

Introduction

The Oregon part of the Upper Klamath River 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 365,300 acres in Klamath and Jackson Counties. The subbasin is approximately eighty-four percent forestland; nine percent grassland, hayland, and pastureland; and five percent rangeland. Resource concerns include diminishing water quality, loss of fish and wildlife habitat, soil compaction, noxious weeds, and streambank erosion. Producers also have significant concerns about widespread public controversy over agriculture and natural resource management in the subbasin.

There are 91 farms and 151 operations in the Upper Klamath River subbasin. Nearly 70 percent of the farms are less than 50 acres in size. Neither the operators of large farms nor those of small farms are adopting conservation practices to any great extent. Conservation marketing and increased technical and financial assistance might improve the diffusion of conservation in the subbasin.

Conservation assistance in the Upper Klamath River subbasin is provided by the NRCS Klamath Service Center, the Klamath Soil and Water Conservation District, the Klamath County Watershed Council, and other local agencies and organizations.

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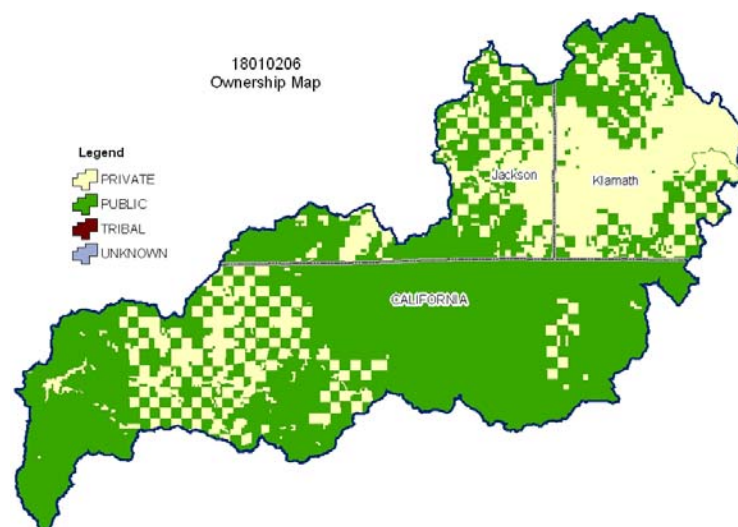
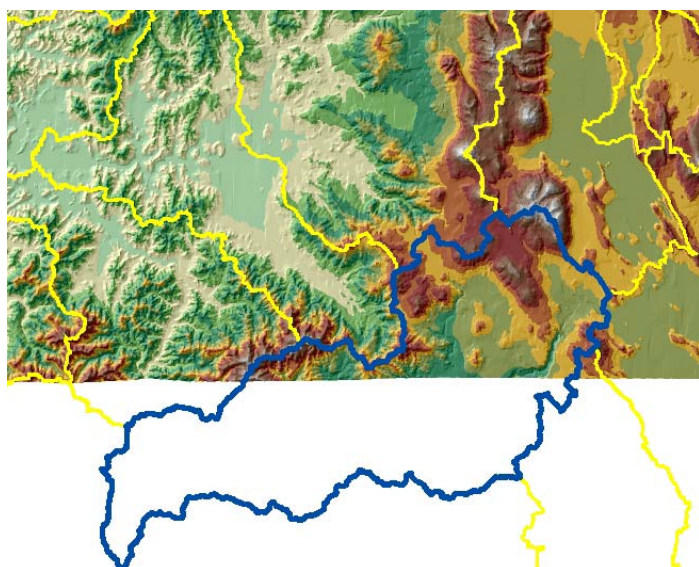
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Relief Map



Physical Description

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ALL NUMBERS IN THIS PROFILE ARE FOR OREGON ONLY

Land Cover/Land Use (NLCD ²)	Ownership - (2003 Draft BLM Surface Map Set ¹)						Totals	%
	Public		Private		Tribal			
	Acres	%	Acres	%	Acres	%		
Forest	141,800	39%	166,000	45%	0	0%	307,800	84%
Grain Crops	*	---	*	---	0	0%	*	---
Conservation Reserve Program Land ^a	0	0%	0	0%	0	0%	0	0%
Grass/Pasture/Hay	16,700	5%	15,700	4%	0	0%	32,400	9%
Orchards/Vineyards	0	0%	0	0%	0	0%	0	0%
Row Crops	*	---	*	---	0	0%	*	---
Shrub/Rangelands	7,100	2%	10,700	3%	0	0%	17,800	5%
Water/Wetlands/Developed/Barren	*	---	*	---	0	0%	7,300	2%
Oregon HUC Totals ^b	168,600	46%	196,700	54%	0	0%	365,300	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:

- Approximately 70 percent of private forestland is under industrial ownership (NRCS, Upper Klamath Basin Rapid Subbasin Assessments, 2003).
- Pasture occurs in areas used for beef operations as well as on small farms and ranchettes.
- Many of the ranchers in the subbasin have grazing leases with the Bureau of Land Management, U.S. Forest Service, Pacific Power, and/or large industrial forest companies.

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

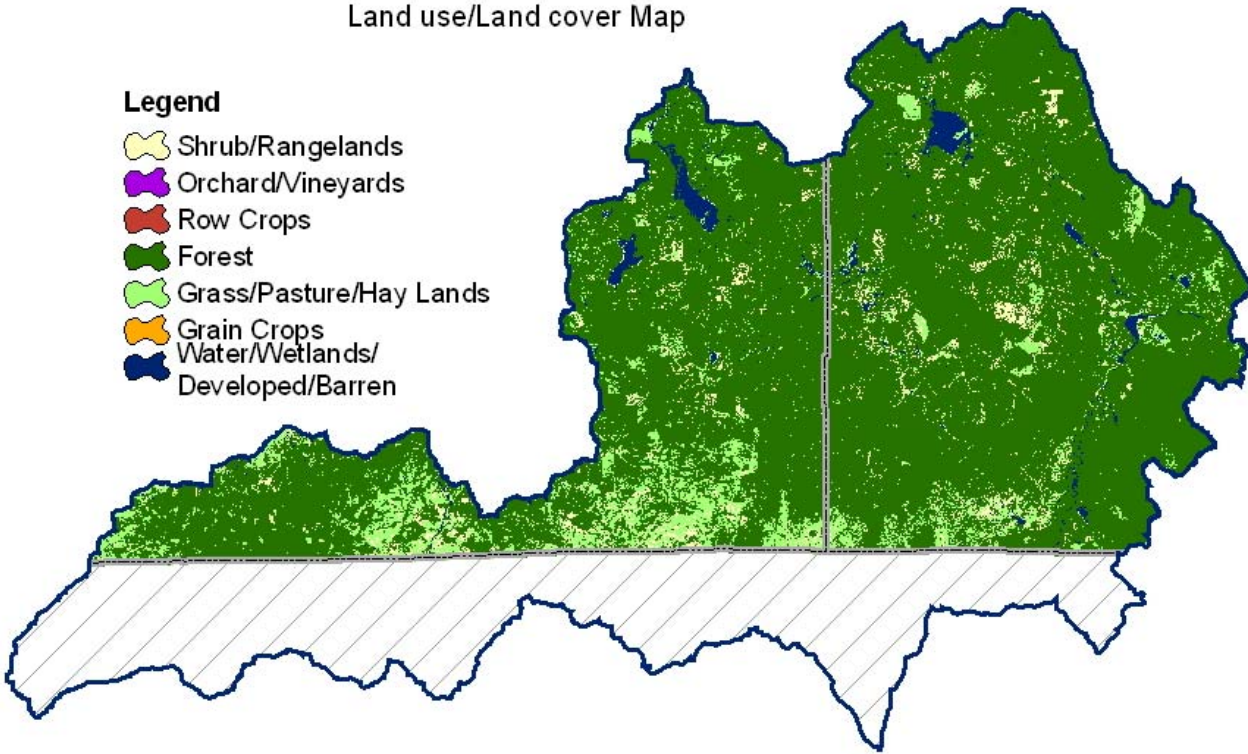
(Continued on the following pages)

18010206
Land use/Land cover Map

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Legend

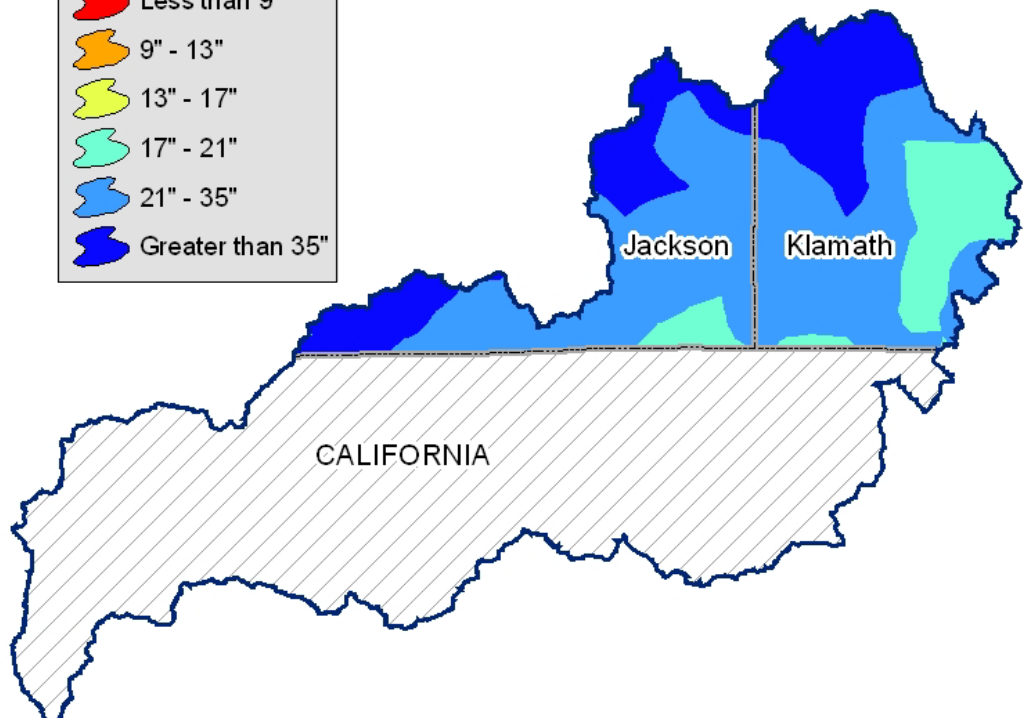
-  Shrub/Rangelands
-  Orchard/Vineyards
-  Row Crops
-  Forest
-  Grass/Pasture/Hay Lands
-  Grain Crops
-  Water/Wetlands/Developed/Barren



**Eastern Oregon
Precipitation Range**

-  Less than 9"
-  9" - 13"
-  13" - 17"
-  17" - 21"
-  21" - 35"
-  Greater than 35"

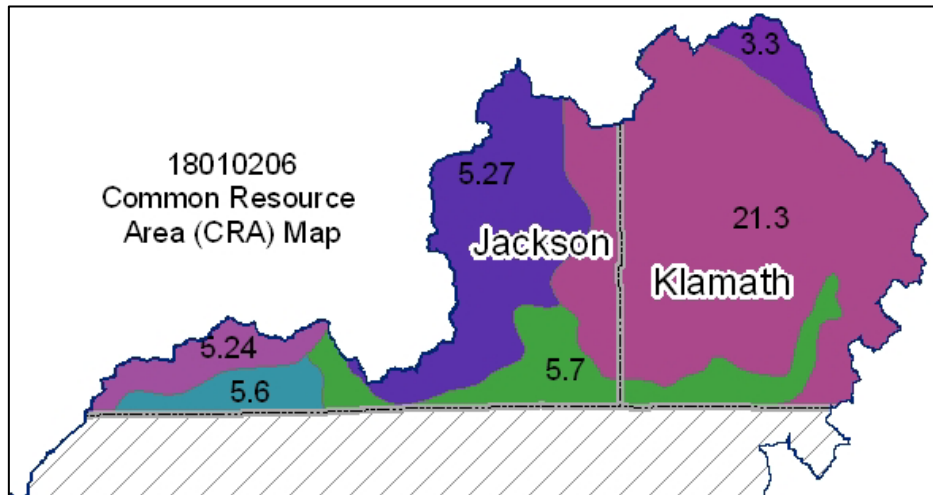
**18010206
Average Annual
Precipitation in Inches**



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://lce.or.nrcs.usda.gov/website/cra/viewer.htm>



21.3 – Klamath and Shasta Valleys and Basins - Southern Cascade Slope: This unit is characterized by forested mountains and plateaus in the western portion of the MLRA. The temperature regime is frigid, and the moisture regime is xeric. The dominant soils are those of the Pinehurst, Greystoke, Woodcock, and Royst series. The vegetation is dominantly ponderosa pine, Douglas-fir, and some Shasta red fir. The major separation of unit 21.2 from 21.3 is near Bly Mountain. White fir is dominant on unit 21.2, and Douglas-fir is dominant on unit 21.3.

5.24 – Siskiyou-Trinity Area - Inland Siskiyou: This unit comprises most of the MLRA. It is characterized by mountains. The geology is comprised of metasediments, metavolcanics, and granitic rock. The vegetation is dominantly Douglas-fir, ponderosa pine, madrone, and scattered Oregon white oak. The temperature regime is dominantly mesic with small areas that are frigid, and the moisture regime is dominantly xeric with some areas on north-facing slopes that are udic. The udic areas adjacent to MLRAs 1 and 3 are characterized by western hemlock.

5.27 – Siskiyou-Trinity Area - Umpqua Cascades: This unit is characterized by middle elevation mountains in the southern Cascades. The temperature regime is mesic or frigid, and the moisture regime is xeric. The vegetation consists of Douglas-fir at low elevations and white fir at higher elevations. Western hemlock is absent except in drainageways or in areas that receive additional moisture. This unit is similar to units 3.1 and 3.2 in the Cascades except for the absence of western hemlock and the more moist climatic conditions.

5.6 – Siskiyou-Trinity Area - Scott Bar Mountain: This unit is on mountains around the lower stretch of the Scott River and the middle stretch of the Klamath River. The soil temperature regime is dominantly mesic with some frigid areas at higher elevations, and the soil moisture regime is xeric. Common vegetation includes mixed conifer, Douglas-fir, ponderosa pine, and Jeffrey pine. This unit drains to the Scott and Klamath Rivers, which flow through the unit.

5.7 – Siskiyou-Trinity Area - Siskiyou Foothills: This unit is characterized by foothills adjacent to the terraces and flood plains of unit 5.1. The vegetation is dominantly Oregon white oak, Pacific madrone, ponderosa pine, and scattered Douglas-fir. Significant areas of rangeland are scattered throughout the unit in areas of shallow soils. The temperature regime is mesic, and the moisture regime is xeric.

Physical Description – Continued

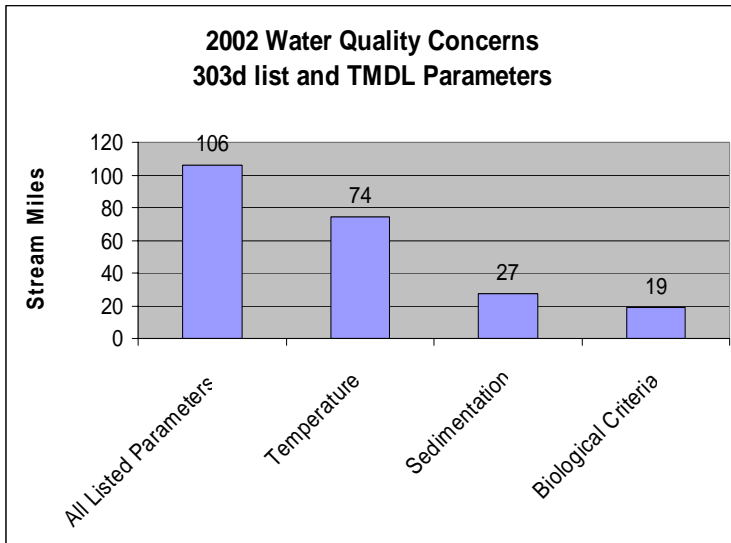
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		ACRES	ACRE-FEET			
Irrigated Adjudicated Water Rights (OWRD ⁴)	Surface	1,666	5,157			
	Well	11	32			
	Total Irrigated Adjudicated Water Rights	1,677	5,190			
Stream Flow Data	USGS 11516530 KLAMATH RIVER BELOW IRON GATE DAM, CA	Total Avg. Yield	1,515,158			
		May – Sept. Yield	386,164			
		MILES	PERCENT			
Stream Data ⁵ <i>*Percent of Total Miles of Streams in HUC</i>	Total Miles – Major (100K Hydro GIS Layer)	221	---			
	303d/TMDL Listed Streams (DEQ)	106	48%			
	Anadromous Fish Presence (StreamNet)	7	3%			
	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	9,072	80%			
	Grain Crops	2	0%			
	Grass/Pasture/Hay	927	8%			
	Orchards/Vineyards	0	0%			
	Row Crops	0	0%			
	Shrub/Rangelands – Includes CRP Lands	440	4%			
	Water/Wetlands/Developed/Barren	910	8%			
	Total Acres of 100-foot Stream Buffers	11,351	---			
Land Capability Class <i>(Croplands & Pasturelands Only)</i> <i>(1997 NRI³ Estimates for Non-Federal Lands Only)</i>	1 – slight limitations	0	0%			
	2 – moderate limitations	0	0%			
	3 – severe limitations	0	0%			
	4 – very severe limitations	5,100	100%			
	5 – no erosion hazard, but other limitations	0	0%			
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	0	0%			
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	0	0%			
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0	0%			
	Total Croplands & Pasturelands	5,100	100%			
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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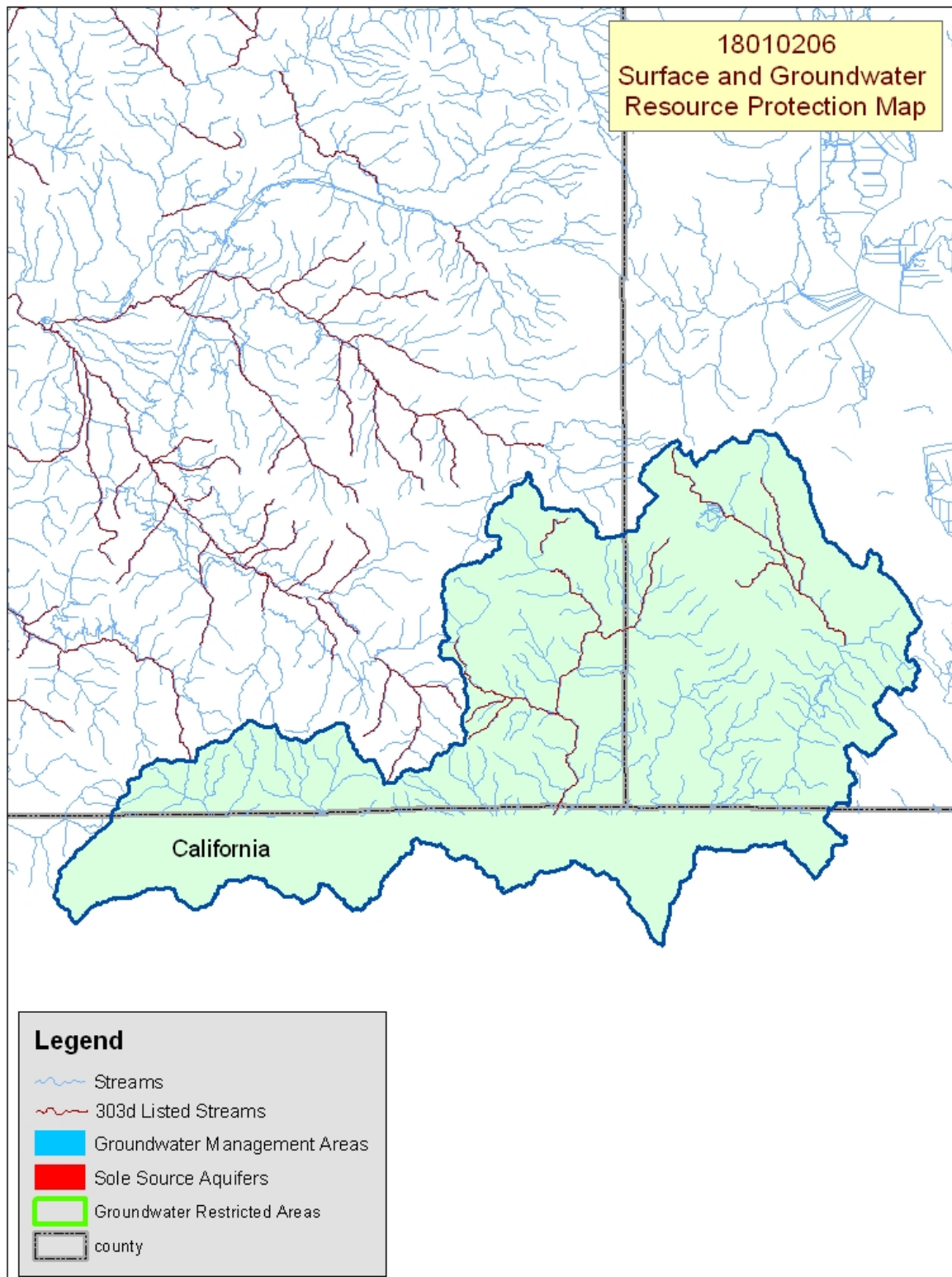
Tons of Soil Loss by Water Erosion: Due to the limited amount of non-Federal cropland and pastureland within this HUC, no reliable NRI soil loss estimates are available.



- ❖ Seventy-four percent of the listed stream miles exceed State water quality standards for temperature. Elevated stream temperatures may be due to inadequate riparian shade, stream channel widening, and other anthropogenic or natural causes.
- ❖ Sedimentation originates from streambank erosion or from erosion associated with forest roads.
- ❖ Conservation practices that can be used to address these water quality issues include livestock waste management, grazing 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	Upper Klamath Subbasin Assessments (Upper Klamath River – East)	Completed 2004
ODEQ TMDL's ⁸		ODA Agricultural Water Quality Management Plans ⁹	
Name	Status	Name	Status
None	None	Lost River	Completed
OWEB Watershed Council ¹⁰		Watershed Council Assessments ¹¹	NWPCC Subbasin Plans and Assessments ¹⁸
Klamath Watershed Council Klamath River Watershed Working Group		None	None

(Continued on page 8)



Map Footnote [417](#)

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	Wind	X			
	Streambank	X					X
	Irrigation Induced	X					
Soil Condition	Tilth, Crusting, Infiltration, Organic Matter	X				X	
	Soil Compaction	X				X	X
Water Quantity	Water Management for Irrigated Land	X					
	Water Management for Nonirrigated Land					X	X
Water Quality, Surface	Nutrients and Organics	X					
	Suspended Sediments and Turbidity	X					X
	Low Dissolved Oxygen	X					X
	Temperature	X					X
	Pathogens	X					
	Aquatic Habitat Suitability	X					
Air Quality	Airborne Sediment Causing Safety/Health Problems	X					
Plant Condition	Productivity, Health, and Vigor	X				X	X
	Noxious and Invasive Weeds					X	X
Plant Management	Establishment, Growth, and Harvest					X	X
Human, Economics	High Risk and Uncertainty	X					
Human, Political	High Degree of Controversy	X				X	X

Grass/Pasture/Hay Lands

- While some areas of irrigated pasture are well managed, many units are large, have only boundary fences, and are wild flood irrigated, making it difficult to practice intensive grazing or irrigation water management.
- Fields used to produce hay commonly are well managed and thus have fewer resource concerns.

Range/Forest

- Most range and forest units used for livestock grazing are large, which makes it difficult to implement intense grazing rotations with the available fences and watering facilities.
- Juniper encroachment and other noxious and invasive weeds reduce the health and vigor of range grasses and forbs.
- Juniper increases evapotranspiration, reducing both the availability of water for range grasses and downstream subsurface discharge to the river.
- Overstocked forests can result in higher canopy interception losses and evapotranspiration rates, reducing both the availability of water for vegetation and downstream discharge to the river or lake.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES ¹²	
THREATENED SPECIES	CANDIDATE SPECIES
Mammals -Canada lynx Birds – Bald eagle, Northern spotted owl Fish – Shortnose sucker, Lost River sucker, Bull trout, Coho salmon Invertebrates – Vernal pool fairy shrimp Plants – Applegate's milk vetch, Gentner's fritillary, Large-flowered meadowfoam, Cook's lomatium	Mammals - Pacific fisher Birds – Yellow-billed cuckoo, Streaked horned lark Amphibians and Reptiles – Oregon spotted frog Invertebrates - Mardon skipper butterfly
	PROPOSED SPECIES None
ESSENTIAL FISH HABITAT¹³ – Chinook, Coho	

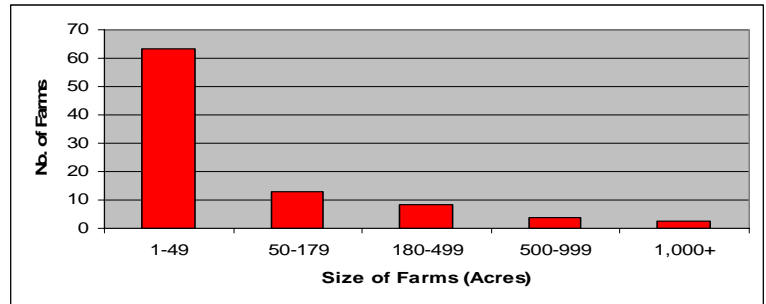
Census and Social Data^{/14}

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Number of Farms: 91

Number of Operators: 151

- Full-Time Operators: **52**
- Part-Time Operators: **99**



Estimated Level of Willingness and Ability to Participate in Conservation^{/15}: **Moderate to High**

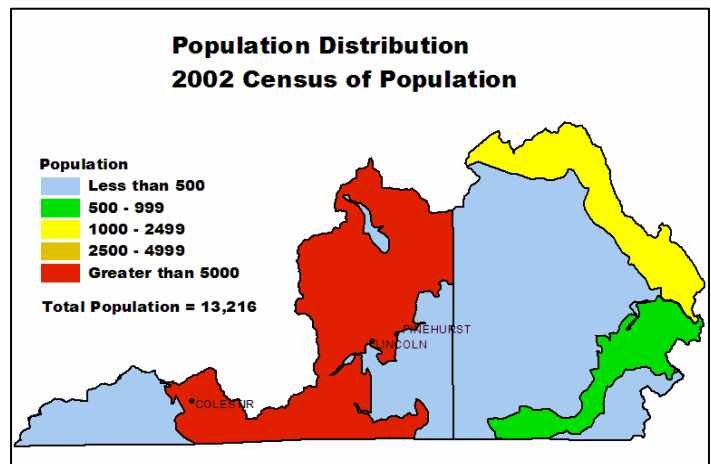
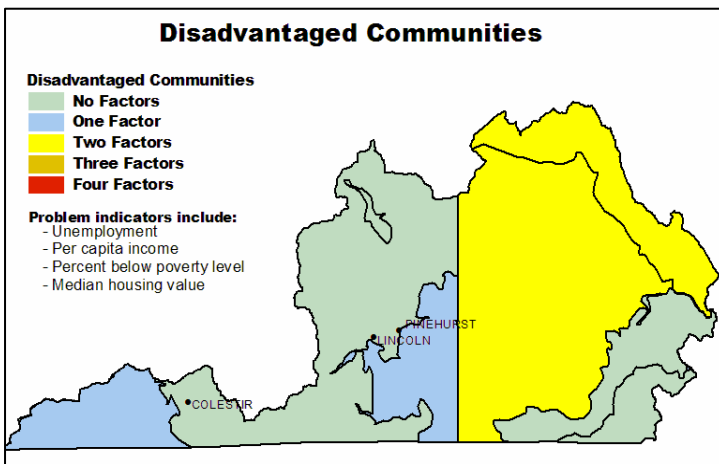
High: Viable agricultural operations in the subbasin tend to be those owned and operated by families. These operators are well aware of local resource concerns and have a relatively positive stewardship attitude; however, many are not adopting conservation practices reportedly because they perceive conservation to be economically impractical. Conservation marketing could improve the diffusion of conservation among these landowners.

Moderate: Hobby farmers, which have smaller acreages and are absentee, tend to lack awareness of local resource concerns, lack the resources to adopt conservation practices, and require significantly more time to inform, persuade, and assist with natural resource management. Absentee landowners also tend to lack ties to the community that normally are requisite to widespread conservation diffusion in a watershed.

Evaluation of Social Capital^{/16}

Largely because of the influx of new and absentee landowners, the communities in the subbasin do not have a lot of experience with working together to solve local problems. The greatest strengths of the communities seem to be good participation in agricultural organizations, effective local leadership, and good media coverage of local issues.

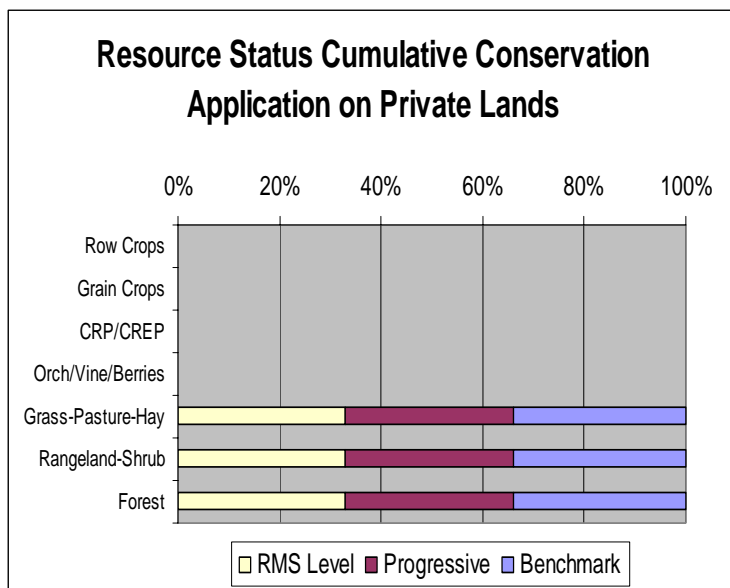
As of late, however, the agricultural landowners of the communities have started to work together occasionally and to engage in concerted activities that support local resource management. As community-wide interest in local resource concerns increases and local leadership becomes involved, the diffusion of conservation in the subbasin can be expected to increase.



Progress/Status

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PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg/Year	Total
Total Conservation Systems Planned (Acres)	0	0	0	81	253	67	334
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	1,587	0	0	440	405	2,027
Nutrient Management	0	0	0	0	0	0	0
Pest Management	0	0	0	0	0	0	0
Prescribed Grazing	1,763	0	0	0	220	397	1,983
Trees and Shrubs	0	0	12	54	0	13	66
Conservation Tillage	0	0	0	0	0	0	0
Wildlife Habitat	0	0	0	0	0	0	0
Wetlands	0	0	0	0	0	0	0



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

- ❖ Progress over the last 5 years has been focused on:
 - ~ Prescribed grazing and water management on irrigated pastureland.
- ❖ Pastureland commonly is not intensively farmed because of a lack of adequate water and grazing management.
- ❖ Most range units are associated with forest, wet meadow, or irrigated grazing units. The condition of the rangeland is dependent upon the overall grazing management of the larger unit.
- ❖ Most private, industrial forestland meets State forest practice act requirements.
- ❖ High cost and unreliable markets limit forest management activities on private, non-industrial forestland. A high percentage of this forestland is overstocked with stagnate stands that have limited value for livestock grazing, wildlife or timber production.

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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All data is provided "as is." There are no warranties, express or implied, including the warranty of fitness for a particular purpose, accompanying this document. Use for general planning purposes only.

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/wrlexport.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>.