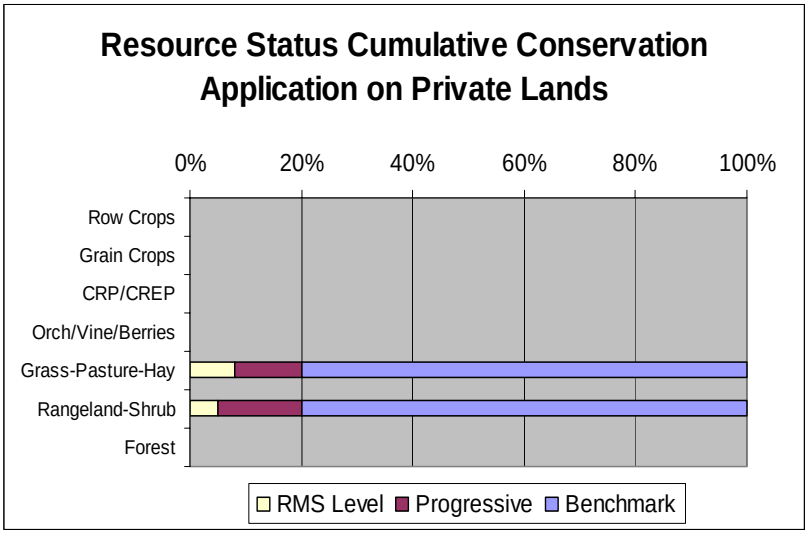
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg / Year	Total
Total Conservation Systems Planned (Acres)	0	0	0	0	0	0	0
Total Conservation Systems Applied (Acres)	0	0	0	0	0	0	0
Conservation Treatment (Acres)							
Waste Management	0	0	0	0	0	0	0
Buffers	0	0	0	0	0	0	0
Erosion Control	0	0	0	0	0	0	0
Irrigation Water Management	0	0	0	0	0	0	0
Nutrient Management	0	0	0	0	0	0	0
Pest Management	0	0	0	0	0	0	0
Prescribed Grazing	0	0	0	0	0	0	0
Trees and 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.

- Little progress on conservation adoption has been made in this subbasin. This is partly due to its remoteness.
- Much of the pastureland 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 under non-industrial ownership, has been thinned in the recent past.

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.