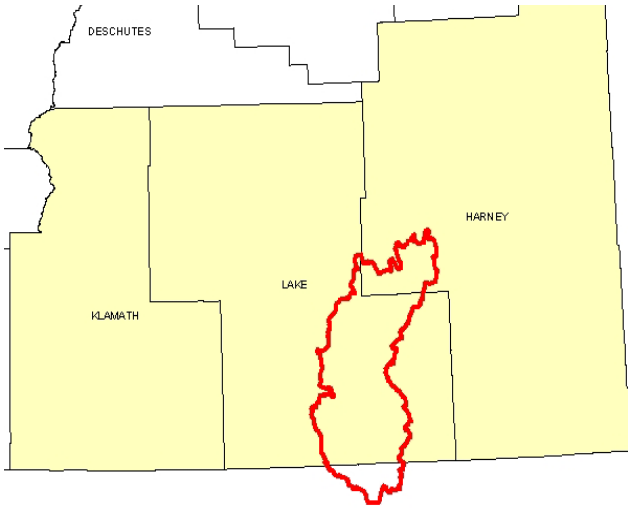
Warner Lakes- 17120007

8-Digit Hydrologic Unit Profile

SWCD	Acres
Lakeview	885,495
Harney	194,824
Fort Rock / Silver Lake	18,880

Introduction



The Warner Lakes 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 1,214,838 acres. Seventy-four percent of the subbasin is in Lake County, in south-central Oregon, sixteen percent is in Harney County, and the remaining ten percent is in California and Nevada. Eighty-three percent of the subbasin is under public ownership.

Seventy-two percent of the private and public land in the subbasin is rangeland, ten percent is forest land, and eight percent is pastureland and hayland. The subbasin is largely unpopulated with only about 40 farmers and ranchers and 25 farms.

Conservation assistance is provided by three NRCS service centers, one soil survey office, and four soil and water conservation districts.

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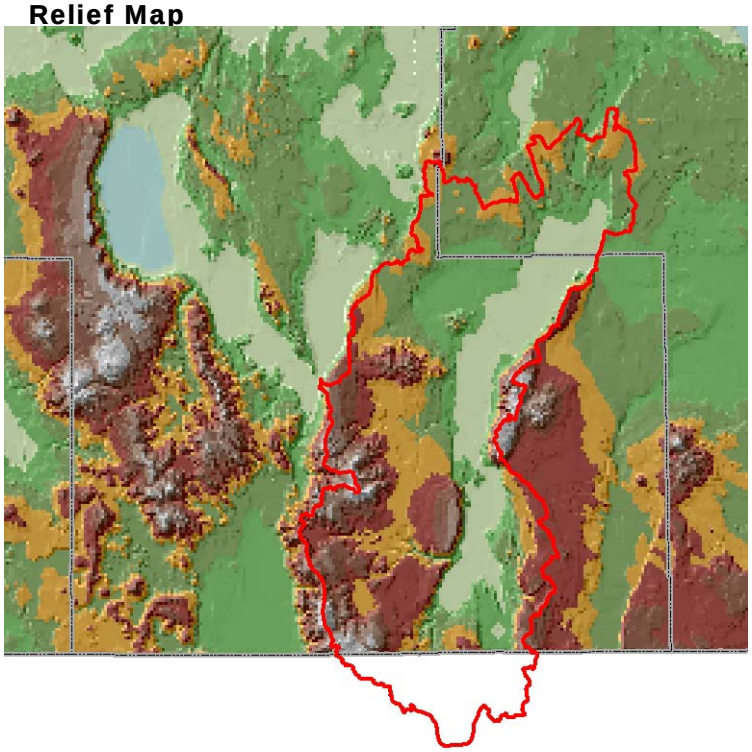
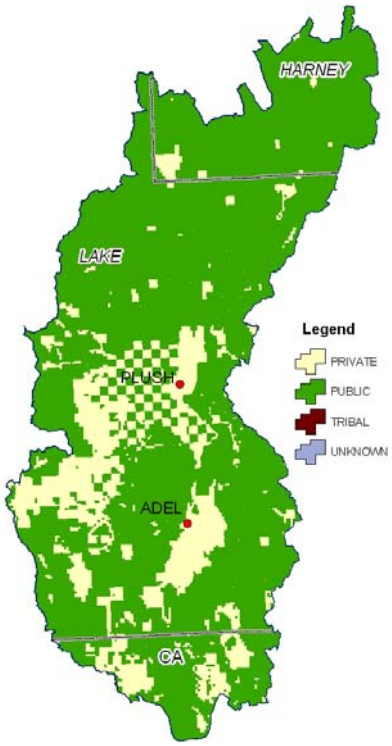
Relief Map





Produced by the Water Resources Planning Team Portland, OR

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Physical Description

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ALL NUMBERS WITHIN THIS PROFILE ARE FOR OREGON ONLY

Land Cover/Land Use (NLCD[12])	Ownership - (2003 Draft BLM Surface Map Set[11])							
	Public		Private		Tribal		Totals [b]	%
	Acres	%	Acres	%	Acres	%		
Forest	80,100	7%	31,800	3%	0	0%	111,900	10%
Grain Crops	*	---	*	---	0	0%	*	---
Conservation Reserve Program Land [a]	0	0%	0	0%	0	0%	0	---
Grass/Pasture/Hay	61,200	6%	26,300	2%	0	0%	87,500	8%
Orchards/Vineyards	0	0%	0	0%	0	0%	0	0%
Row Crops	*	---	*	---	0	0%	*	---
Shrub/Rangelands	678,700	62%	106,900	10%	0	0%	785,600	72%
Water/Wetlands/Developed/Barren	81,100	7%	32,400	3%	0	0%	113,500	10%
Oregon HUC Totals [b]	**901,100**	**82%**	**197,500**	**18%**	**0**	**0%**	**1,098,600**	**100%**

**: Less than one 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:

- ~ Cattle ranching is the primary agricultural use.
- ~ Over 50 percent of the private forest land is under industrial forest ownership and management.
- ~ About 200 acres of irrigated wheat is grown in the hydrologic unit.
- ~ Pastureland and hayland also includes natural grasslands.

Irrigated Lands (1997 NRI[13] Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	1,800	4%	<1%
	Uncultivated Cropland	35,400	83%	3%
	Pastureland	5,600	13%	<1%
	Total Irrigated Lands	**42,800**	**100%**	**4%**

(Continued on following pages)

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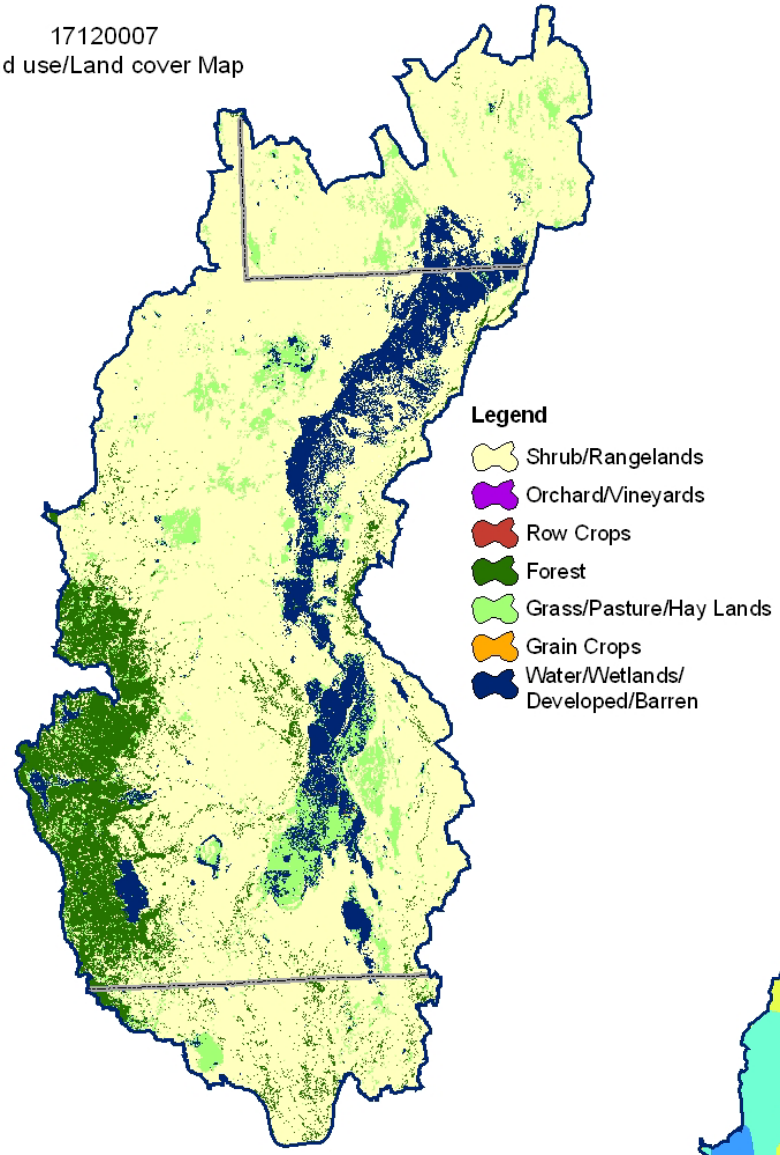
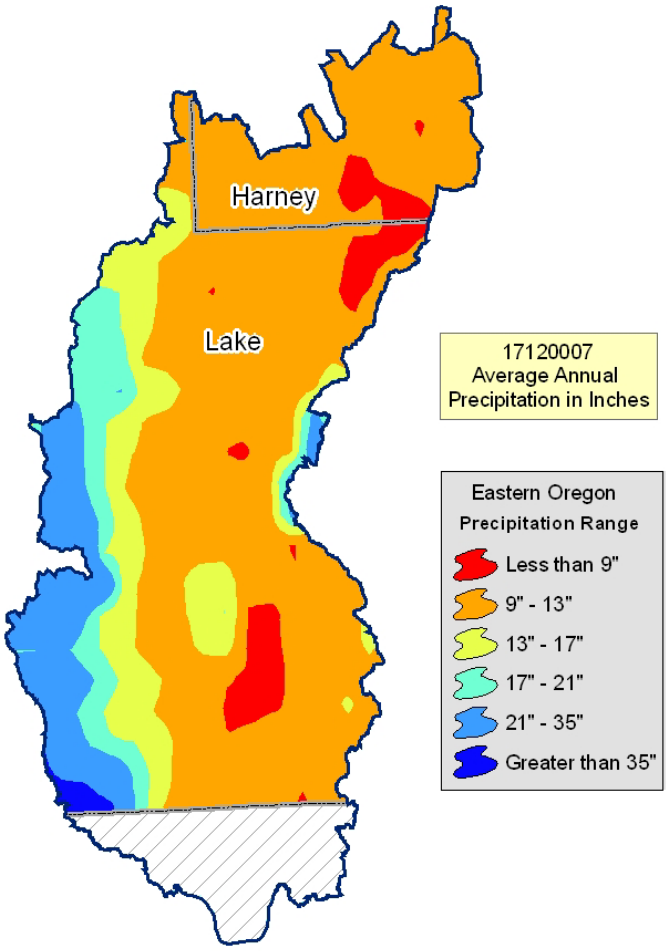
17120007
Land use/Land cover Map





Common Resource Area Map

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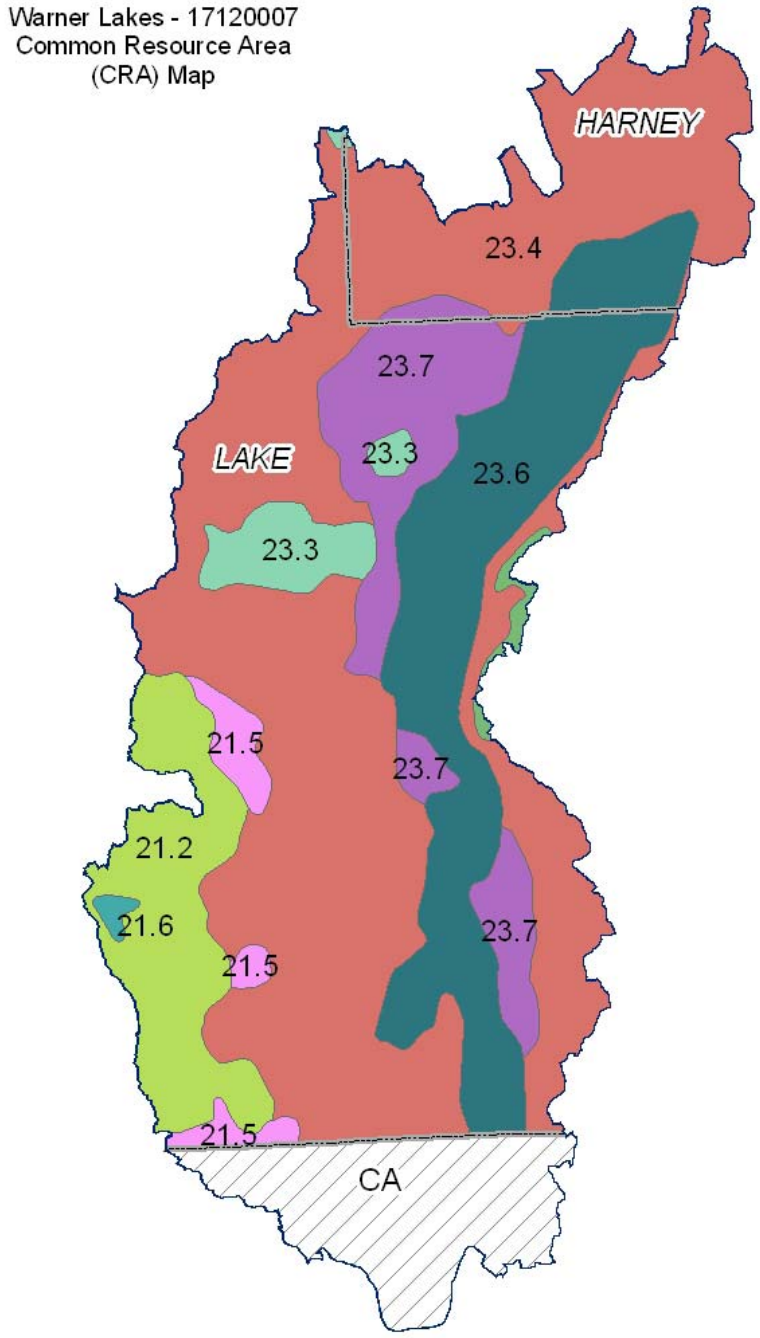
Only the major units are described below - for descriptions of all units within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



21.2 - Klamath and Shasta Valleys and Basins - Fremont Pine-Fir Forest: This unit is characterized by forested mountains and plateaus in the eastern part of the MLRA. The temperature regime is dominantly frigid but is cryic in the higher lying areas, and the moisture regime is xeric. The dominant soils are those of the Rogger, Mound, Chocktoot, and Hallihan series. The vegetation is dominantly ponderosa pine and white fir with lodgepole pine in the higher lying areas.

23.4 - Malheur High Plateau - High Lava Plains: This unit is on basalt plateaus and escarpments of fault-block mountains. The temperature regime is frigid or mesic, and the moisture regime is primarily 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 depressional areas.

23.6 - Malheur High Plateau - Warm High Desert Basins: This unit is characterized by basins that contain significant amounts of volcanic ash. The temperature regime is dominantly mesic, and the moisture regime is aridic. The soils typically are very deep and are well drained to very poorly drained. Wetland areas, shallow lakes, and playas are common.

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 typically are not present, but soils that have a cemented pan within 40 inches of the surface are common. The soils do not have bedrock within 60 inches of the surface. 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.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	72,210	185,825
	Well	3,341	10,023
	Total Irrigated Adjudicated Water Rights	75,551	195,848
Stream Flow Data	USGS 10378500 HONEY CREEK, NEAR PLUSH,OR	**Total Avg. Yield**	24,345
		May – Sept. Yield	10,758
	USGS 10366000 TWENTYMILE CREEK, NEAR ADEL,OR	**Total Avg. Yield**	29,630
		May – Sept. Yield	6,493
	USGS 10371500 DEEP CREEK, ABOVE ADEL,OR	**Total Avg. Yield**	97,199
		May – Sept. Yield	41,930
		MILES	**PERCENT**
Stream Data[5] **Percent of Total Miles of Streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	577	---
	303d/TMDL Listed Streams (DEQ)	186	32%
	Anadramous Fish Presence (StreamNet)	0	---
	Bull Trout Presence (StreamNet)	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	2,404	17%
	Grain Crops	3	0%
	Grass/Pasture/Hay	2,555	18%
	Orchards/Vineyards	0	---
	Row Crops	4	0%
	Shrub/Rangelands – Includes CRP Lands	5,739	41%
	Water/Wetlands/Developed/Barren	3,258	23%
	Total Acres of 100-foot Stream Buffers	**13,964**	**---**
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**1** – slight limitations	0	---
	2 – moderate limitations	0	---
	3 – severe limitations	3,900	9%
	4 – very severe limitations	7,600	17%
	5 – no erosion hazard, but other limitations	22,600	50%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	10,700	24%
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	0	---
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0	---
	Total Croplands & Pasturelands	**44,800**	**---**

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

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

Resource Concerns

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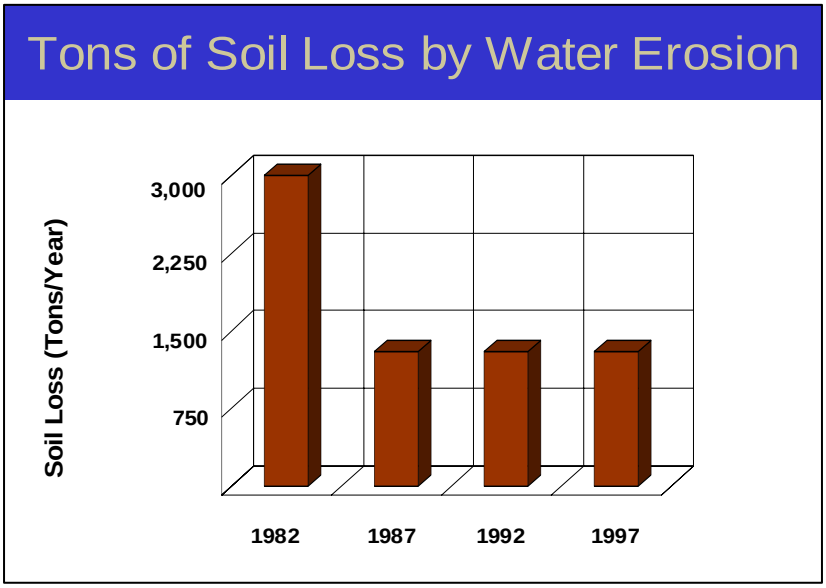
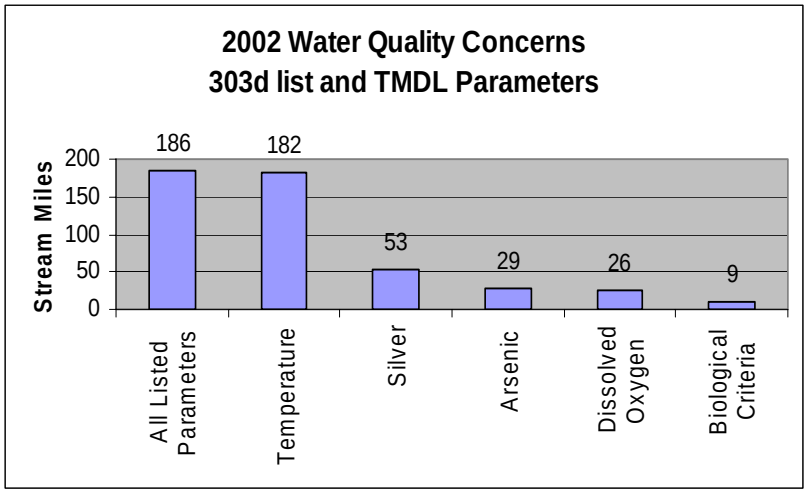


- Sheet and rill erosion by water on the croplands and pasturelands has been reduced by more than 1,700 tons of soil per year from 1982 to 1997.
- NRI estimates indicate that none of the agricultural lands had water erosion rates above a sustainable level in 1997.
- Controlling erosion not only sustains 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 croplands and pasturelands averaged less than 0.1 ton/acre/year in 1997.

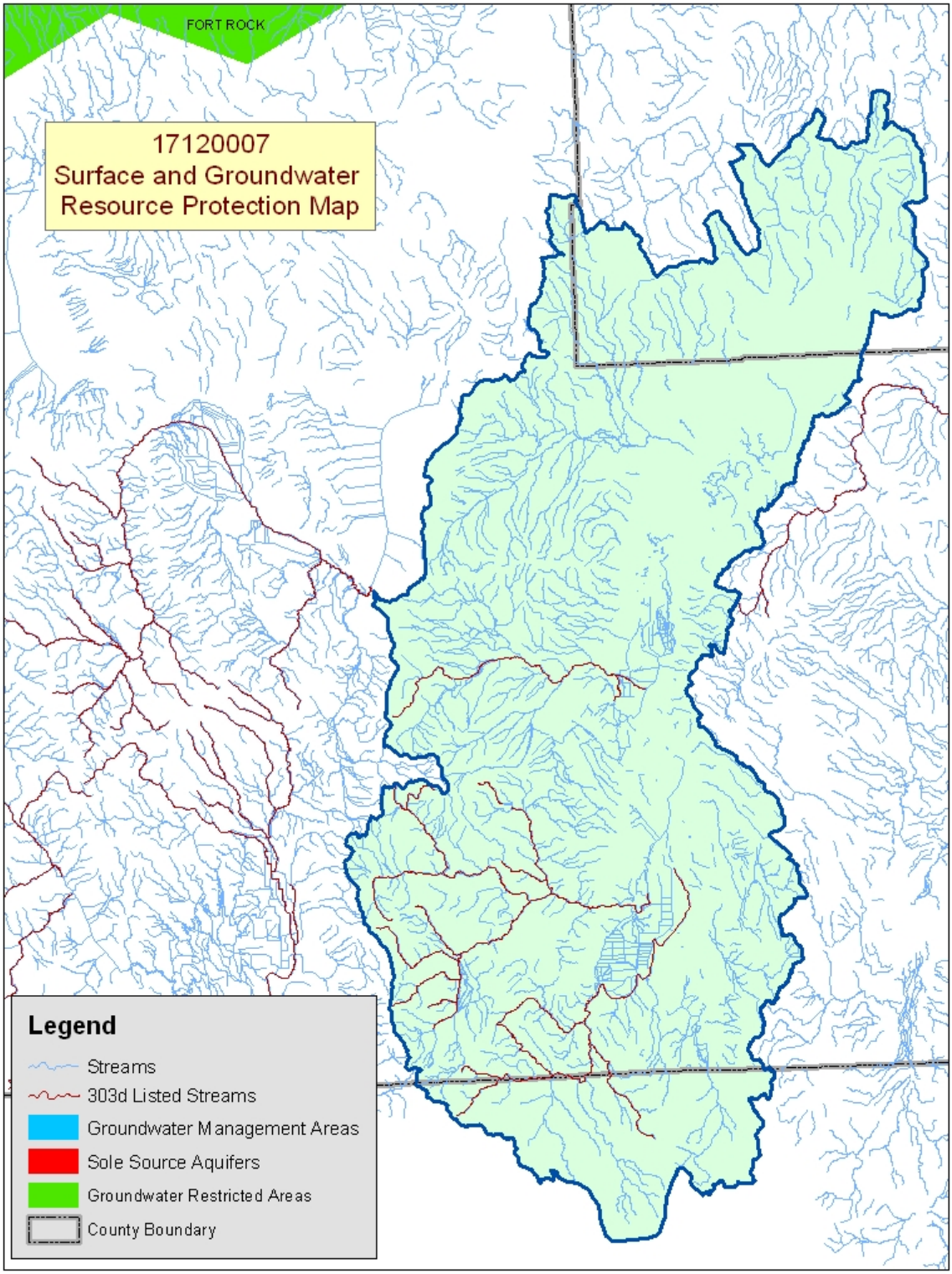


- Almost all listed stream miles exceed state water quality standards for temperature. Elevated stream temperatures may be due to inadequate riparian shade, stream channel widening, warm irrigation return flows, and other anthropogenic or natural causes.
- Conservation practices that can be used to address 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	
ODEQ TMDL's[8]		ODA Agricultural Water Quality Management Plans[9]	
Name	Status	Name	Status
None		Goose and Summer Lakes	Completed

OWEB Watershed Councils[10]	Watershed Council Assessments[11]	NWPCC Subbasin Plans and Assessments[18]
Deep Creek Watershed Council Harney County Watershed Council	None	Not Applicable

(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**	**Orchards / Vnyrd**	**Shrub / Range**	**Forest**
Soil Erosion	Wind	X	X				
	Streambank					X	X
	Irrigation Induced						
Water Quantity	Water Management for Irrigated Land	X	X				
Water Quality, Surface	Temperature					X	X
Plant Suitability	Site and Intended Use Suitability					X	X
Plant Condition	Productivity, Health, and Vigor	X					X
Plant Management	Establishment, Growth, and Harvest	X	X				X
Animal Habitat, Domestic	Water - Quantity & Quality					X	
Animal Habitat, Wildlife	Water - Quantity & Quality						X
Human, Economics	High Capital/Financial Cost		X				X
	Low or Unreliable Profitability	X	X			X	
	High Management Level Required						X

Grass / Pasture / Hay

- Water conservation is an issue on irrigated hay and pasture units on most ranches.
- Wind erosion can be a concern on sandy soils where the forage has not been properly managed as cover or to maximize production.
- A low economic return limits adoption of appropriate conservation practices.

Grain Crops

- Wind erosion and irrigation water management are the primary resource concerns.
- The high cost to update irrigation systems as compared to potential profit commonly hinders use of additional conservation practices.

Shrub / Rangelands

- Rangeland productivity can be reduced by 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.

Forest Land

- Lack of thinning and forest management can result in stagnate stands that have low commercial value for wood products and limited value for livestock grazing and wildlife habitat.
- High cost, unreliable markets, and inadequate incentive programs limit forest management activities on private, non-industrial forest land.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES[/12]	
THREATENED SPECIES	**CANDIDATE SPECIES**
Mammals – Canada lynx **Birds -** Bald eagle **Fish –** Shortnose sucker, Warner sucker, Lost River sucker, Bull trout, Hutton Springs tui chub, Foskett speckled dace, Borax Lake chub, Lahontan cutthroat trout **Invertebrates –** None **Plants –** Malheur wire-lettuce	**Plants** – Northern wormwood **Amphibians and Reptiles** - Oregon spotted frog, Columbia spotted frog **PROPOSED SPECIES** None
ESSENTIAL FISH HABITAT[/13] **–** None	

Census and Social Data[14]

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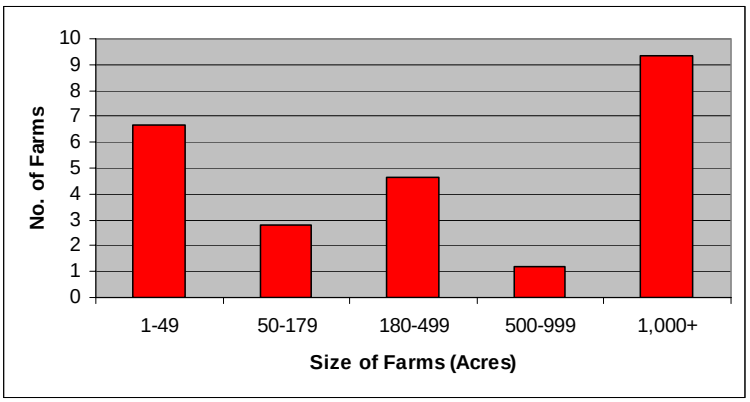
Number of Farms: 25

Number of Operators: 40

- Full-Time Operators: **17**
- Part-Time Operators: **23**

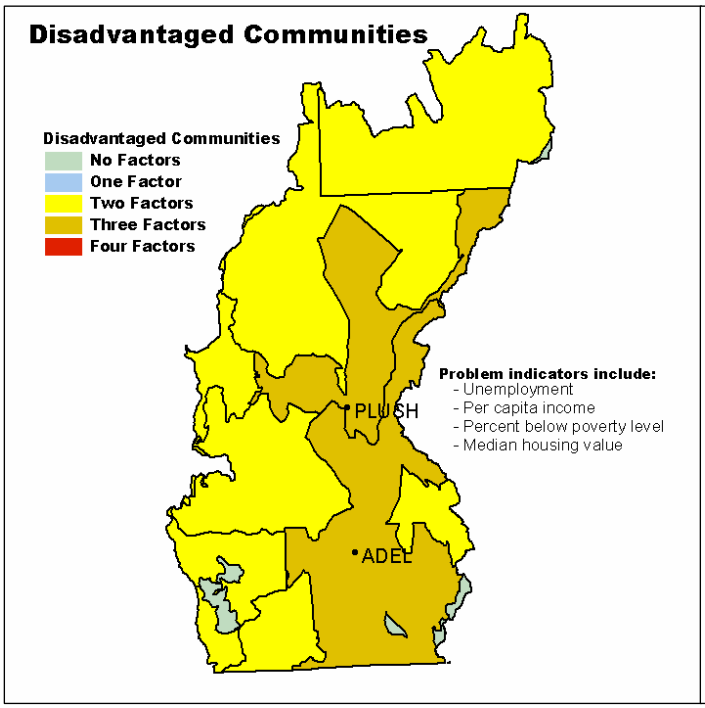


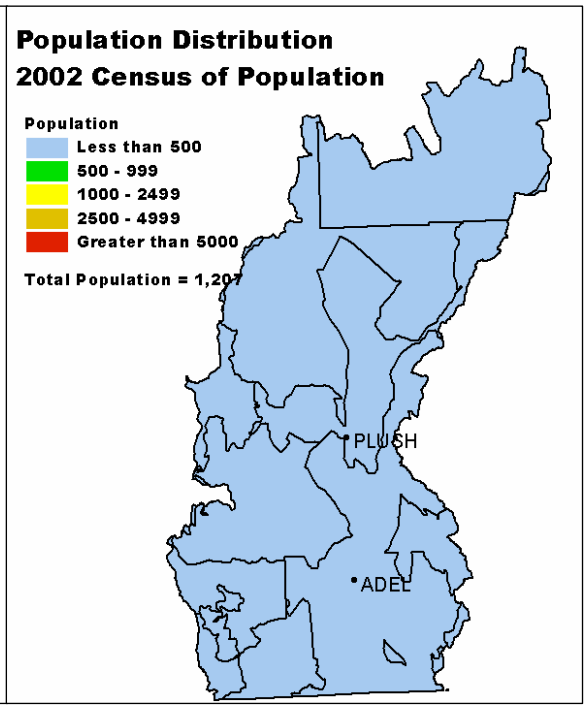
Estimated Level of Willingness and Ability to Participate in Conservation[15]: Moderate to High

Evaluation of Social Capital[16]: Moderate

The few farmers and ranchers in the Warner Lakes subbasin generally are financially stable, full-time operators who intend to pass their farm or ranch on to their heirs. They generally are well-educated, aware of natural resources issues, and have a positive stewardship attitude. Increasing adoption of conservation practices among these operators may be possible by providing more timely technical assistance and tailoring recommended conservation practices and systems to meet the particular needs of each operation.

The agricultural community in the subbasin and surrounding area generally is supportive of conservation and agriculture. It has effective leaders, a well-educated voting public, and a history of working together to complete community projects. The community might help to accelerate conservation by increasing public awareness of natural resources issues and directing the public's attention to the connection between conservation and economically stable farms and ranches.





Progress / Status

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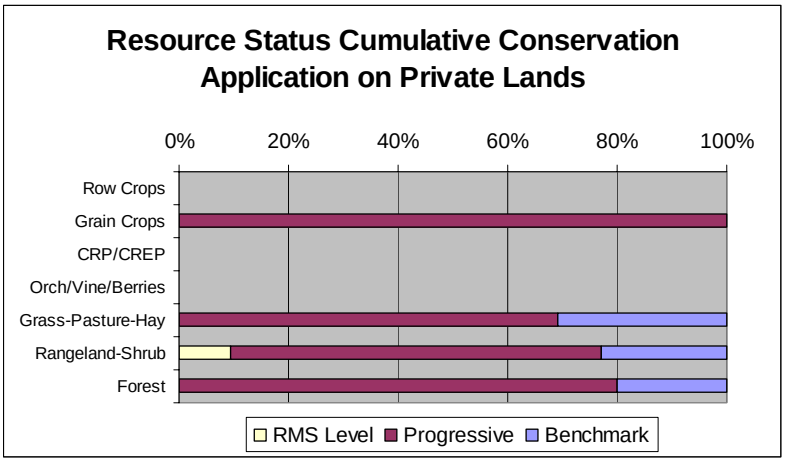
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg / Year	Total
Total Conservation Systems Planned (Acres)	10,185	160	0	0	0	2,069	10,345
Total Conservation Systems Applied (Acres)	0	0	3,177	0	3,243	1,284	6,420
Conservation Treatment							
Waste Management (Number)	0	0	0	0	0	0	0
Riparian Forest Buffers (Acres)	0	0	0	0	0	0	0
Erosion Control (Acres)	10,185	0	0	0	0	2,073	10,185
Irrigation Water Management (Acres)	0	0	0	0	0	0	0
Nutrient Management (Acres)	0	0	0	0	0	0	0
Pest Management (Acres)	0	0	0	0	0	0	0
Prescribed Grazing (Acres)	10,185	1,834	3,177	0	3,243	3,688	18,439
Trees and Shrubs (Acres)	0	0	0	0	0	0	0
Conservation Tillage (Acres)	0	0	0	0	0	0	0
Wildlife Habitat (Acres)	10,185	0	3,177	0	0	2,672	13,362
Wetlands (Acres)	0	0	0	0	0	0	0



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

- Progress over the last five years has been focused on:
  - Erosion control and conservation tillage.
  - Prescribed grazing.
  - Wildlife habitat management in riparian areas and on uplands.
- Low profitability limits further progress in conservation on grazing lands (pastureland and rangeland).
- Most private, industrial forest land meets state forest practice requirements.
- High cost, unreliable markets, and inadequate incentive programs limit forest management activities on private, non-industrial forest lands.

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.