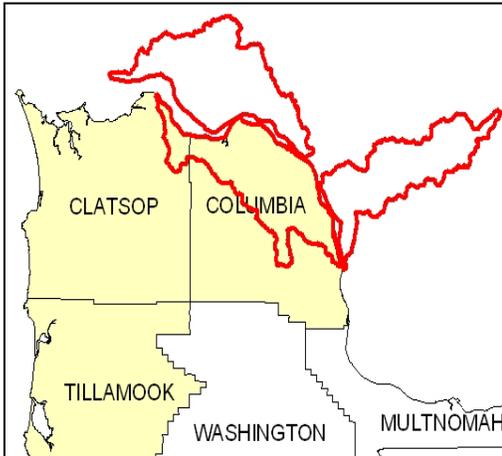


Lower Columbia/ Clatskanie – 17080003

FINAL

8-Digit Hydrologic Unit Profile

SWCD	Acres
Columbia	171,042
Clatsop	18,624



Introduction

The part of the Lower Columbia/Clatskanie River 8-Digit Hydrologic Unit Code (HUC) subbasin in Oregon is comprised of 189,550 acres. Some of the subbasin extends into Washington and is not included in this profile. Eighty percent of the subbasin is forestland, of which seventy-seven percent is under private ownership. About ten percent is pastureland that is used for livestock operations. Three confined animal feeding operations (CAFOs) are in the subbasin. A small, but increasing, percentage of the land is being developed as wildlife habitat for birding, hunting, and other recreational activities.

Some resource concerns associated with the pastureland and CAFOs include soil compaction, streambank erosion, water contamination, flooding, noxious weeds, unreliable profits, and the need for timely technical assistance.

There are 610 operators on 370 farms and ranches in the watershed. Ninety-three percent of the farms and ranches are less than 180 acres in size, and less than one percent are more than 500 acres in size. Most small acreage landowners are part-time hobby farmers that are in the area for the lifestyle it provides.

In Oregon, one NRCS service center, two soil and water conservation districts, the Northwest Oregon Resource Conservation and Development (RC&D) office, and other local conservation organizations provide conservation assistance in the subbasin.

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[Physical Description](#)

[Land Use Map & Precipitation Map](#)

[Common Resource Area](#)

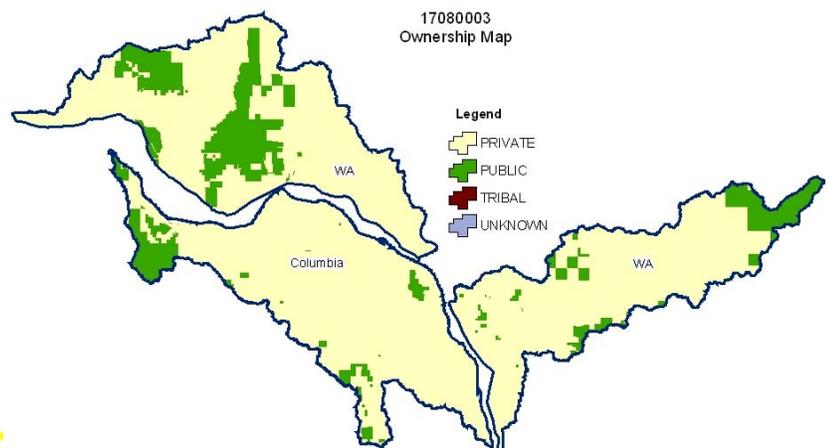
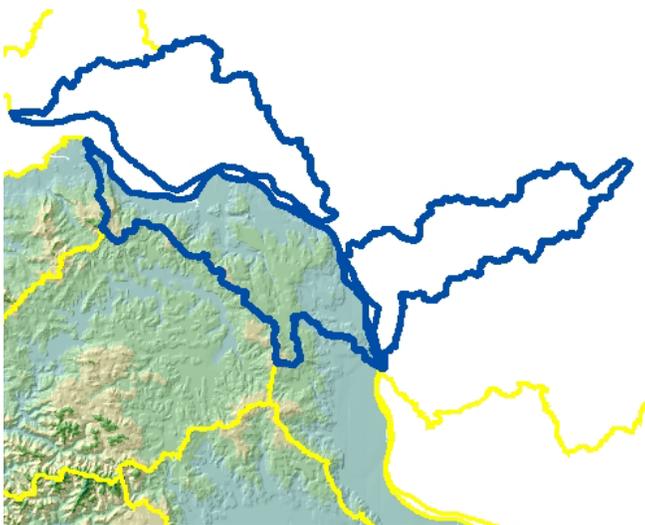
[Resource Concerns](#)

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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 ⁴¹)							
	Public		Private		Tribal		Totals	%
	Acres	%	Acres	%	Acres	%		
Forest	16,800	9%	146,200	77%	0	0%	163,000	86%
Grain Crops	0	0%	*	---	0	0%	*	---
Conservation Reserve Program Land ^a	0	0%	0	0%	0	0%	0	0%
Grass/Pasture/Hay	*	---	16,200	9%	0	0%	16,200	9%
Orchards/Vineyards	0	0%	*	---	0	0%	*	---
Row Crops	0	0%	1,200	1%	0	0%	1,200	1%
Shrub/Rangelands	*	---	1,600	1%	0	0%	1,600	1%
Water/Wetlands/Developed/Barren	*	---	6,500	3%	0	0%	6,500	3%
Oregon HUC Totals ^b	16,800	9%	172,500	91%	0	0%	189,300	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:

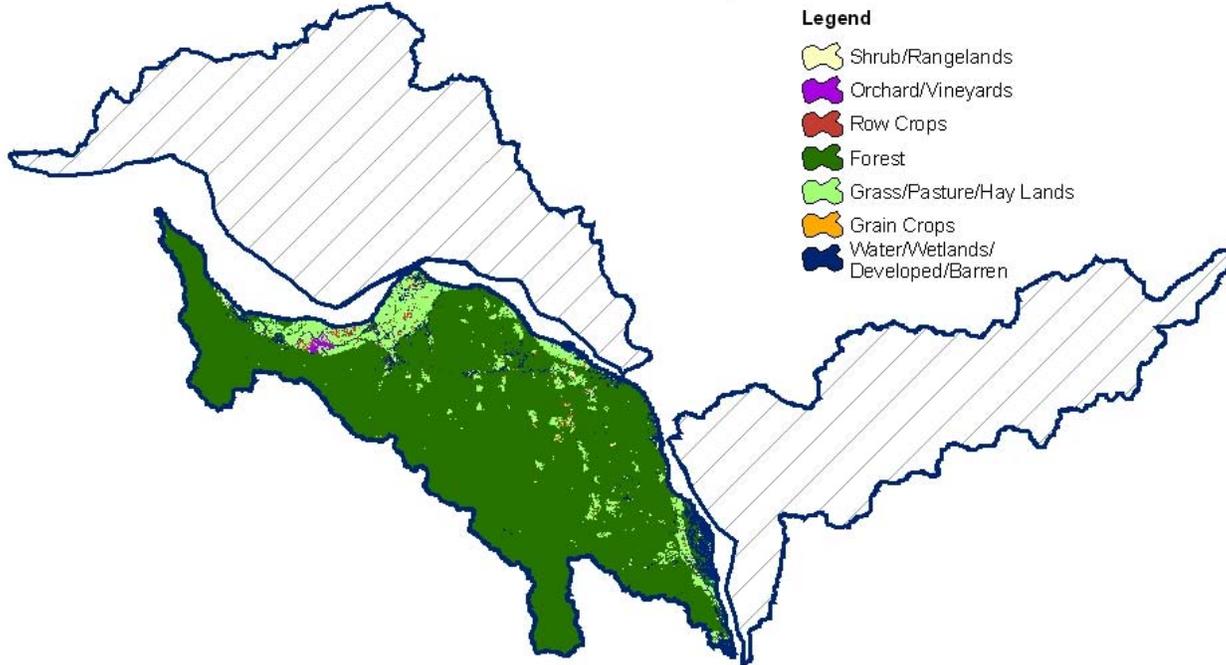
- Approximately 49 percent of private forestland is under industrial forest ownership (OSU, Forestry Sciences Laboratory).
- Orchards/Vineyards/Berries includes other perennial crops such as nursery stock and Christmas trees.
- Pasture includes commercial dairy and beef operations as well as small farms and ranches.

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	300	14%	0%
	Pastureland	1,800	86%	1%
	Total Irrigated Lands	2,100	100%	1%

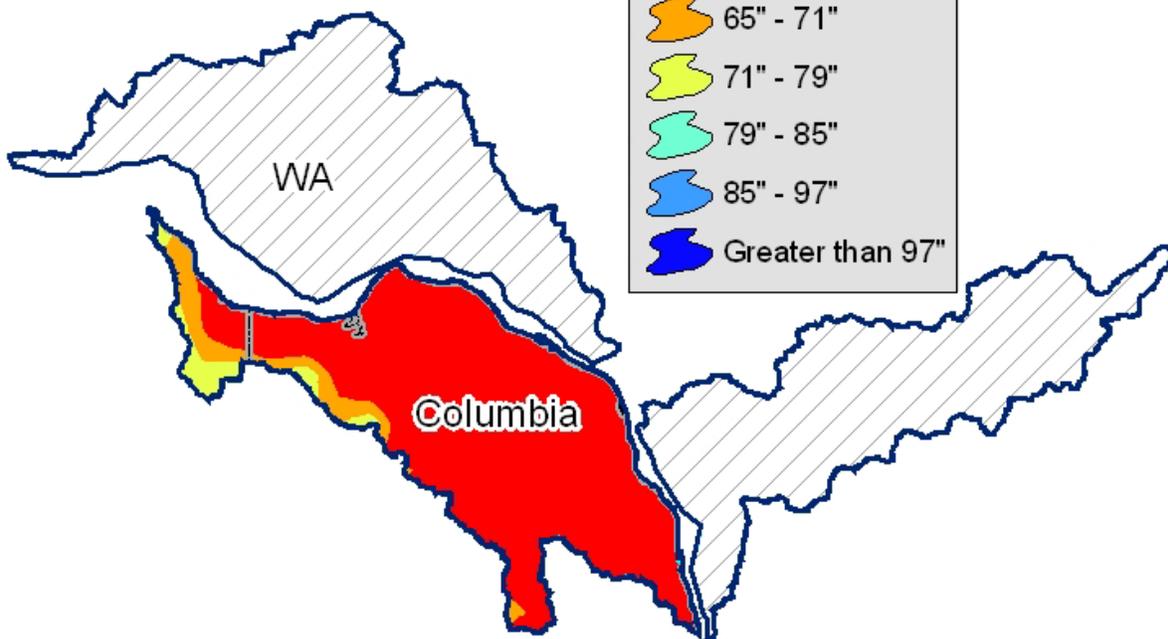
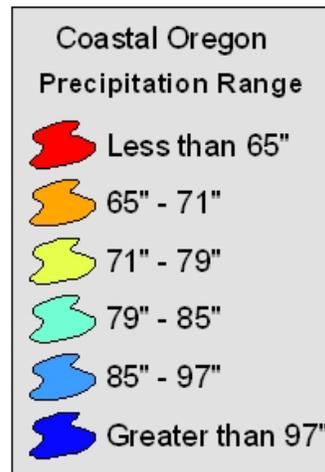
(Continued on the following pages)

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17080003
Land use/Land cover Map



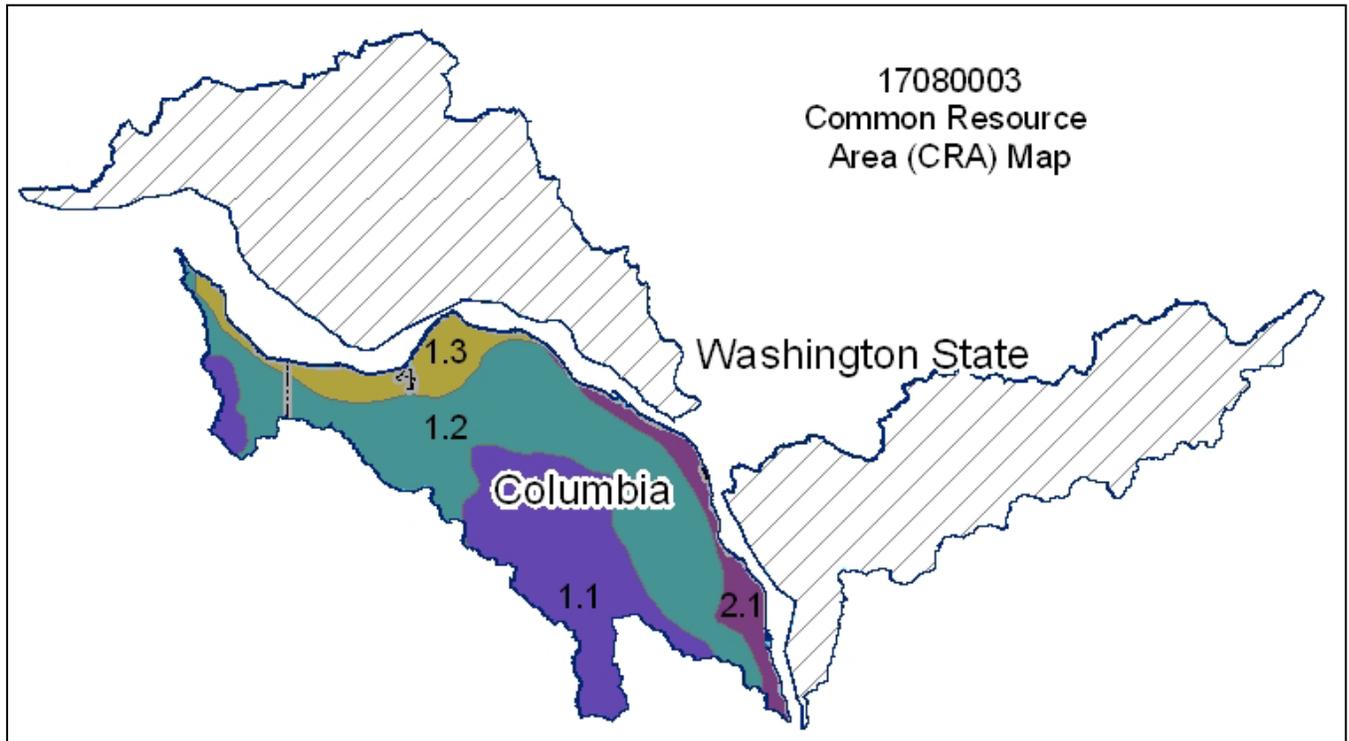
17080003
Average Annual
Precipitation in Inches



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>



1.1 - Northern Pacific Coast Range, Foothills, and Valleys – Volcanics: This unit is comprised of mountains that consist of basalt and are outside of the "fogbelt." The temperature regime is mesic or frigid with a small area that is cryic, and the moisture regime is udic. The vegetation is Douglas fir and western hemlock.

1.2 - Northern Pacific Coast Range, Foothills, and Valleys - Willapa Hills: This unit is comprised of lower elevation mountains and foothills in the Coast Range. The soils are underlain by sedimentary rock and are silty and clayey throughout the profile. The soils in unit 1.6 are more loamy. Some of the soils in unit 1.2 have a fragipan. The temperature regime is mesic, and the moisture regime is udic. The vegetation is Douglas fir and western hemlock.

1.3 - Northern Pacific Coast Range, Foothills, and Valleys - Columbia River Tidal Areas: This unit is comprised of diked and undiked tidal areas along the Columbia River and outside of the "fogbelt." The temperature regime is mesic, and the moisture regime is udic. Similar diked islands in unit 2.1 have a xeric moisture regime and a climate that is more favorable for intensive agriculture.

2.1 - Willamette and Puget Valleys - Portland/Vancouver Basin: This unit is comprised of the terraces and flood plains of the Willamette and Columbia Rivers, in the Portland/Vancouver metropolitan area. The landforms, soils, and vegetation similar to those of the remainder of the Willamette Valley; however, since H (humans) are a component within SWAPA +H, this area has different management concerns that need to be addressed (urban areas, nurseries, etc.). The temperature regime is mesic, and the moisture regime is xeric.

Physical Description – Continued

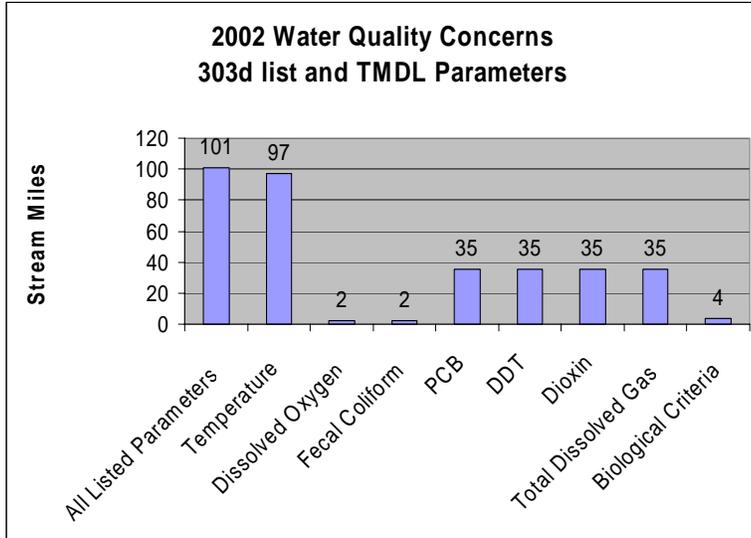
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		ACRES	ACRE-FEET			
Irrigated Adjudicated Water Rights <i>(OWRD⁴)</i>	Surface	3,325	8,313			
	Well	19	49			
	Total Irrigated Adjudicated Water Rights	3,345	8,361			
Stream Flow Data	USGS 14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR	Total Avg. Yield	171,330,645			
		May – Sept. Yield	69,428,033			
		MILES	PERCENT			
Stream Data ⁵ <i>*Percent of Total Miles of Streams in HUC</i>	Total Miles – Major (100K Hydro GIS Layer)	297	---			
	303d/TMDL Listed Streams (DEQ)	101	34%			
	Anadromous Fish Presence (StreamNet)	45	15%			
	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	6,829	75%			
	Grain Crops	10	0%			
	Grass/Pasture/Hay	1,594	17%			
	Orchards/Vineyards	71	<1%			
	Row Crops	119	1%			
	Shrub/Rangelands – Includes CRP Lands	94	<1%			
	Water/Wetlands/Developed/Barren	416	5%			
	Total Acres of 100-foot Stream Buffers	9,134	---			
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	8,600	38%			
	3 – severe limitations	6,000	26%			
	4 – very severe limitations	300	1%			
	5 – no erosion hazard, but other limitations	0	0%			
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	7,900	35%			
	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	22,800	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	250	380	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.



- ❖ Almost 100 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.
- ❖ Fecal coliform can be an indication of livestock waste runoff, but it also typically is a result of poorly functioning onsite sewage disposal systems and urban runoff.
- ❖ Many of the water quality concerns are associated with the main stem of the Columbia River, and the pollutant source originates upstream from the watershed.
- ❖ Conservation practices that can be used to address these water quality issues include grazing management and use of riparian buffers.

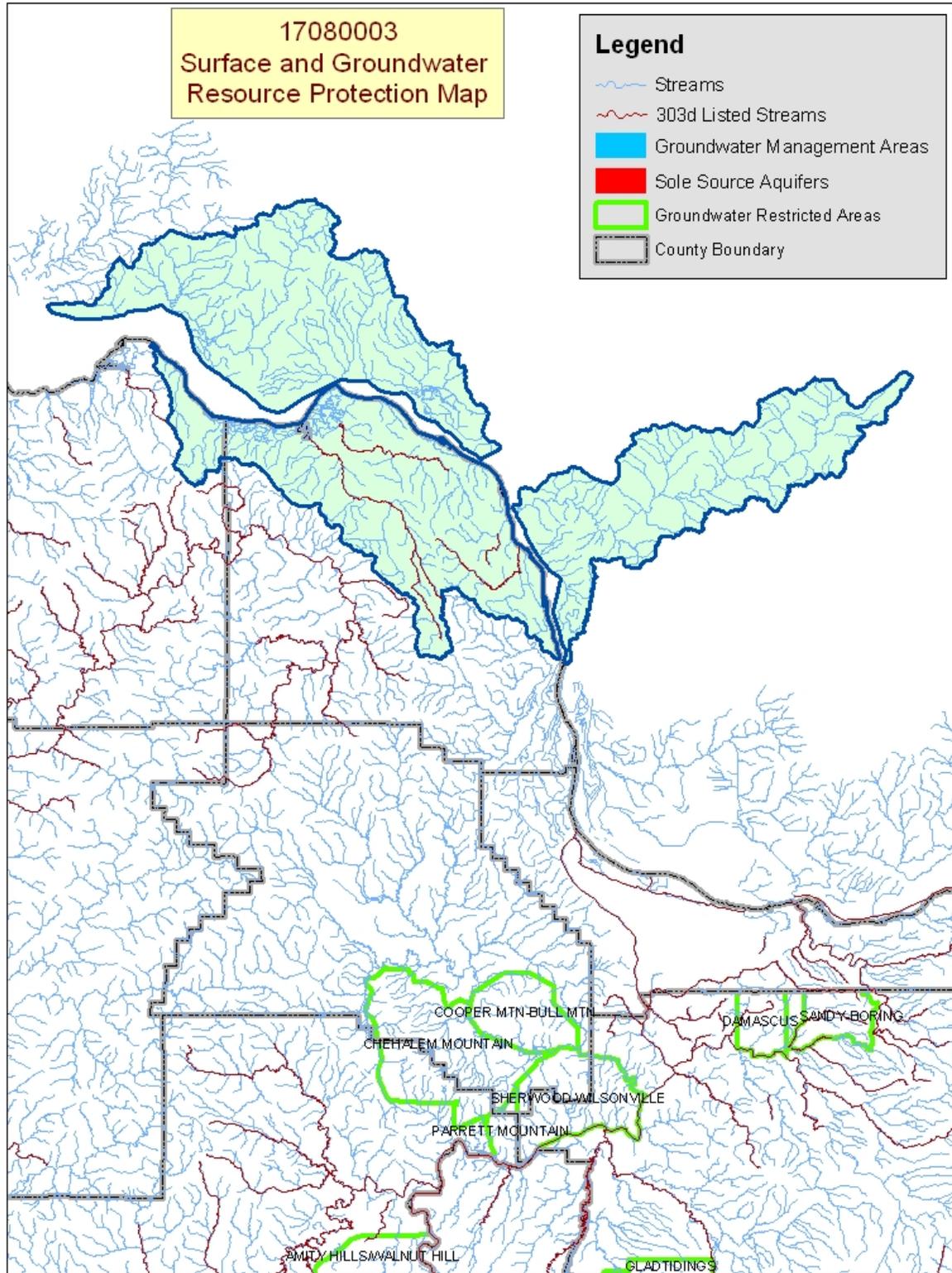
Watershed Projects, Plans, Studies, and Assessments			
NRCS Watershed Projects ⁶		NRCS Watershed Plans, Studies, and Assessments ⁷	
Name	Status	Name	Status
None		None	
ODEQ TMDL's ⁸		ODA Agricultural Water Quality Management Plans ⁹	
Name	Status	Name	Status
North Coast Subbasins Columbia & Willamette Rivers Columbia & Snake Rivers	Completed Completed Draft for Review	North Coast	Completed
OWEB Watershed Council ¹⁰		Watershed Council Assessments ¹¹	NWPCC Subbasin Plans & Assessments ¹⁸
Lower Columbia Watershed Council, Clatsop Coordinating Council/Nicolai- Wickiup Watershed Council		Lower Columbia-Clatskanie Subbasin Watershed Assessment, Nicolai- Wickiup Watershed Council	Lower Columbia Subbasin Plan and Columbia Estuary Subbasin Plan

(Continued on page 8)

Lower Columbia/ Clatskanie – 17080003

8-Digit Hydrologic Unit Profile

FINAL
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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	Concentrated Flow or Gully						X
	Streambank	X		X			
	Irrigation Induced			X			
Soil Condition	Soil Compaction	X					
Water Quantity	Ponding & Flooding	X	X	X			
Water Quality, Groundwater	Pesticides		X				
	Nutrients & Organics	X	X				
Water Quality, Surface	Pesticides		X				
	Nutrients & Organics		X				
	Suspended Sediments & Turbidity		X				
	Temperature	X	X				X
	Pathogens	X					
	Aquatic Habitat Suitability	X					X
Plant Suitability	Site & Intended Use Suitability	X					X
Plant Condition	Productivity, Health, & Vigor	X	X				X
Plant Management	Establishment, Growth, & Harvest	X					X
Animal Habitat, Domestic	Management	X					
Human, Economics	High Capital/Financial Costs	X					X
	High Labor Costs or Availability			X			
	High Management Level Required	X	X				
	Low or Unreliable Profitability	X	X	X			
Human, Political	Inadequate Availability of Cost Share Programs						X
	Lack of Technical Assistance	X					

Grass/Pasture/Hay

- Most livestock operations are associated with smaller operations of beef and other livestock. Typical resource issues include:
 - Nutrient & organics
 - Pathogens
 - Plant condition & suitability
 - Noxious weeds
- Streambank erosion and wildlife habitat can also be issues associated with pasture.

Grain, Row, and Perennial Crops

- Cropland is less than 1 percent of the watershed, and it is used for crops such as wheat, corn, oats, and mint.
- Nutrients, pesticides, flooding, and ponding are key resource concerns.

Forestland

- Almost one-half (49%) of the private forestland is under industrial forest management.
- Invasive, noxious weeds (Japanese knotweed, purple loosestrife, and tansy ragwort) are a resource concern.
- Much of the private, non-industrial forestland is used as rural homesites and recreational property. Only a small portion is used for long-term timber production.
- Protection of salmon and steelhead is a concern in managing forestland adjacent to streams.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES ¹²	
THREATENED SPECIES	CANDIDATE SPECIES
Mammals - Columbian white-tailed deer	Fish – Coho salmon, Steelhead
Birds – Bald eagle, Northern spotted owl	Birds – Yellow-billed cuckoo, Streaked horned lark
Fish – Chum salmon, Coho salmon, Steelhead, Sockeye salmon	Amphibians and Reptiles – Oregon Spotted Frog
Plants – Howellia, Bradshaw's lomatium, Nelson's checker-mallow	PROPOSED SPECIES - None
ESSENTIAL FISH HABITAT ¹³ – Chinook	

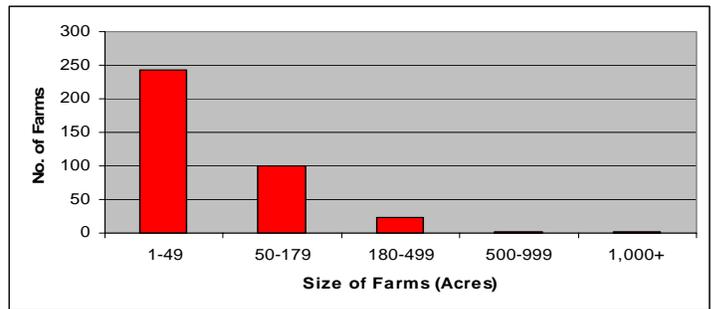
Census and Social Data ^{/14}

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Number of Farms: 370

Number of Operators: 610

- Full-Time Operators: **172**
- Part-Time Operators: **438**



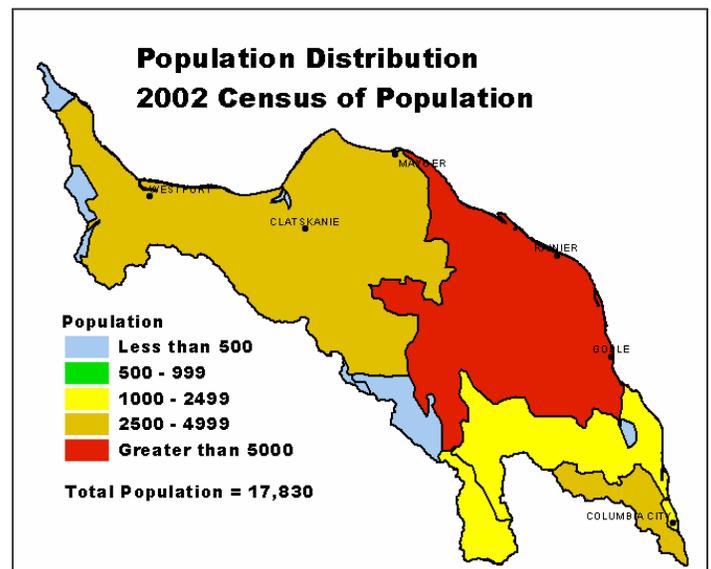
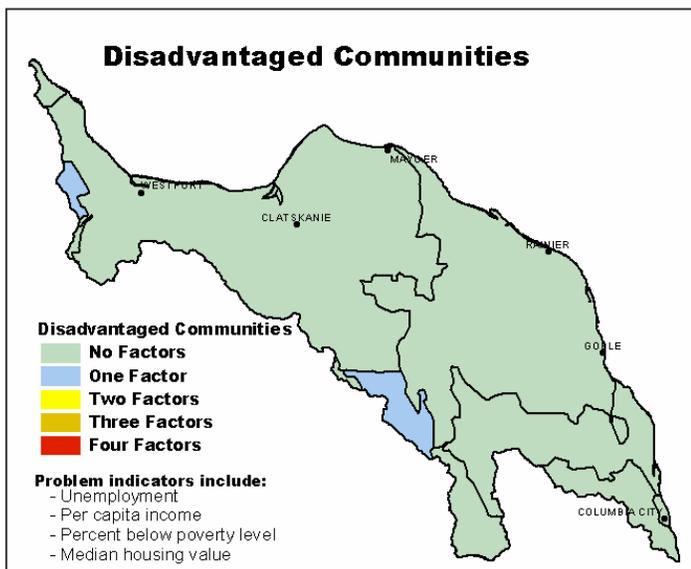
Estimated Level of Willingness and Ability to Participate in Conservation ^{/15}: **Low** (for small operations)

The majority of the operators in the Lower Columbia/Clatskanie River subbasin have farms that are less than 50 acres in size, and they are relatively new to agriculture, land management, and conservation. Generally, they are educated people, are aware of local natural resource issues, and have a moderate stewardship attitude. They are not necessarily dependent on income from their land or operation.

To increase the willingness and ability of the small acreage landowners to adopt conservation practices, information distribution and marketing efforts need to be targeted directly at these landowners. Financial assistance may be necessary to persuade the landowners to try new conservation systems. Extensive technical assistance is needed during implementation to properly install and maintain new conservation practices and systems.

Evaluation of Social Capital ^{/16} **Low**

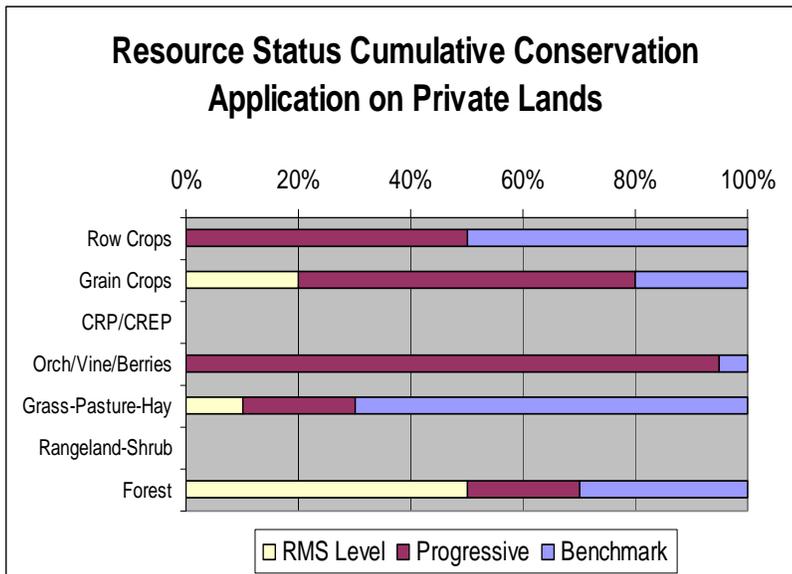
Social capital in the Lower Columbia/Clatskanie River subbasin and the community's ability to successfully address local resource concerns tends to be low. The community's greatest strength is that it finishes community projects that it starts. In general, the community has good leadership and demonstrates fair participation in community activities but it lacks widespread participation of the majority of residents, especially newcomers and members of minority groups. The community might benefit from community activities that are directed at local issues of concern to new landowners and minority groups. It might also benefit from community development assistance that is provided by the NRCS resource conservation and development (RC&D) office or the USDA Cooperative Extension Service, which help to obtain government funding to address local resource concerns.



Progress/Status

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PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg/Year	Total
Total Conservation Systems Planned (Acres)	733	346	110	645	509	469	2,343
Total Conservation Systems Applied (Acres)	655	63	2,049	2,527	0	1,059	5,294
Conservation Treatment Acres							
Waste Management (Number)	3	0	0	0	0	1	3
Buffers (Acres)	26	111	0	0	0	27	137
Erosion Control (Acres)	10	0	0	0	0	2	10
Irrigation Water Management (Acres)	0	0	0	0	1	0	1
Nutrient Management (Acres)	67	0	0	20	0	17	87
Pest Management (Acres)	0	0	114	20	0	27	134
Prescribed Grazing (Acres)	76	67	78	734	0	191	955
Trees & Shrubs (Acres)	45	65	28	3	0	28	141
Conservation Tillage (Acres)	0	1,350	223	0	0	315	1,573
Wildlife Habitat (Acres)	560	300	56	754	2,400	814	4,070
Wetlands (Acres)	68	0	109	25	0	40	202



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

- ❖ Progress over the last 5 years has been focused on:
 - ~ Prescribed grazing on pastureland.
 - ~ Wildlife habitat management in riparian and wetland areas.
- ❖ Most of the livestock operations are smaller, noncommercial operations with beef, horses, or other livestock. NRCS and the SWCD have not devoted attention to these small farms in the past; thus, most of the operations are at the benchmark level.
- ❖ Private, industrial forestland owners typically do not work with NRCS and SWCDs; however, their land commonly complies with State forest practices act requirements.
- ❖ Much of the non-industrial, private forestland in the watershed is used as rural homesites or recreational property.
- ❖ The private landowners who do manage for long-term timber production typically comply with State forest practices act requirements and operate at the RMS level.

Lands Removed from Production through Farm Bill Programs

- ❖ Conservation Reserve Program (CRP): **None**
- ❖ Wetland Restoration Program (WRP): **None**
- ❖ Conservation Reserve Enhancement Program (CREP): **None**

Footnotes/Bibliography

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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/wlexport.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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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.

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>.