



## Introduction

The Middle Columbia-Hood 8 Digit Hydrologic Unit Code (HUC) subbasin is over 1.3 million acres with the majority stretching across 3 of the 6 counties in the NRCS Deschutes Basin Administrative Area. Of the 1.3 million acre subbasin 47% (over 650,000 acres) run across the Columbia River and into the state of Washington. Of the 730,000 acres within Oregon, Wasco County houses 48%, Sherman has 10%, and Hood River has 42%. There are 940 farms in the subbasin. Fifty-three percent of the farms are less than 50 acres.

From the Columbia Gorge to Central Oregon, this area encompasses resources and commodities ranging from orchards to cattle, and flower seed to wheat.

Conservation assistance is provided by three NRCS service centers, one soil survey office, one Resource Conservation & Development (RC&D) office and two satellite Field offices, Warm Springs Indian Reservation and Hood River.

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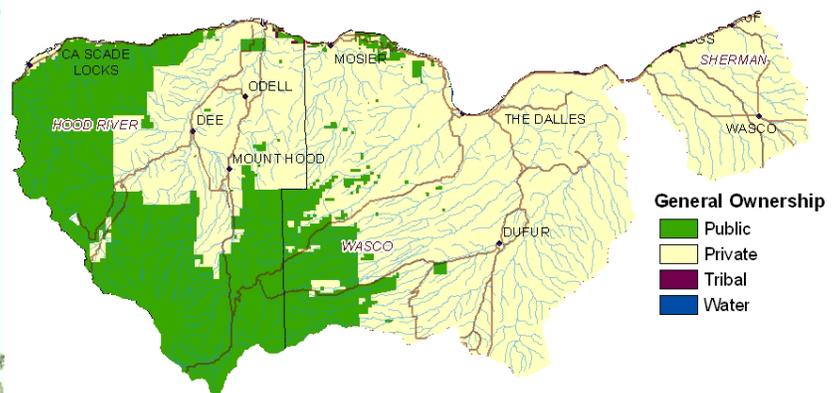
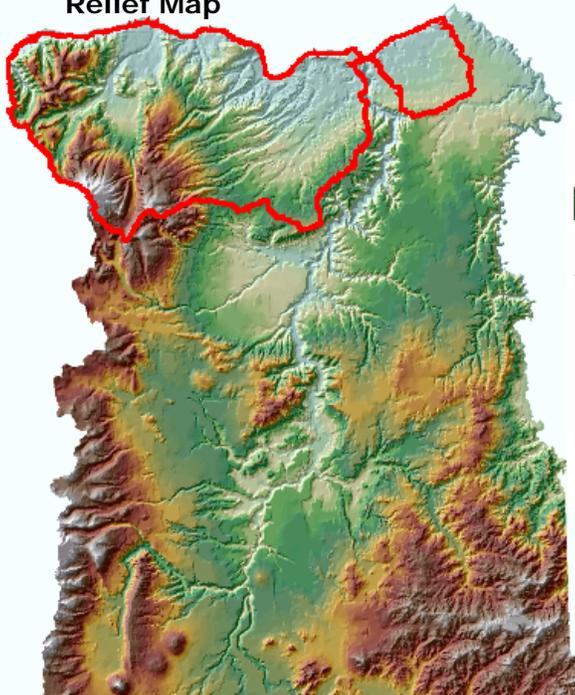
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## Relief Map



General Ownership

### Physical Description

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**ALL NUMBERS WITHIN THIS PROFILE ARE FOR OREGON ONLY**

Land Cover/ Land Use (NLCD <sup>2</sup> )	Ownership - (2003 Draft BLM Surface Map Set <sup>1</sup> )						Totals	% of HUC
	Public		Private		Tribal			
	Acres	%	Acres	%	*	%		
Forest	210,200	29%	168,400	23%	*	--	378,922	52%
Grain Crops	*	--	149,900	21%	*	--	150,119	21%
Conservation Reserve Program (CRP) Land <sup>a</sup>	0	0%	21,400	3%	*	--	21,396	3%
Grass/Pasture/Hay Lands	*	--	48,100	7%	*	--	54,236	8%
Orchards/Vineyards/Berries	*	--	19,600	3%	*	--	20,094	3%
Row Crops	*	--	*	--	*	--	*	--
Shrub/Rangelands	5,200	1%	78,000	11%	*	--	104,642	12%
Water/Wetlands/ Developed/Barren	9,700	1%	11,700	2%	*	--	21,975	2%
<b>Oregon HUC Totals <sup>b</sup></b>	<b>232,000</b>	<b>32%</b>	<b>497,300</b>	<b>68%</b>	<b>*</b>	<b>--</b>	<b>730,300</b>	<b>53%*</b>

\*: Less than one percent of total acres. See below for special considerations.

a: Estimate from Farm Service Agency records and include CRP/CREP.

b: Totals may not add due to rounding and small unknown acreages.

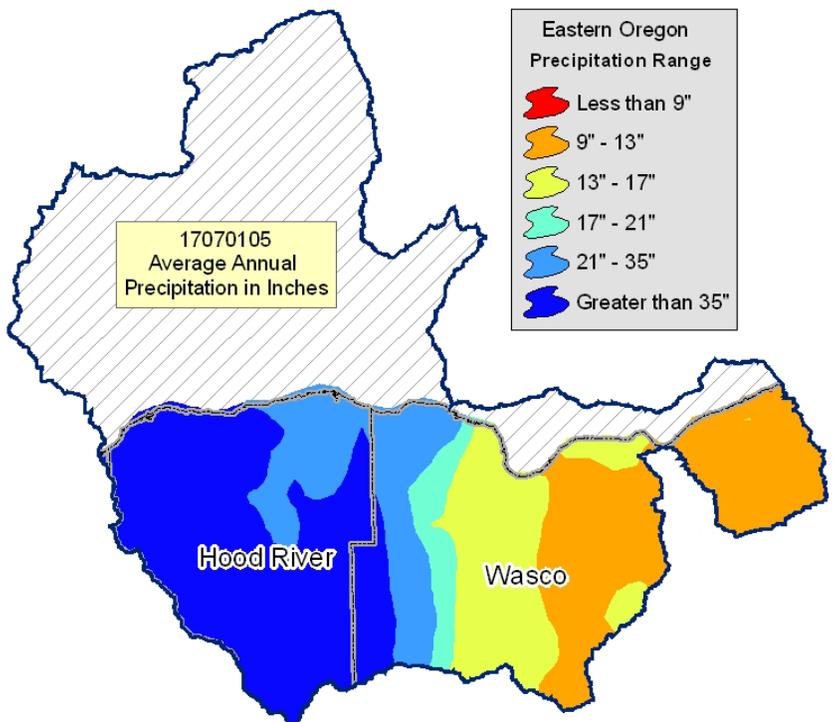
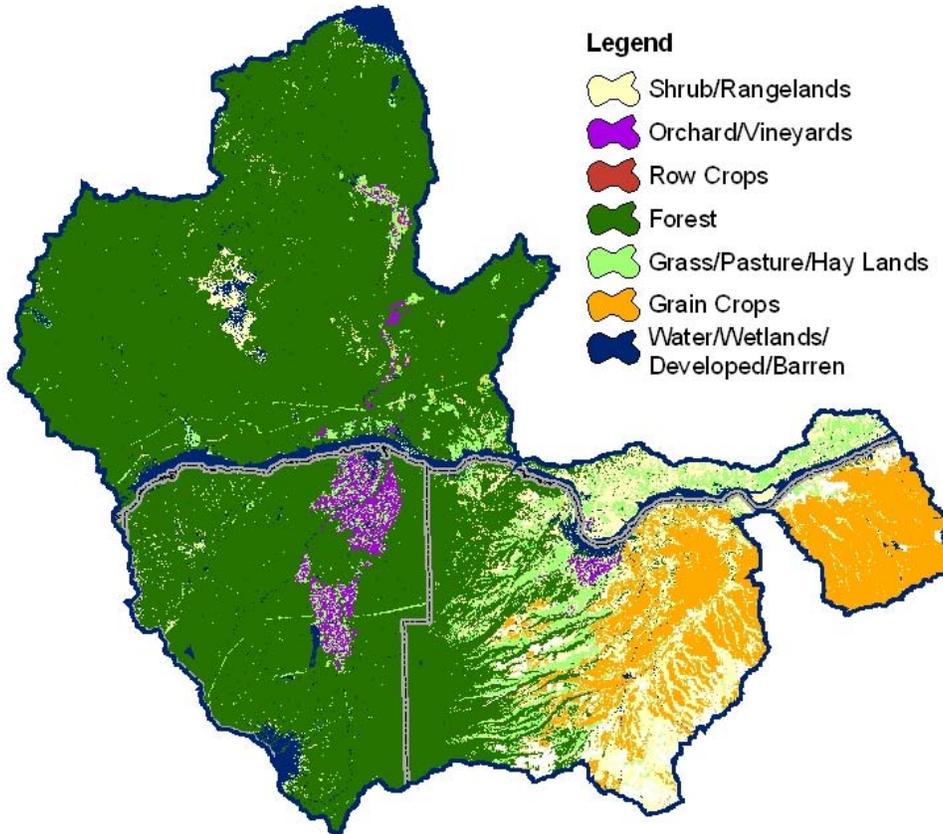
#### Special Considerations for this 8 Digit HUC:

- ~ Over half the private forest land is under industrial forest management.
- ~ In the 12+ inch precipitation zone some grain is annual cropped but at lower precipitation all is grown in a grain-fallow rotation.
- ~ Pasture units occur on large ranches and on many smaller farms in the vicinity of Hood River.
- ~ Most orchards (pears, cherries and apples) are located in Hood River and other areas near the Columbia River.
- ~ A minor acreage of irrigated row crops (corn, vegetables, carrot seed, onions, etc.) is also grown.

Irrigated Lands (1997 NRI <sup>3</sup> Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	4,200	11%	<1%
	Non-Cultivated Cropland	26,900	72%	4%
	Pastureland	6,500	17%	1%
	<b>Total Irrigated Lands</b>	<b>37,600</b>	<b>100%</b>	<b>5%</b>

(Continued on following pages)

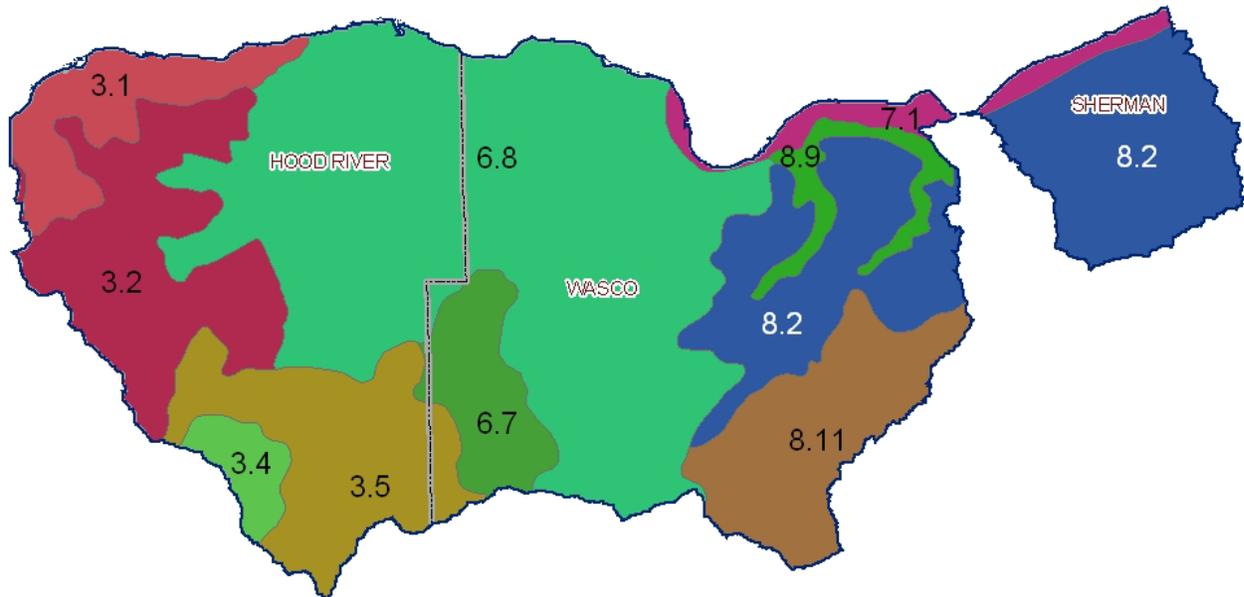
17070105  
Land use/Land cover Map



## Common Resource Area Map

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CRA Map - areas with a majority are listed below - for descriptions of every class within the HUC, go to: <http://ice.or.nrcs.usda.gov/website/cra/viewer.htm>



**3.2 - Olympic and Cascade Mountains - Western Cascades Montane Highlands:** This unit comprises the mid to high elevation of the Cascades. Vegetation is Douglas-fir, western and mountain hemlock, Pacific silver fir, and noble fir. Elevation is typically above about 3,000 feet. The mountains are highly dissected with steep slopes. Temperature regime is frigid and "warm" cryic; moisture regime is udic. It normally has a deep annual snowpack.

**3.5 - Olympic and Cascade Mountains - Northern Cascade Crest Montane Forest:** The Cascade Crest Montane Forest CRA consists of an undulating plateau punctuated by volcanic buttes and cones that reach a maximum elevation of about 6500 feet. The CRA is extensively forested with mountain hemlock and Pacific silver fir. Temperature regime is cryic; moisture regime is udic. Although this unit has the same moisture and temperature regime as unit 3.3, it is noticeably more moist and the break between 3.3 and 3.5 is transitional.

**6.8 - Cascade Mountains, Eastern Slope - Oak-Conifer Eastern Cascades-Columbia Foothills:** This unit occurs at the eastern extreme of the Columbia River Gorge. It is characterized by vegetation of Oregon white oak, ponderosa pine and Douglas-fir. This unit and its vegetation are characteristic of the Columbia River gorge "micro-climate". This unit extends about equal distance into Oregon and Washington. Temperature regime is mesic and the moisture regime is xeric. This unit includes the orchard areas of Hood River.

**8.2 - Columbia Plateau - Loess Islands:** This unit is the remnant of the once unbroken mantle of wind-deposited loess that covered the entire Columbia Plateau. The unit is surrounded by eroded Pleistocene flood channels. Mean annual precipitation is 9 to 15 inches, increasing from west to east. Temperature regime is mesic and the moisture regime is aridic and xeric. The big sage-bluebunch wheatgrass association is the predominant vegetation. Three tip sage and Idaho fescue grow in a band around the northern perimeter of the CRA. Present-day land use has transformed the loess islands into wheat fields. Because of the low annual precipitation, crop rotations generally include a fallow period.

**8.11 - Columbia Plateau - Umatilla Plateau:** This is the major unit within the MLRA. It consists of loess mantled basalt plateaus. The soils are the moderately deep silt loam Condon and Morrow soils series. Temperature regime is mesic; moisture regime is xeric. Precipitation is about 12 to 15 inches.

**Physical Description – Continued**

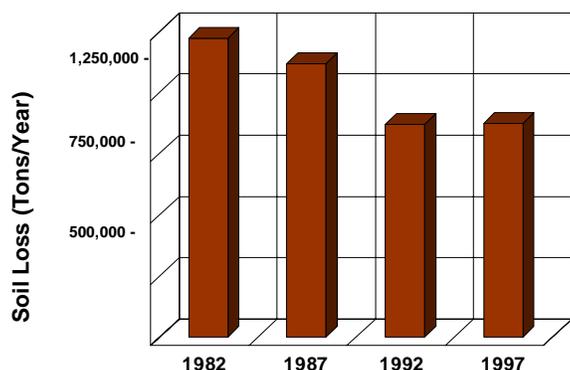
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		ACRES	ACRE-FEET			
<b>Irrigated Adjudicated Water Rights</b> (OWRD <sup>4</sup> )	Surface	30,908	93,615			
	Well	11,345	33,756			
	<b>Total Irrigated Adjudicated Water Rights</b>	<b>42,252</b>	<b>127,371</b>			
<b>Stream Flow Data</b>	USGS 14120000 HOOD RIVER AT TUCKER BRIDGE, NEAR HOOD RIVER, OR	<b>Total Avg. Yield</b>	734,487			
		<b>May - Sept Yield</b>	212,684			
		<b>MILES</b>	<b>PERCENT</b>			
<b>Stream Data</b> <sup>5</sup>  <i>*Percent of Total Miles of streams in HUC</i>	Total Miles – Major (100K Hydro GIS Layer)	480	--			
	303d (DEQ Water Quality Limited Streams)	312	65%*			
	Anadromous Fish Presence (Streamnet)	114	24%*			
	Bull Trout Presence (Streamnet)	106	22%*			
		<b>ACRES</b>	<b>PERCENT</b>			
<b>Land Cover/Use</b> <sup>2</sup> based on a 100 ft. stretch on both sides of all streams in the 100K Hydro Layer	Forest	6,355	55%			
	Grain Crops	1,735	15%			
	Grass/Pasture/Hay Lands	1,027	9%			
	Orchards/Vineyards	256	2%			
	Row Crops	3	0%			
	Shrub/Rangelands – Includes CRP Lands	1,905	16%			
	Water/Wetlands/Developed/Barren	325	3%			
	<b>Total Acres of 100 ft stream buffers</b>	<b>11,603</b>	<b>--</b>			
<b>Land Capability Class</b> (Croplands & Pasturelands Only)  (1997 NRI <sup>3</sup> Estimates for Non-Federal Lands Only)	<b>I</b> – slight limitations	1,900	1%			
	<b>II</b> – moderate limitations	51,800	29%			
	<b>III</b> – severe limitations	85,500	47%			
	<b>IV</b> – very severe limitations	27,200	15%			
	<b>V</b> – no erosion hazard, but other limitations	0	0%			
	<b>VI</b> – severe limitations, unsuited for cultivation, limited to pasture, range, forest	14,200	8%			
	<b>VII</b> – very severe limitations, unsuited for cultivation, limited to grazing, forest, wildlife	0	0%			
	<b>VIII</b> – misc areas have limitations, limited to recreation, wildlife, and water supply	0	0%			
	<b>Total Crop &amp; Pasture Lands</b>	<b>180,600</b>	<b>--</b>			
	<b>Confined Animal Feeding Operations – Oregon CAFO Permit – 12/2004</b>					
<b>Animal Type</b>	<b>Dairy</b>	<b>Feed Lot</b>	<b>Poultry</b>	<b>Swine</b>	<b>Mink</b>	<b>Other</b>
<b>No. of Permitted Farms</b>	1	0	0	0	0	0
<b>No. of Permitted Animals</b>	140	0	0	0	0	0

### Resource Concerns

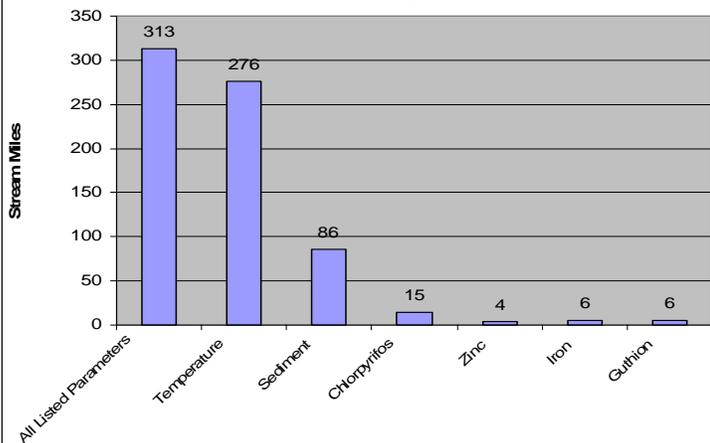
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#### Tons of Soil Loss by Water Erosion



- ❖ Sheet and rill erosion by water on the subbasin croplands and pasturelands have been reduced by almost 350,000 tons of soil per year from 1982 to 1997.
- ❖ NRI estimates indicate 90,600 acres of the subbasin agricultural lands still had water erosion rates above a sustainable level in 1997.
- ❖ Controlling erosion not only sustains the long-term productivity of the land, but 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 cultivated cropland fell 22 percent from 8.0 to 6.2 tons/acre/year from 1982 to 1997. Recent results indicate reductions down to 2 tons/acre.

#### 2002 Water Quality Concerns 303d list and TMDL parameters

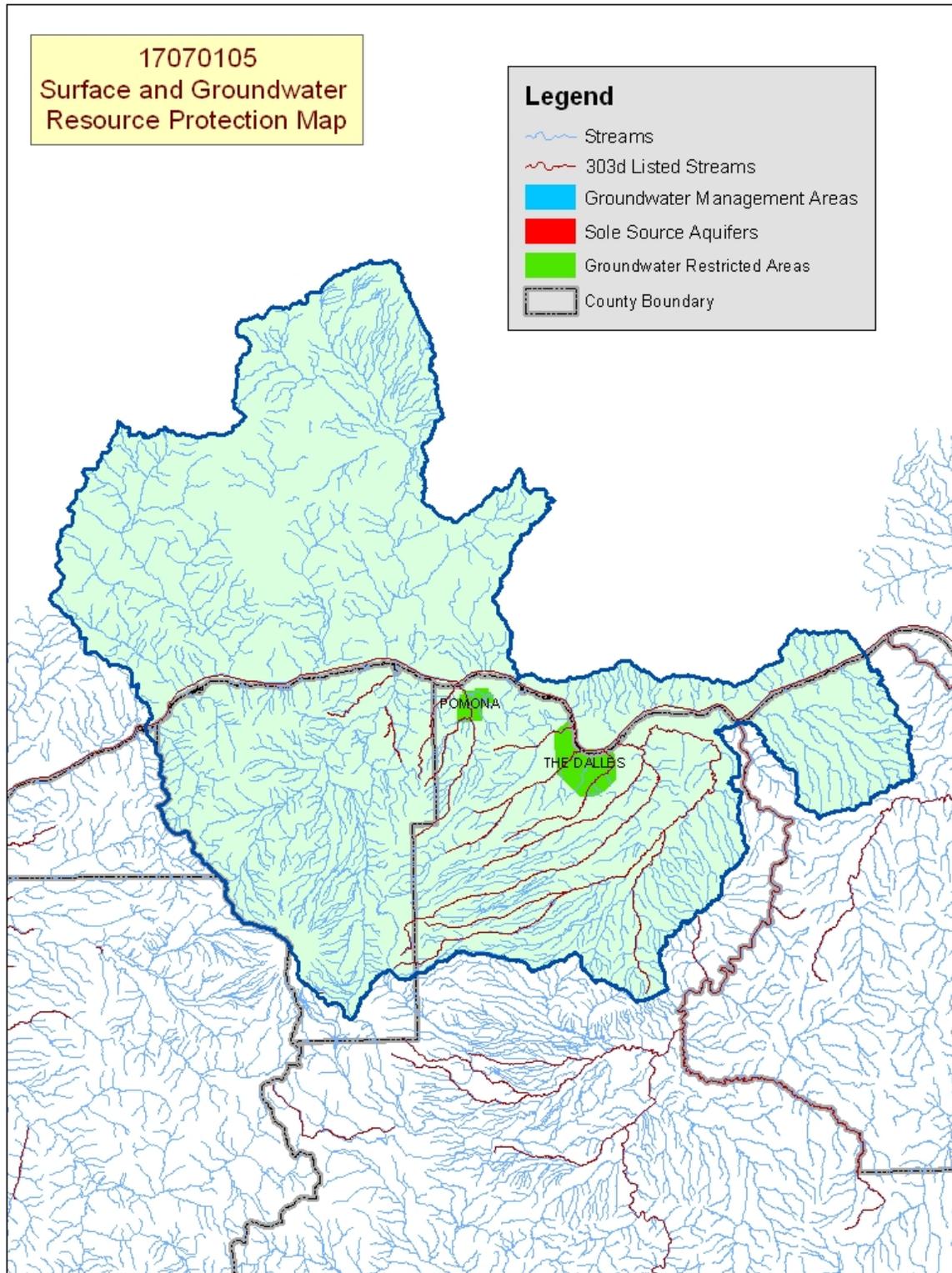


- ❖ Eighty-eight percent of all listed stream miles are listed for stream temperatures exceeding state water quality standards. Elevated stream temperatures may be due to inadequate riparian shade, stream channel widening, warm irrigation return flows, and other anthropogenic or natural sources.
- ❖ Stream reaches listed for sediment are affected by erosion on croplands and from stream banks.
- ❖ Other parameters are listed for localized problems most often associated with orchards and vineyards.
- ❖ Conservation practices that can be used to address these water quality issues include erosion control, nutrient and pest management, grazing management, irrigation water management and riparian buffers.
- ❖ Pesticide listings based on detections from limited sampling of water quality in orchard areas.

#### Watershed Projects, Plans, Studies and Assessments

NRCS Watershed Projects <sup>6</sup>		NRCS Watershed Plans, Studies & Assessments <sup>7</sup>	
Name	Status	Name	Status
Middle Fork Hood River Mt. Hood Irrigation District	Installed - 1963 Installed - 1985	Central Canal Pipeline - East Fork Irrigation District	Preliminary Investigation Report - 2004
ODEQ TMDL's <sup>8</sup>		ODA Agricultural Water Quality Mgt Plans <sup>9</sup>	
Name	Status	Name	Status
Western Hood Columbia & Willamette Rivers Columbia & Snake Rivers TMDLs	EPA Approved 2002 EPA Approved 1991 Draft for Review	Hood River Lower Deschutes	Completed Completed
OWEB Watershed Council <sup>10</sup>		Watershed Council Assessments <sup>11</sup>	
Fifteenmile, Fulton/Gordon Canyons, Hood River, Mosier, North Sherman, and The Dalles Watershed Councils	To Be Completed Later	NWPC Subbasin Plans & Assessments <sup>18</sup>	
		Columbia Gorge, Lower Columbia Mainstem, Hood River, Fifteenmile Creek Subbasin Plans	

(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	Pasture\Hay	Grain Crops	Row Crops	Orchards/Vnyrd	Shrub/Range	Forest
Soil Erosion	Sheet & Rill		X	X			
	Wind		X				
	Concentrated Flow						X
	Classic Gully					X	
	Irrigation Induced			X	X		
Soil Condition	Tilth, Crusting, Infiltration, Organic Matter		X				
Water Quantity	Water Mgt. For Irrigated Land	X		X	X		
Water Quality, Surface	Pesticides			X	X		
	Suspended Sediments & Turbidity		X				X
	Temperature	X	X		X	X	X
	Aquatic Habitat Suitability		X		X	X	
Plant Suitability	To Site & Intended Use	X					
Plant Condition	Productivity, Health & Vigor	X				X	X
Animal Habitat, Domestic	Water - Quantity & Quality					X	
Animal Habitat, Wildlife	Food, Cover &/or Shelter						X

#### Grass/Pasture/Hay Lands

- Major concerns are with controlling invasive weeds and maintaining good pasture condition.

#### Grain Crops

- Direct seeding and annual cropping has been successful in the higher rainfall (12 inches plus) zone.
- Soil erosion and low organic matter remain resource concerns at lower rainfall where conventional grain-fallow rotations are still utilized.

#### Row Crops

- Competition for clean, plentiful water for fish and wildlife mandates water conservation on irrigated row crops.

#### Orchard/Vineyards/Berries

- Water conservation and water quality (potential for pesticide contamination) are issues on irrigated orchards.

#### Shrub/Rangelands

- Noxious weeds and poor range condition reduce productivity for livestock and wildlife.
- Rangelands lying adjacent to watershed streams result in concerns about impacts (habitat and temperature) to fisheries.

#### Forest

- Much of the private forest lands are managed by private industrial owners who generally comply with state forest practices.
- Usually private non-industrial forestland is associated with small woodlots or rural homesites which are not actively managed for timber production.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES <sup>/12</sup>	
Threatened Species	Candidate Species
<b>Marine</b> - None	<b>Fish</b> - None
<b>Mammals</b> – Canada lynx	<b>Birds</b> – Yellow-billed cuckoo
<b>Birds</b> - Bald eagle, Northern Spotted Owl	<b>Amphibians and Reptiles</b> – Oregon spotted frog
<b>Fish</b> – Steelhead, Chinook salmon, Bull Trout	<b>Plants</b> – Northern wormwood
<b>Invertebrates</b> – None	<b>PROPOSED SPECIES</b> None
<b>Plants</b> – None	
<b>ESSENTIAL FISH HABITAT</b> <sup>/13</sup> – Chinook, Coho salmon	

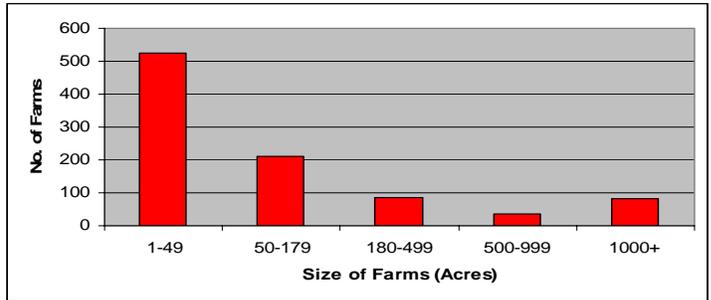
### Census and Social Data<sup>/14</sup>

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Number of Farms: **940**

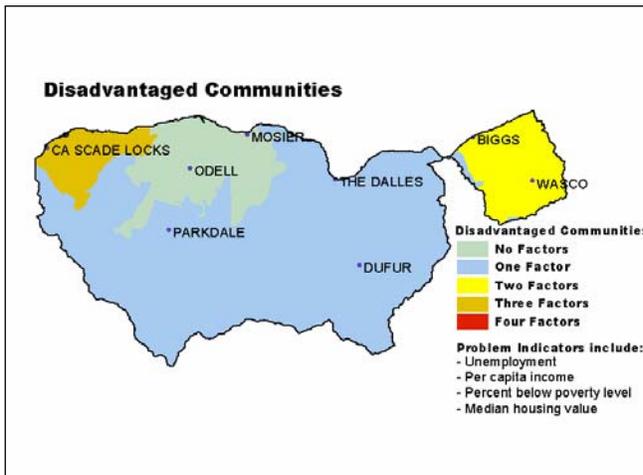
Number of Operators: **1,485**

- Full-Time Operators: **577**
- Part-Time Operators: **908**

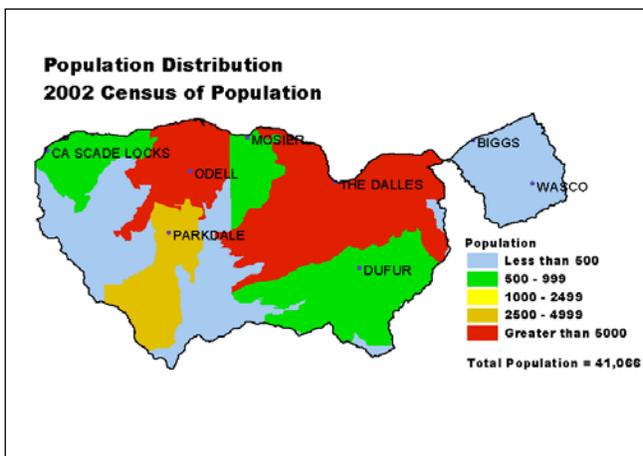


Estimated Level of Willingness and Ability to Participate in Conservation<sup>/15</sup>: **MODERATE**

Evaluation of Social Capital<sup>/16</sup>: **LOW TO MODERATE**



While some variation exists throughout the watershed, overall conservation participation in the Middle Columbia HUC is above average and the communities in the watershed have adequate human resources to effectively deal with natural resource concerns. Conservation implementation would benefit from additional incentives and increased technical assistance to improve and develop individual, on-farm management skills. Many communities in the watershed have strong leadership, internet access, and experience completing local projects. Most individuals in the communities actively participate in public meetings and local organizations, exercise their right to vote, and have previously used government assistance to solve problems. Communities would benefit by more media coverage of local issues. Also, broadening public participation to include more minority groups in local organizations and groups could help build consensus and support for decisions affecting the entire community.

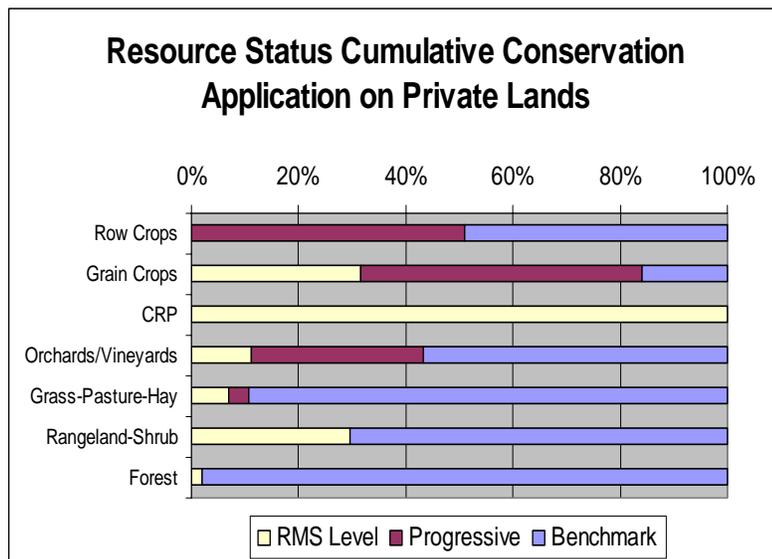


Sixty one percent of the operators are part-time and more than 50 percent of the farms are less than 50 acres. These facts point to the potential need for special technical assistance targeted to reach people who (1) may lack experience with government farm programs, (2) have good stewardship intentions but lack management skills, and (3) lack the time during a normal 40-hour workweek to visit an NRCS field office and seek assistance.

### Progress/Status

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PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg/Year	Total
Total Conservation Systems Planned Acres	10,066	9,353	24,969	15,177	11,581	14,229	71,146
Total Conservation Systems Applied Acres	4,126	6,449	38,739	12,116	24,866	17,259	86,296
Conservation Treatment							
Waste Management (number)	0	0	0	1	0	0	1
Riparian Forest Buffers (acres)	155	0	179	476	76	177	886
Erosion Control (acres)	5,870	21,326	40,561	12,775	10,787	18,264	91,319
Irrigation Water Management (acres)	433	0	12	9	667	224	1,121
Nutrient Management (acres)	147	280	2,669	6,167	0	1,853	9,263
Pest Management (acres)	3,020	3,539	3,499	4,253	2,021	3,266	16,332
Prescribed Grazing (acres)	0	273	219	0	0	98	492
Trees & Shrubs (acres)	22	1	228	113	388	150	752
Conservation Tillage (acres)	3,439	15,668	36,360	11,749	8,240	15,091	75,456
Wildlife Habitat (acres)	1,338	14,509	18,765	306	118	7,007	35,036
Wetlands (acres)	0	0	0	10	0	2	10



(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, on non-irrigated grain.
  - ~ Nutrient and pest management on orchards.
  - ~ Wildlife habitat management on riparian areas and uplands.
- ❖ Row crop are generally produced on small farms in Hood River who have not previously worked with NRCS.
- ❖ Eighty-five percent of the resource concerns are being addressed on grain farms.
- ❖ Many orchards have not yet adopted advanced pest and irrigation management practices.
- ❖ Resource concerns with pasture management often are not being addressed on small farms.
- ❖ Private non-industrial forest, not managed for timber, usually would not meet state forest practices.

### Lands Removed from Production through Farm Bill Programs

- ❖ Conservation Reserve Program (CRP): **21,396 acres**
- ❖ Wetland Restoration Program (WRP): **None**
- ❖ Conservation Reserve Enhancement Program (CREP): **1,720.3 acres**

### 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, Federal, Tribal, State, and Local. This will be a seamless, statewide Oregon Public Ownership vector layer composed of fee ownership of lands by Federal, State, Tribal, County, and City agencies. The layer will be comprised of the best available data compiled at 1:24,000 scale or better and linework will match 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 or 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, Publication\_Information: Publication\_Place: Sioux Falls, SD USA, Publisher: U.S. Geological Survey, Online\_Linkage: <http://edcwww.cr.usgs.gov/programs/lccp/nationallandcover.html>, Description: 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 due to 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 Resource Conservation Service, Watershed Projects Planned and Authorized, <http://www.nrcs.usda.gov/programs/watershed/Purpose>.
7. Natural Resource Conservation Service, Watershed Plans, Studies and Assessments completed, [http://www.nrcs.usda.gov/programs/watershed/Surveys\\_Plng.html#Watershed%20Surveys%20and%20Plan](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](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](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 degree of social capital helps a community to be physically healthy, socially progressive, and economically vigorous. Low amounts of social capital typically result in community conflict, lack of trust and respect, and unsuccessful attempts to solve problems. The evaluation used 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](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>.