

Introduction



The Oregon portion of the Mid-Columbia/Wallula 8-Digit Hydrologic Unit Code (HUC) subbasin is 502,600 acres in size and is in parts of four counties, including Morrow (63 percent), Gilliam (19 percent), Umatilla (18 percent), and Sherman (<1 percent) Counties. The subbasin is 85 percent privately owned, consists of both irrigated land and dryland, and is largely rangeland, pastureland, and cropland. Resource concerns include wind erosion, poor soil condition, inadequate irrigation water management, and ground water contamination. Social concerns include unreliable profits, perceived high risks, inadequate cost-share programs, and new, inexperienced resource managers.

In the Oregon part of the subbasin, there are about 500 operators on slightly more than 300 farms and ranches. More than one-half of the farms and ranches are less than 50 acres in size, and just over 20 percent are more than 1,000 acres in size. Only about one-third of the operators are fulltime.

Conservation assistance is provided by three NRCS service centers, four soil and water conservation districts, and the Columbia Blue Mountain Resource Conservation and Development (RC&D) office.

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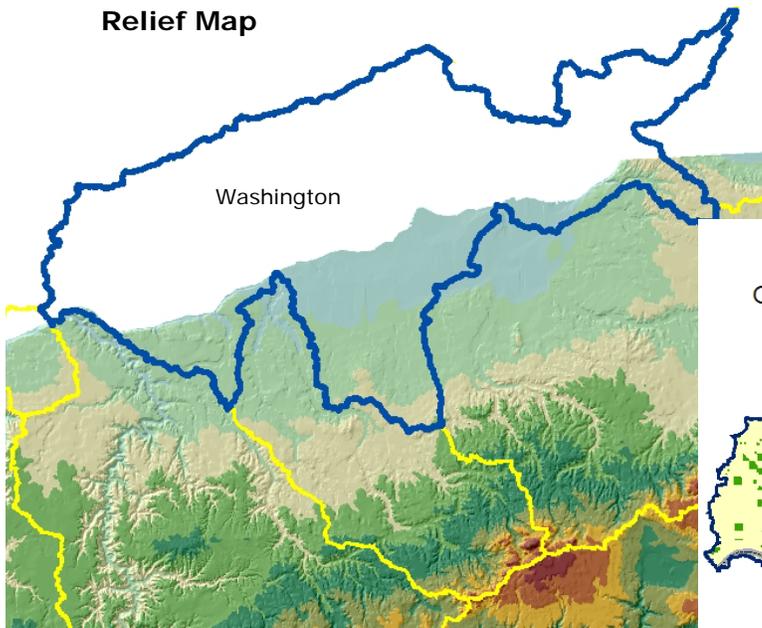
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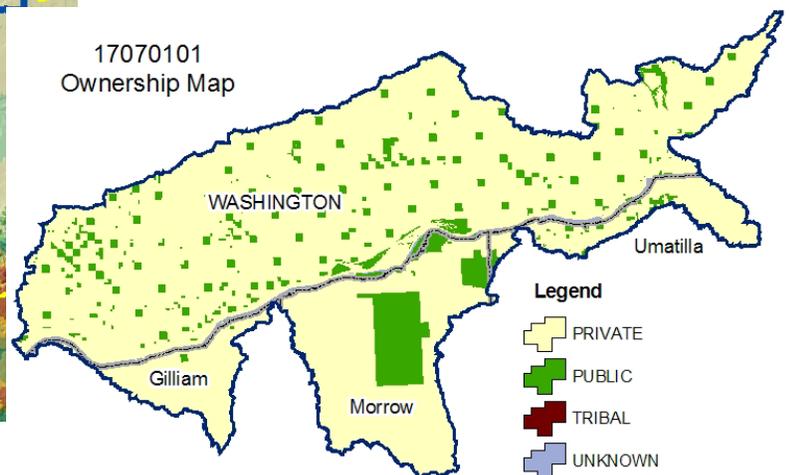
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Relief Map



17070101
Ownership 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 ⁴)							
	Public		Private		Tribal		Totals	%
	Acres	%	Acres	%	Acres	%		
Forest	---	*	---	*	0	0%	---	*
Grain Crops	---	*	147,200	29%	0	0%	148,100	29%
Conservation Reserve Program Land ^a	---	*	16,000	3%	0	0%	16,000	3%
Grass/Pasture/Hay	4,900	1%	107,100	21%	0	0%	112,000	22%
Orchards/Vineyards	0	0%	0	0%	0	0%	0	0%
Row Crops	0	0%	0	0%	0	0%	0	0%
Shrub/Rangelands	67,100	13%	143,100	28%	0	0%	210,200	42%
Water/Wetlands/Developed/Barren	---	*	12,200	2%	0	0%	16,000	3%
Oregon HUC Totals ^b	76,700	15%	425,900	85%	0	0%	502,600	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:

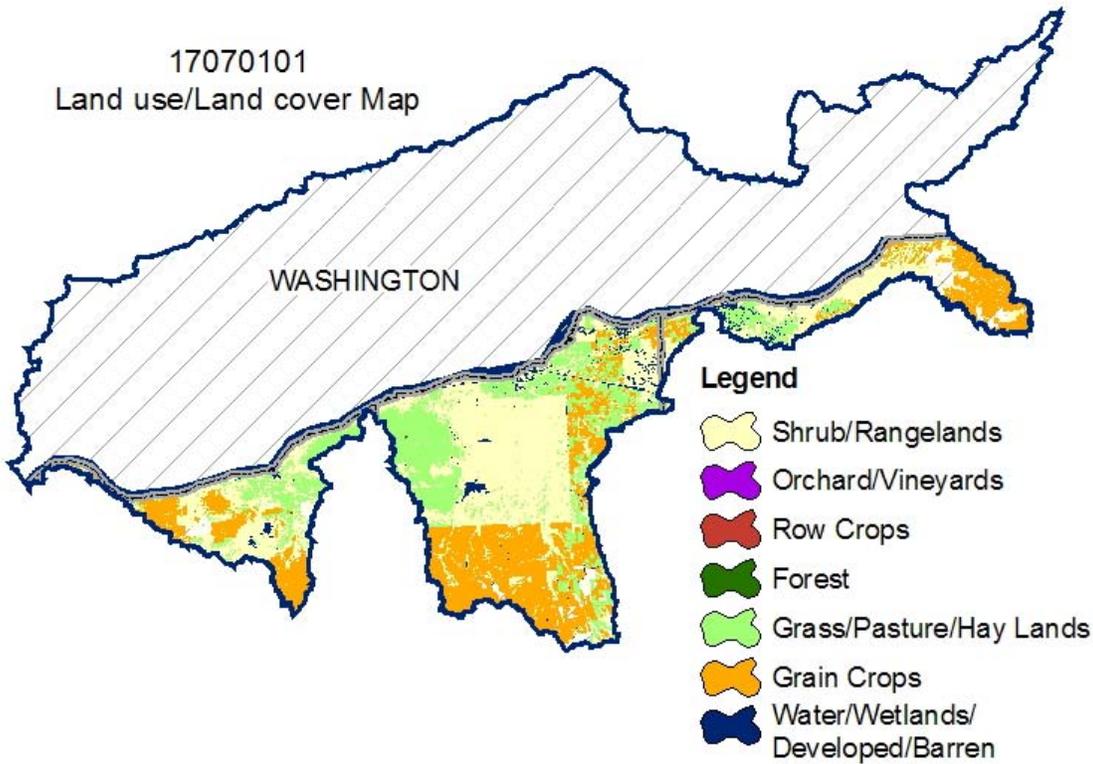
- Both irrigated and dryland wheat is grown in the watershed.
- Row crops are grown in rotation with wheat on approximately 20,000 irrigated acres. Row crops include corn, potatoes, and onions as well as melons and other specialty crops. In the above chart, table row crops are included with grain crops.
- About 107,000 acres is used for irrigated pasture, hay, and grass seed.
- Irrigated hybrid poplar is grown for pulp and peelers on about 20,000 acres.

Irrigated Lands (1997 NRI ³ Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	54,400	47%	11%
	Uncultivated Cropland	17,100	15%	3%
	Pastureland	43,800	38%	9%
	Total Irrigated Lands	115,300	100%	23%

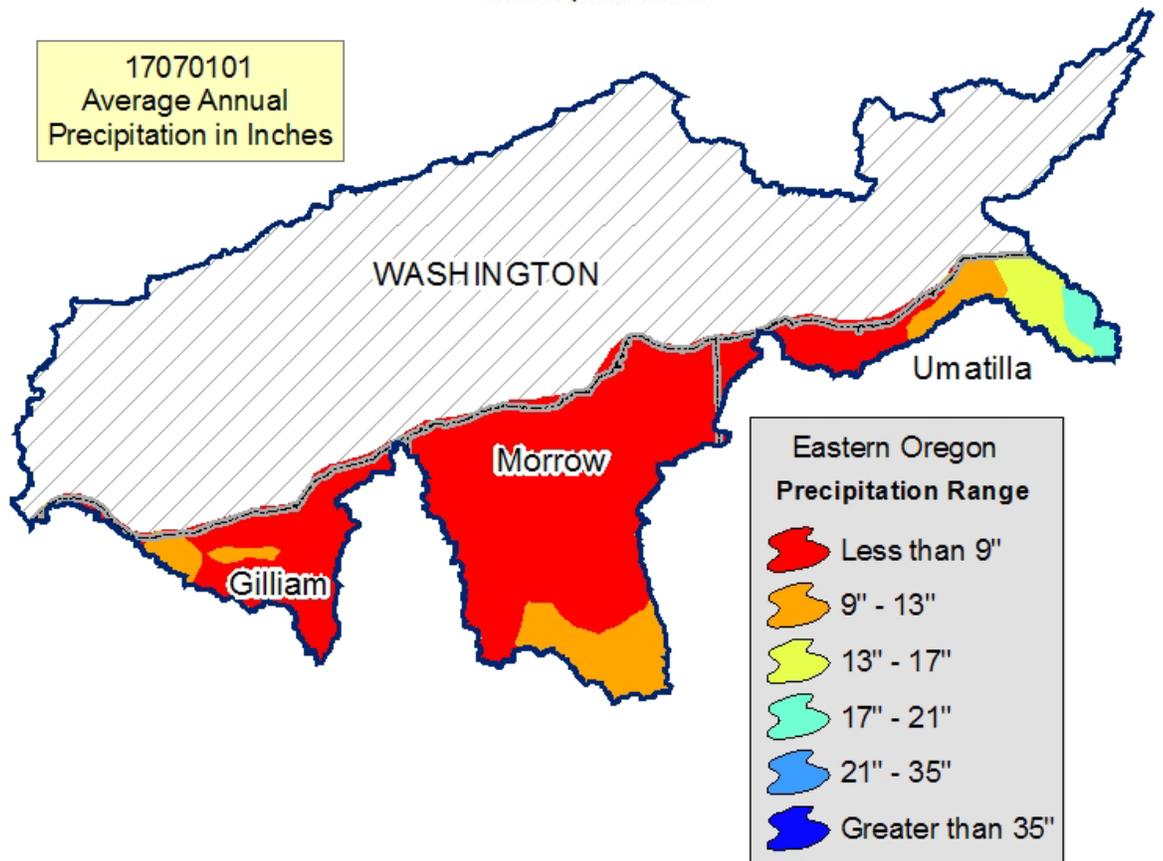
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17070101
Land use/Land cover Map



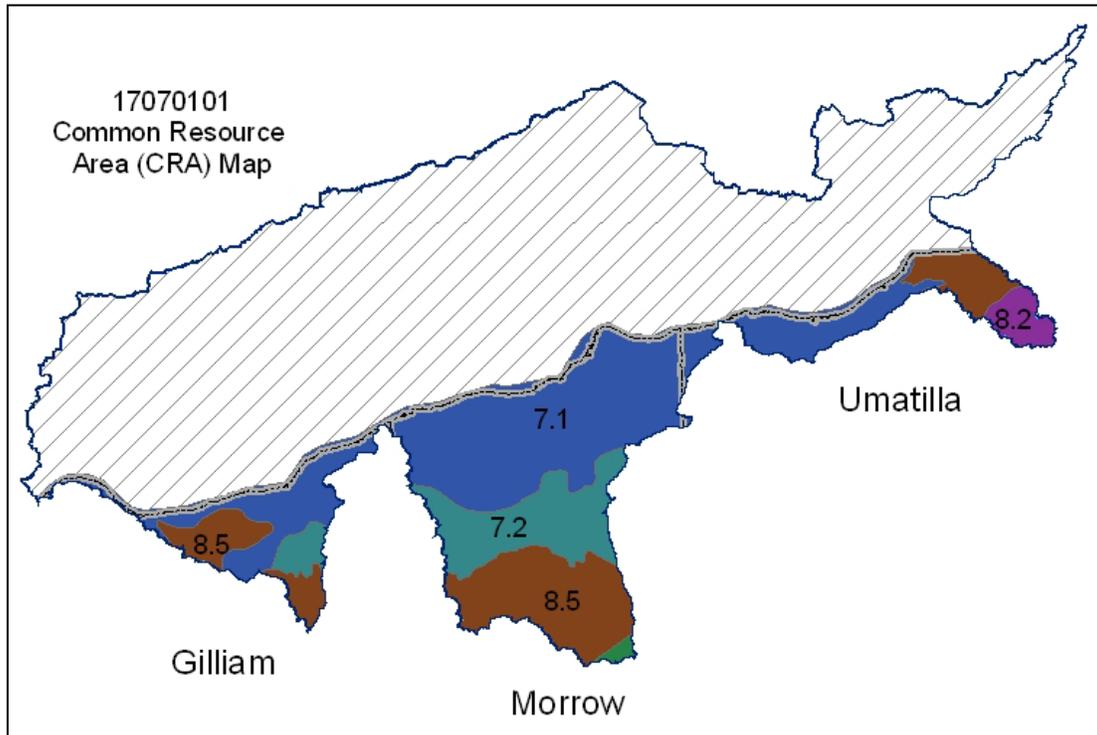
17070101
Average Annual
Precipitation in Inches



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



7.1 - Columbia Basin - Sandy Missoula Flood Deposits: This unit once contained vast temporary lakes that were created by floodwater from glacial Lake Missoula. The mean annual precipitation is 6 to 9 inches. The soils are dominantly sand, loamy sand, and sandy loam and include those of the Quincy, Sagehill, Roloff, Olex, and Koehler series. The temperature regime is mesic, and the moisture regime is aridic. The native vegetation consists of bluebunch wheatgrass and sagebrush. Major irrigation projects provide water to this unit from the Columbia River and have allowed for the conversion of large areas of sagebrush to agriculture use. Although the water supply is not limited, the quality of the groundwater is a major issue.

7.2 - Columbia Basin - Silty Missoula Flood Deposits: This unit is a transitional area between the Sandy Missoula Flood Deposits CRA and MLRA 8. The soils are dominantly silt loam and silt and include those of the Warden and Shano series. The temperature regime is mesic, and the moisture regime is aridic.

8.2 - Columbia Plateau - Loess Islands: This unit is a 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. The mean annual precipitation is 9 to 15 inches, increasing from west to east. The temperature regime is mesic, and the moisture regime is aridic and xeric. The big sagebrush-bluebunch wheatgrass plant association is dominant. Threetip sagebrush and Idaho fescue grow in a band around the northern perimeter of the CRA. The loess islands have been transformed into wheatfields. Because of the low annual precipitation, crop rotations generally include a fallow period.

8.5 - Columbia Plateau - Moist Yakima Folds: This unit is a series of anticlinal ridges and synclinal valleys covering the western Columbia Plateau. The far eastern end of the unit extends into Oregon east of Wallula Gap, on the Columbia River. The ridges are composed of basalt layers as much as 12,000 feet thick. Loess blankets the south-facing slopes and supports dryland wheat, and the steep, rocky, north-facing slopes are used for grazing. This unit is in the rainshadow of the Cascade Range, and it receives 9 to 15 inches of precipitation. The temperature regime is mesic, and the moisture regime is aridic. Sagebrush and bunchgrass plant associations are dominant in areas that are not heavily farmed or grazed.

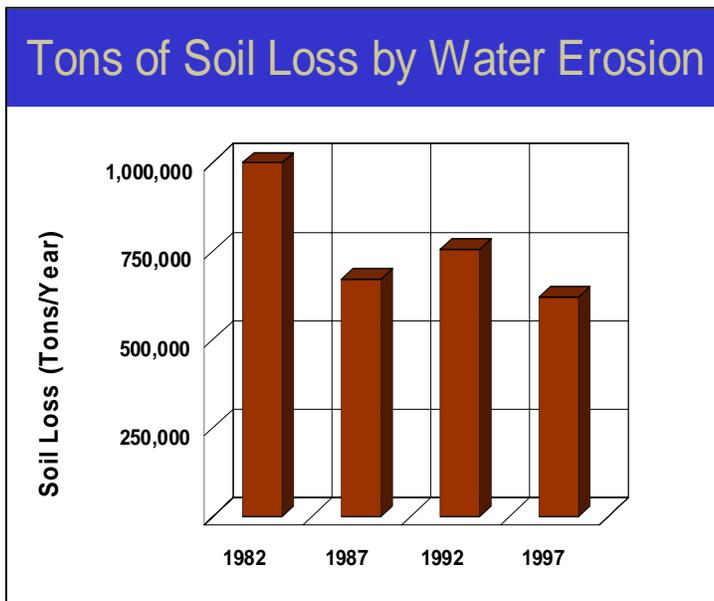
Physical Description – Continued

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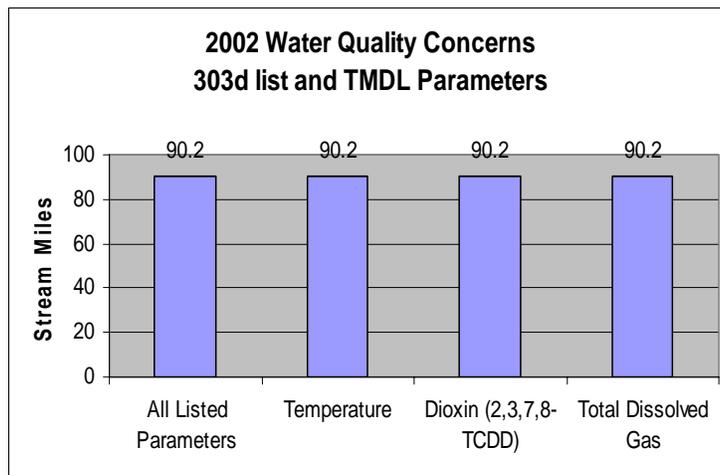
		ACRES	ACRE-FEET			
Irrigated Adjudicated Water Rights (OWRD ^{/4})	Surface	60,512	217,375			
	Well	26,986	96,940			
	Total Irrigated Adjudicated Water Rights	87,498	314,316			
Stream Flow Data	USGS 14019200 COLUMBIA RIVER AT MCNARY DAM, NEAR UMATILLA, OR	Total Avg. Yield	132,067,438			
		May – Sept. Yield	73,950,942			
		MILES	PERCENT			
Stream Data ^{/5} <i>*Percent of Total Miles of Streams in HUC</i>	Total Miles – Major (100K Hydro GIS Layer)	125	---			
	303d/TMDL Listed Streams (DEQ)	90.2	72%			
	Anadromous Fish Presence (StreamNet)	30.1	24%			
	Bull Trout Presence (StreamNet)	96.3	77%			
		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	14	0%			
	Grain Crops	4,898	36%			
	Grass/Pasture/Hay	1,444	11%			
	Orchards/Vineyards	0	0%			
	Row Crops	0	0%			
	Shrub/Rangelands – Includes CRP Lands	6,744	50%			
	Water/Wetlands/Developed/Barren	445	3%			
	Total Acres of 100-Foot Stream Buffers	13,545	100%			
Land Capability Class <i>(Croplands & Pasturelands Only)</i> <i>(1997 NRI^{/3} Estimates for Non-Federal Lands Only)</i>	1 – slight limitations	1,500	1%			
	2 – moderate limitations	47,000	17%			
	3 – severe limitations	92,100	34%			
	4 – very severe limitations	126,700	46%			
	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	6,800	2%			
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0	0%			
	Total Croplands & Pasturelands	274,100	--			
Confined Animal Feeding Operations – Oregon CAFO Permit – 12/2004						
Animal Type	Dairy	Feedlot	Poultry	Swine	Mink	Other
No. of Permitted Farms	2	4	0	0	0	1
No. of Permitted Animals	55,300	46,300	0	0	0	12,000

Resource Concerns

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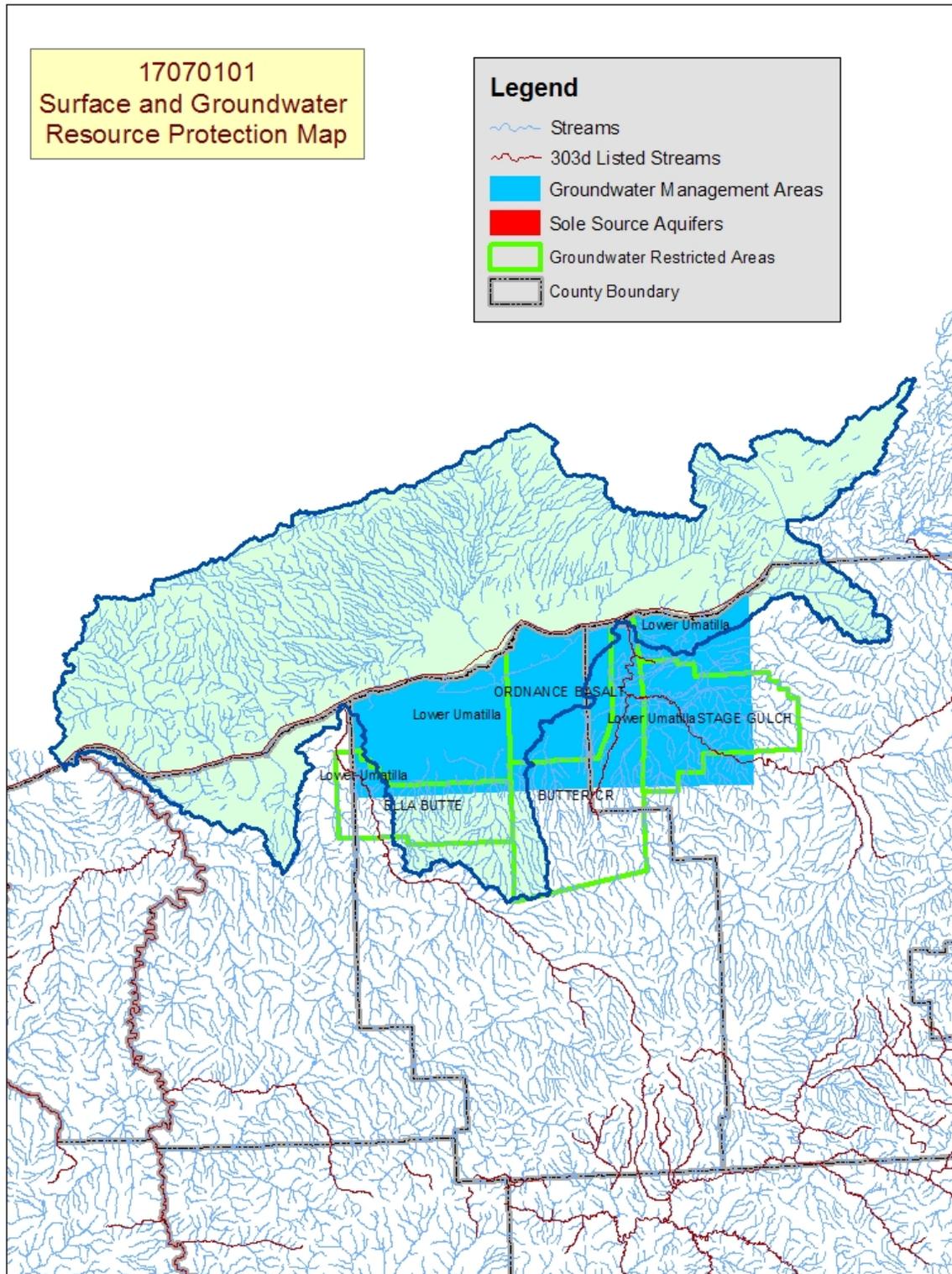
- ❖ Sheet and rill erosion by water on the croplands and pasturelands have been reduced by nearly 400,000 tons of soil per year from 1982 to 1997.
- ❖ NRI estimates indicate that 50,200 acres of the agricultural lands still had water erosion rates above a sustainable level in 1997.
- ❖ Controlling erosion not only sustains the long-term productivity of the land, but 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, the rate of erosion on croplands and pasturelands fell 39 percent, from 3.6 tons per acre per year to 2.2 tons per acre per year from 1982 to 1997.



- ❖ The entire 90 miles of the Columbia River flowing through this hydrologic unit is listed as having limited water quality because of temperature, dioxins, and total dissolved gas.
- ❖ Generally, the water quality concerns are related to operation of the Columbia River hydropower facilities and only indirectly to agriculture or other nonpoint causes.

Watershed Projects, Plans, Studies and Assessments			
NRCS Watershed Projects ⁶		NRCS Watershed Plans, Studies, and Assessments ⁷	
Name	Status	Name	Status
Upper Stage Gulch	Active	None	
ODEQ TMDL's ⁸		ODA Agricultural Water Quality Management Plans ⁹	
Name	Status	Name	Status
Columbia & Willamette Rivers Columbia/Snake Rivers TMDLs	EPA Approved – 1991 Draft for Review	Lower John Day Mid Columbia-Lake Wallula Umatilla River Subbasin Willow Creek	Completed Completed Completed Completed
OWEB Watershed Council ¹⁰		Watershed Council Assessments ¹¹	NWPCC Subbasin Plans and Assessments ¹⁸
Gilliam-East John Day, Umatilla Basin, and Willow Creek Watershed Councils		None	Lower Middle Columbia Mainstem Plan

(Continued on page 8)



Map Footnote [17](#)

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	X	X	
Soil Condition	Tilth, Crusting, Infiltration, and Organic Matter		X	X			
	Soil Compaction	X					
Water Quantity	Water Management For Irrigated Land	X	X	X			
Water Quality (Groundwater)	Nutrients and Organics	X	X	X			
Air Quality	Airborne Sediment Causing Safety/Health Problems		X	X			
Plant Suitability	Site & Intended Use Suitability					X	
Plant Condition	Productivity, Health, and Vigor	X				X	
Animal Habitat, Domestic	Water Quantity and Quality					X	
Animal Habitat, Wildlife	Water Quantity and Quality					X	
Human, Economics	High Risk and Uncertainty		X	X			
	Low or Unreliable Profitability		X			X	
Human, Political	Inadequate Availability of Cost Share Programs	X	X				
Human, Other	Small Farms and Ranchettes	X					

Grass/Pasture/Hay

- Wind erosion can be an issue during years when grass or hay is becoming established.
- Soils used for pasture are subject to compaction by livestock.
- Irrigation water management in areas of pasture commonly receives less attention than in areas of other crops.
- Irrigation, forage, and grazing management issues are common in areas of pasture on small farms and ranchettes.

Grain & Row Crops

- Wind erosion can be an issue on sandy soils if insufficient residue is left on the soils.
- Overuse of groundwater for irrigation is a concern. Parts of the watershed are within a State groundwater restricted area.
- Water quality is a concern, particularly because of the loss of nitrates from irrigated cropland. The cropland is part of a State groundwater management area.

Rangeland

- Invasive weeds (yellow star-thistle, knapweed, etc.) reduce the value of grazing land.
- Water availability is a concern in managing livestock and wildlife on rangeland.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES ¹²	
THREATENED SPECIES	CANDIDATE SPECIES
Mammals -_Canada lynx Birds – Bald eagle Fish – Steelhead, Snake River sockeye salmon, Snake River Chinook salmon	Mammals _- Washington ground squirrel Birds – Yellow-billed cuckoo Amphibians and Reptiles – Columbia spotted frog Plants - Northern wormwood
	PROPOSED SPECIES - None
ESSENTIAL FISH HABITAT ¹³ - Chinook	

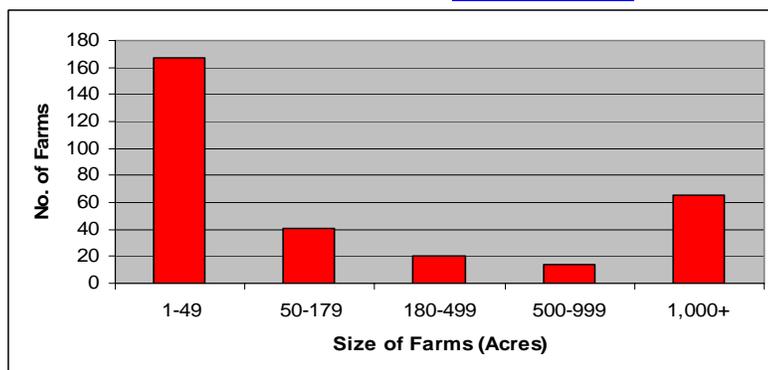
Census and Social Data ^{/14}

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Number of Farms: 307

Number of Operators: 510

- Full-Time Operators: **173**
- Part-Time Operators: **337**

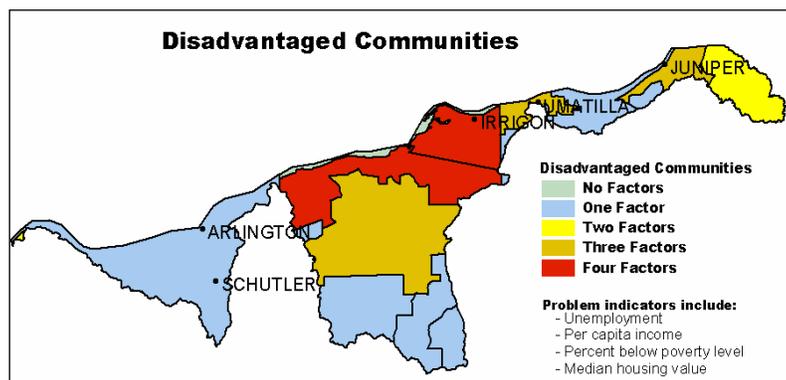
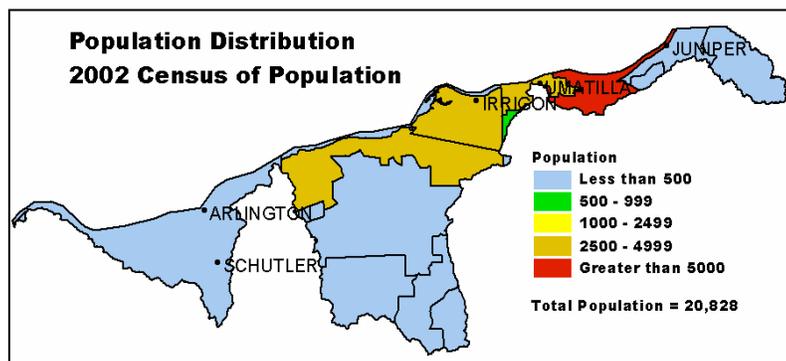


Estimated Level of Willingness and Ability to Participate in Conservation ^{/15}:

MODERATE TO HIGH

Farms in Oregon's Mid-Columbia/Wallula Subbasin are primarily of two types. Most are less than 50 acres in size and are farmed by part-time or hobby farmers who are not closely connected to the mainstream agricultural community. To improve conservation participation on these small farms, efforts need to be taken to increase the level of awareness of local resource concerns and the connection of land management activities to these concerns. Substantial technical assistance may be needed for many of these landowners to successfully adopt conservation practices.

The second type of farm in the subbasin is the full-time, family operation that consists of 1,000 acres or more. The operators of these farms are well aware of local resource concerns and the relevance of their operation to these concerns. Financial assistance would help these farmers adopt conservation practices, but for the most part, conservation is well diffused among these landowners.



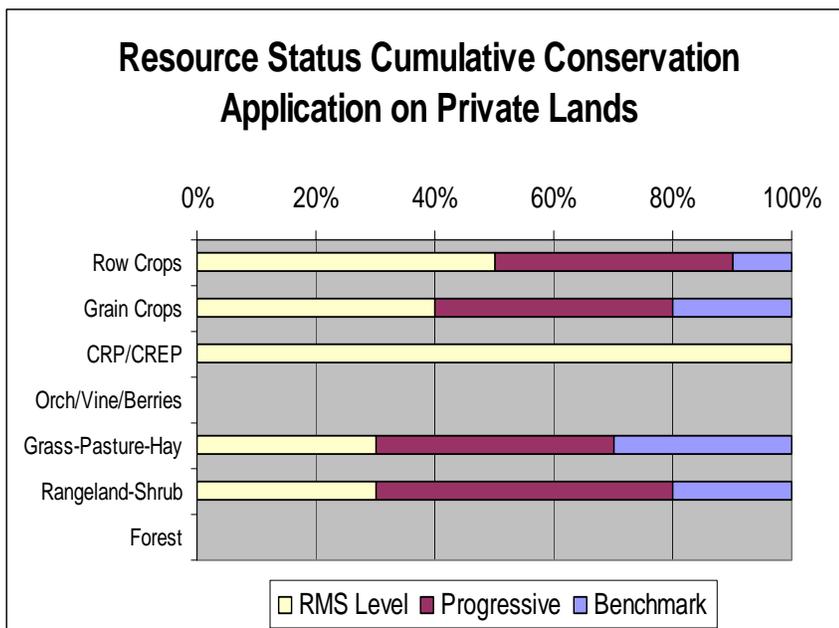
Evaluation of Social Capital ^{/16} **MODERATE**

The agricultural community in Oregon's Mid-Columbia/Wallula Subbasin is reasonably active in conservation, especially the large-acreage operators. The community as a whole is less inclined to be involved in resource issues, possibly because it considers social issues, such as health, education, and housing, more pressing. For conservation to become more widespread, the agricultural community needs to provide technical and financial assistance to the small-acreage farmers and ranchers

Progress/Status

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PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg/Year	Total
Total Conservation Systems Planned (Acres)	555	71,982	8,167	6,157	5,351	18,442	92,212
Total Conservation Systems Applied (Acres)	3,480	43,047	111,627	14,994	6,765	35,983	179,913
Conservation Treatment							
Waste Management (number)	0	0	0	0	0	0	0
Buffers (acres)	0	0	0	0	0	0	0
Erosion Control (acres)	3,807	5,910	75,377	3,261	6,136	18,898	94,491
Irrigation Water Management (acres)	0	4,187	640	0	0	965	4,827
Nutrient Management (acres)	980	6,020	3,178	4,522	1,767	3,293	16,467
Pest Management (acres)	3,308	7,840	1,199	785	2,115	3,049	15,247
Prescribed Grazing (acres)	0	39,827	39,827	0	0	15,931	79,654
Trees & Shrubs (acres)	0	32	0	50	596	136	678
Conservation Tillage (acres)	980	2,293	2,655	7,995	2,559	3,296	16,482
Wildlife Habitat (acres)	892	6,751	1,264	1,993	5,100	3,200	16,000
Wetlands (acres)	0	0	0	28	0	6	28



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

- ❖ Progress over the last 5 years has been focused on:
 - Erosion control, management of nutrients and pests, and conservation tillage in areas of grain and row crops.
 - Prescribed grazing on rangeland and pastureland.
 - Wildlife habitat improvement.
- ❖ Good irrigation water management is used in areas of row and grain crops. Most areas are irrigated with center pivot systems.
- ❖ Farmers have used good crop residue management to control wind erosion.
- ❖ Farmers have had good contact with crop consultants, personnel from experiment farms, and conservationists, which has resulted in adoption of more conservation practices.
- ❖ A high percentage of the rangeland is not grazed due to poor productivity, low rainfall, and invasive weeds.
- ❖ Small operators often lack the ability to properly manage pastureland.

Lands Removed from Production through Farm Bill Programs

- ❖ Conservation Reserve Program (CRP): **15,998 acres**
- ❖ 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

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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>.