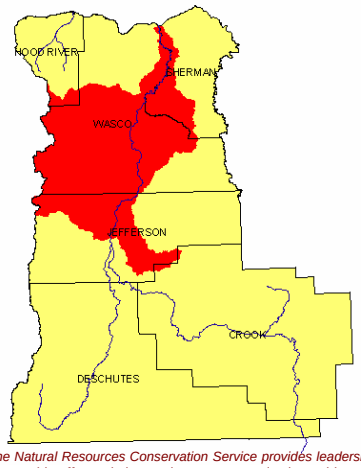
Lower Deschutes - 17070306

8-Digit Hydrologic Unit Profile

FINAL

SWCD	Acres	SWCD	Acres
Wasco	945,847	Crook	9,828
Jefferson	336,656	Clackamas	365
Sherman	146,985	Marion	354
Hood River	28,531		



The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

Introduction

The Lower Deschutes 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of over 1.4 million acres, stretching across four of the six counties in the NRCS Deschutes Basin Administrative Area. Sixty-four percent is in Wasco County, ten percent is in Sherman County, twenty-three percent is in Jefferson County, and the remainder is in the southern part of Hood River County.

The NRCS Deschutes Basin has four service centers, one soil survey office, one Resource Conservation and Development (RC&D) office, and one satellite field office (Warm Springs Indian Reservation). There are six active soil and water conservation district (SWCD) offices and four watershed councils in this NRCS basin.

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

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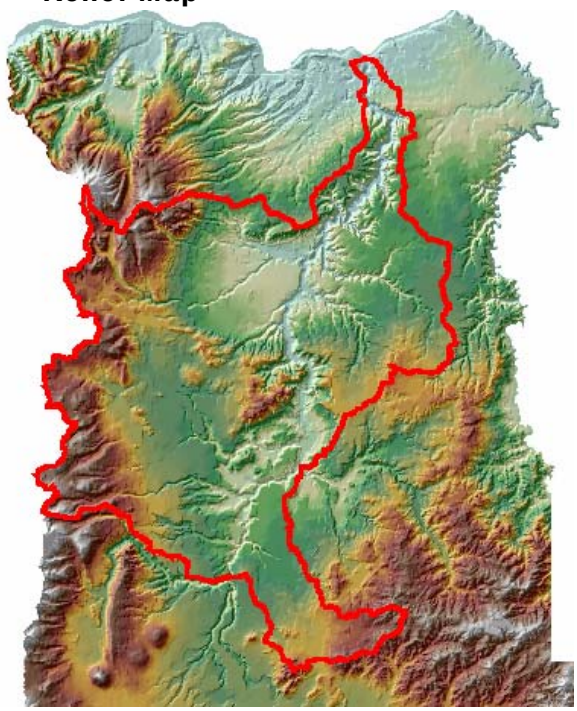

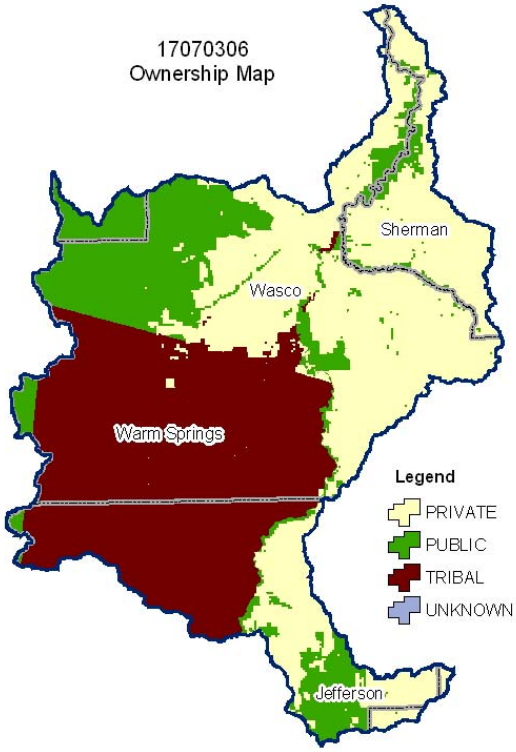

Produced by the Water Resources Planning Team Portland, OR

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th and Independence Avenue, SW, Washington DC 20250-9410, or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

Physical Description

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Land Cover / Land Use (NLCD[12])	Ownership - (2003 Draft BLM Surface Map Set[11])							
	Public		Private		Tribal		Totals	%
	Acres	%	Acres	%	Acres	%		
Forest	168,300	11%	30,200	2%	321,900	22%	**520,700**	**35%**
Grain Crops	*	---	77,100	5%	*	---	**78,100**	**5%**
Conservation Reserve Program Land (CRP) [a]	0	0%	51,200	3%	0	0%	**51,200**	**3%**
Grass/Pasture/Hay	22,100	2%	80,500	5%	29,800	2%	**132,500**	**9%**
Orchards/Vineyards	0	0%	0	0%	0	0%	**0**	**0%**
Row Crops	0	0%	*	---	*	---	*	---
Shrub/Rangelands	98,000	7%	350,800	24%	215,800	15%	**665,700**	**45%**
Water/Wetlands/ Developed/Barren	*	---	*	---	*	---	**20,200**	**1%**
HUC Totals [b]	**296,200**	**20%**	**597,300**	**41%**	**572,000**	**39%**	**1,468,400**	**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:

- ~ Most of the non-Federal forest land is managed by the Confederated Tribes of the Warm Springs Reservation or by private industrial landowners.
- ~ In the 14+-inch precipitation zone, most of the grain is annually cropped; in the lower precipitation zone, a grain-fallow rotation is used.
- ~ Pasture units are on large ranches and on many smaller farms.
- ~ Approximately 3,200 acres of irrigated row crops (corn, vegetables, etc.) are grown in the Willow Creek drainage near Madras.
- ~ Most of the rangeland is in areas of shallow soils on canyon slopes.

Irrigated Lands (1997 NRI[13] Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	34,200	54%	2%
	Uncultivated Cropland	13,600	22%	1%
	Pastureland	15,300	24%	1%
	Total Irrigated Lands	**63,100**	**100%**	**4%**

(Continued on following pages)

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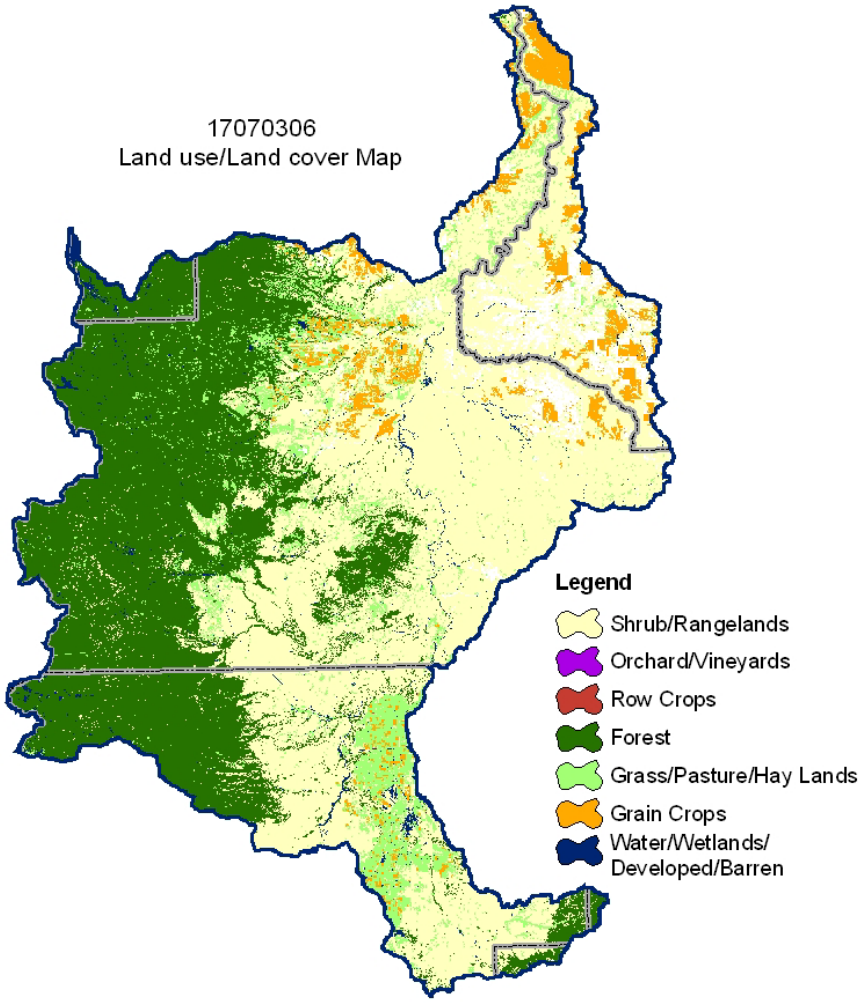

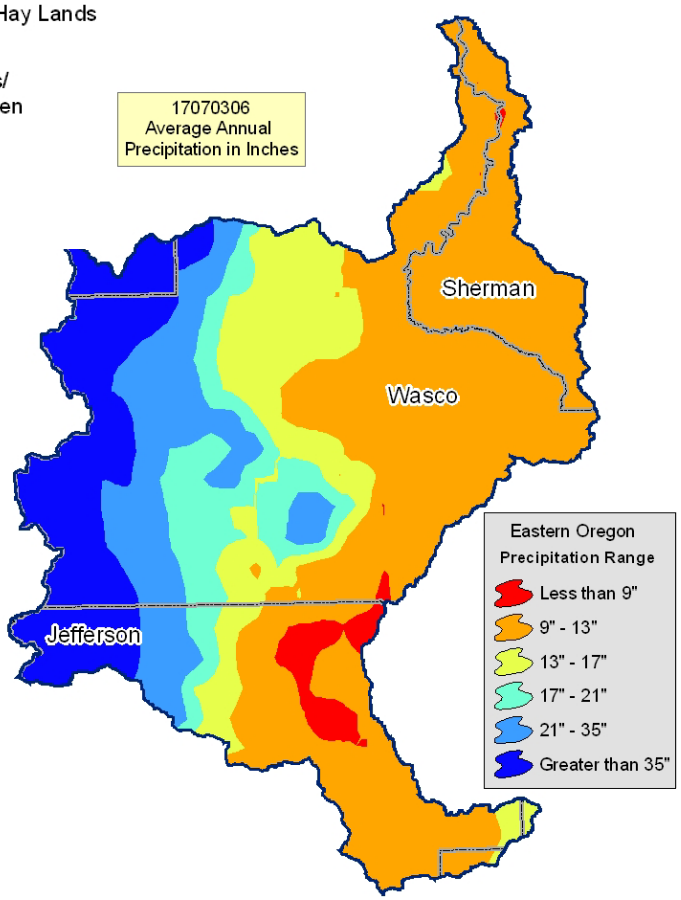

Common Resource Area Map

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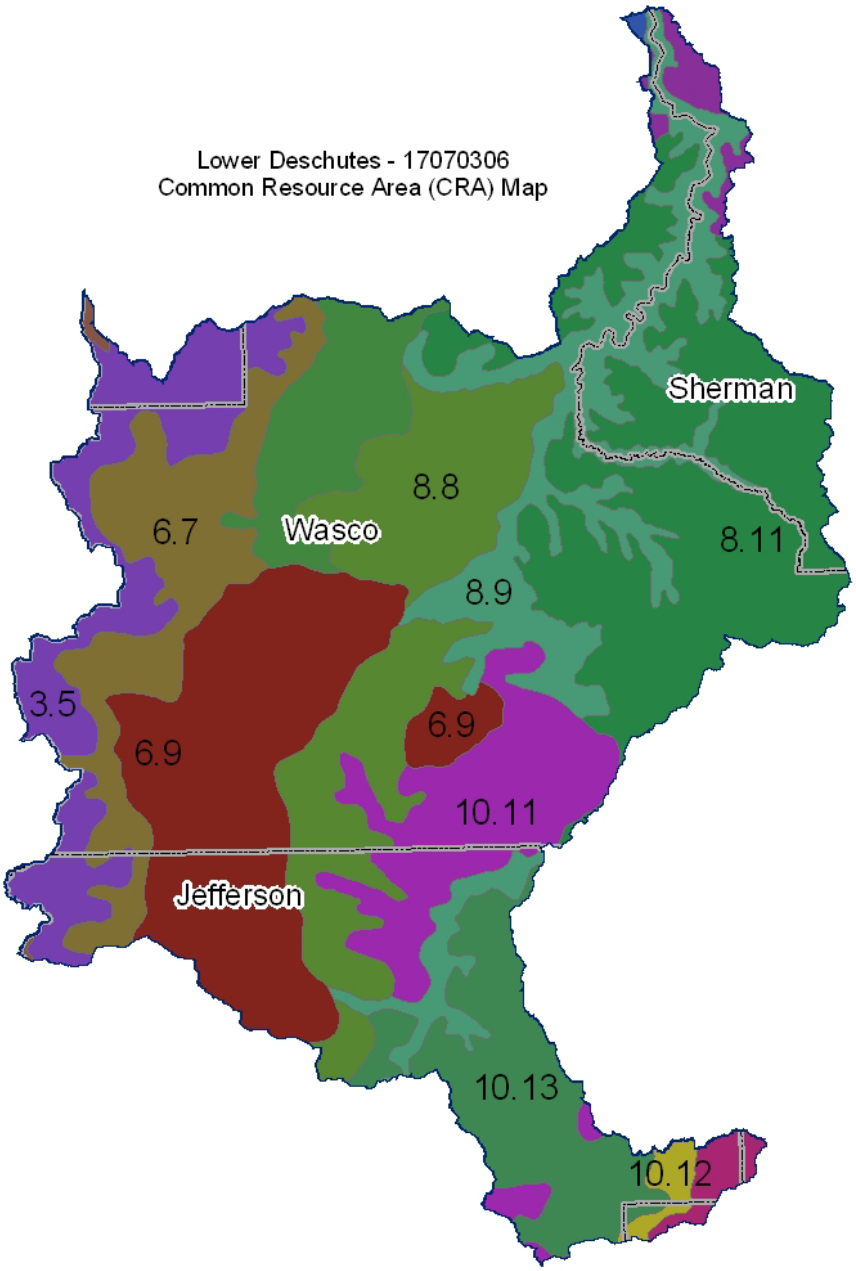
Only the major units are described below - for descriptions of all units within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



6.9 - Cascade Mountains, Eastern Slope - Ponderosa Pine/Bitterbrush Woodland: This unit is characterized by undulating ash-mantled lava flows. The vegetation is dominantly ponderosa pine, antelope bitterbrush, and Idaho fescue. This unit does not have the dominance of lodgepole pine and the coarse pumice fragments that are characteristic of unit 6.1. The temperature regime is frigid, and the moisture regime is xeric.

8.8 - Columbia Plateau - Wapinitia-Simnasho Plateau: This unit is characterized by loess-mantled basalt plateaus. It is west of Deschutes Canyon, on Juniper Flat south to about Lake Billy Chinook. The soils are dominantly those of the Watama, Bakeoven, and Shear series. The temperature regime is mesic, and the moisture regime is aridic and xeric. The mean annual precipitation is 10 to 16 inches.

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

10.11 - Central Rocky and Blue Mountain Foothills - John Day-Clarno Uplands: This unit is characterized by rangeland soils on hills and mountains associated with the John Day/Clarno Formation. The dominant soils are those of the Simas and Tub series. The temperature regime is mesic, and the moisture regime is aridic and xeric.

10.13 - Central Rocky and Blue Mountain Foothills - Madras Plains: This unit is characterized by deep soils on nearly level plateaus. Most areas are row cropped. The unit is dominantly on Agency Plain. The dominant soils are those of the Agency and Madras series. The surface texture is sandy loam or loam. The soils do not have the strong volcanic ash influence that is typical of unit 10.4. The temperature regime is mesic, and the moisture regime is aridic.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	34,654	105,256
	Well	4,758	14,853
	Total Irrigated Adjudicated Water Rights	39,412	120,109
Stream Flow Data	USGS 14103000 DESCHUTES RIVER AT MOODY, NEAR BIGGS, OR	**Total Avg. Yield**	4,230,460
		May - Sept Yield	1,543,121

		MILES	PERCENT
Stream Data[5] **Percent of Total Major Stream Miles in the HUC*	Total Major Stream Miles (100K Hydro GIS)	975	---
	303d/TMDL Listed Streams (DEQ)	252	26%*
	Anadromous Fish Presence (StreamNet)	109	11%*
	Bull Trout Presence (StreamNet)	151	15%*

		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	29,617	38%
	Grain Crops	2,342	2%
	Grass/Pasture/Hay	7,577	10%
	Orchards/Vineyards	0	0.0%
	Row Crops	11	<1%
	Shrub/Rangelands (CRP Included)	34,558	44%
	Water/Wetlands/Developed/Barren	4,120	5%
	Total Acres of 100-foot Stream Buffers	**78,225**	---
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**1** – slight limitations	0	0%
	2 – moderate limitations	49,200	29%
	3 – severe limitations	98,800	60%
	4 – very severe limitations	13,800	8%
	5 – no erosion hazard, but other limitations	0	0%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	3,700	2%
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	2,000	1%
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0	0%
	Total Croplands & Pasturelands	**167,500**	---

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

Animal Type	Dairy	Feedlot	Poultry	Swine	Mink	Other
No. of Permitted Farms	0	3	0	0	0	0
No. of Permitted Animals	0	0	0	0	0	0

Resource Concerns

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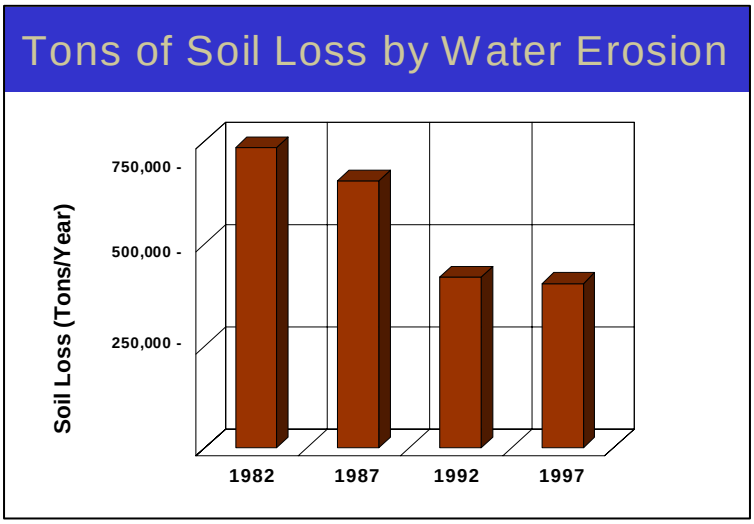
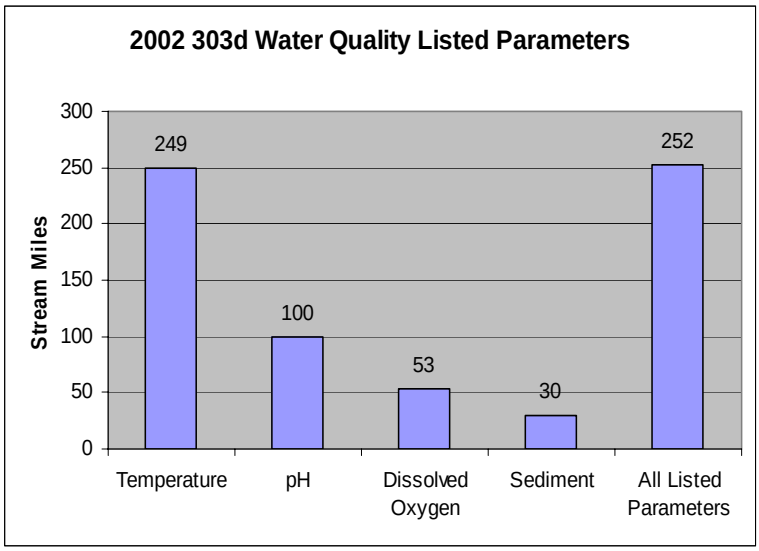


- Sheet and rill erosion by water on the cropland and pastureland have been reduced by more than 300,000 tons of soil per year from 1982 to 1997.
- NRI estimates indicate that 56,900 acres of the agricultural land still had water erosion rates above a sustainable level in 1997.
- Controlling erosion 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 use of 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 3.5 to 2.7 tons/acre/year, from 1982 to 1997.



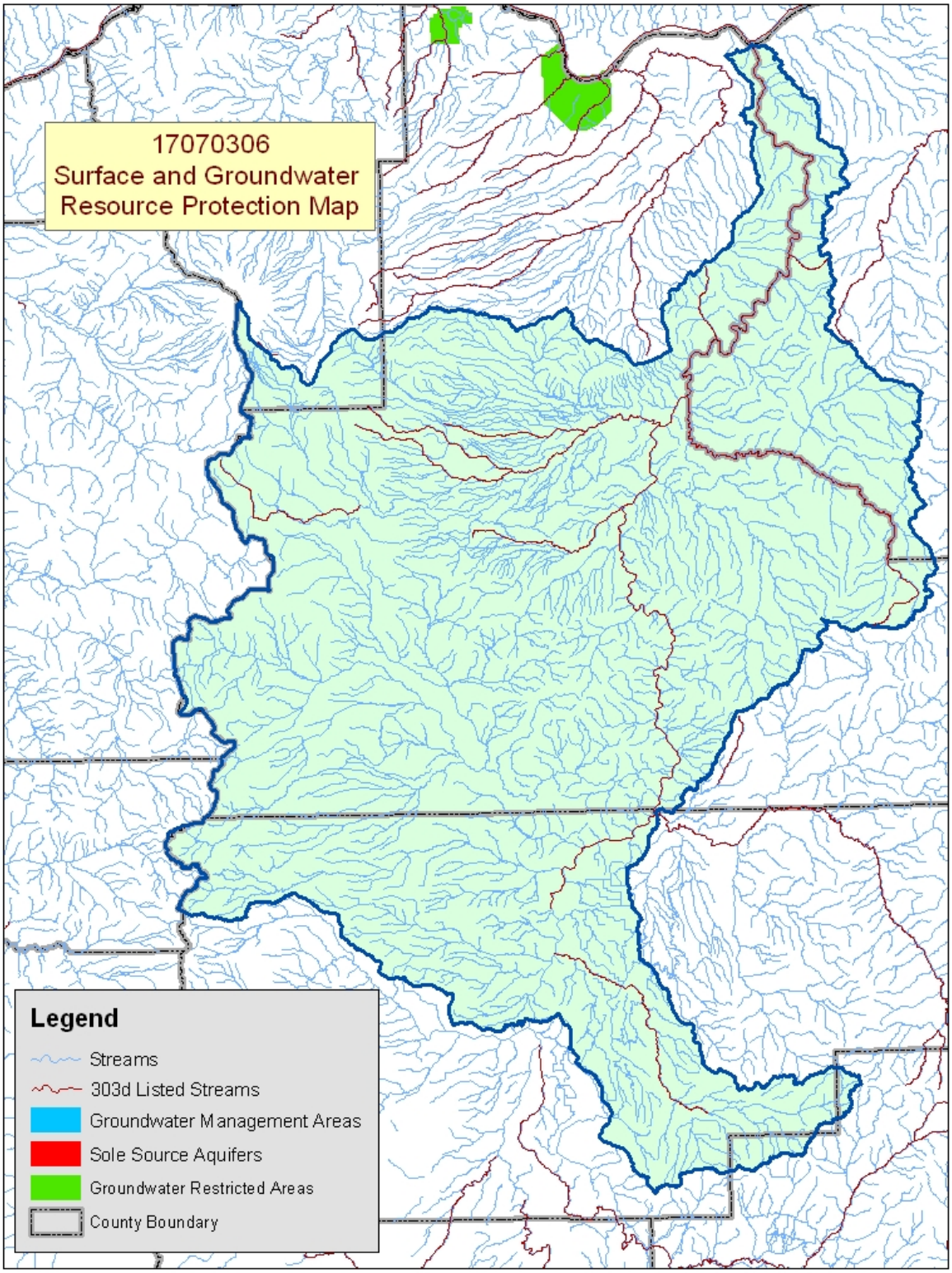
- Ninety-nine percent of all listed stream miles have temperatures exceeding State water quality standards. Elevated stream temperatures may be due to inadequate riparian shade, stream channel widening, warm irrigation return flows, and other anthropogenic or natural causes.
- Stream reaches listed for sediment are affected by erosion on cropland and streambanks.
- Dissolved oxygen and pH commonly are indicative of high nutrient loading phosphorus attached to sediment or from dissolved nutrients in surface runoff.
- Conservation practices that can be used to address these water quality issues include erosion control, nutrient management, grazing management, irrigation water management, and use of riparian buffers.

Watershed Projects, Plans, Studies, and Assessments

NRCS Watershed Projects[6]		NRCS Watershed Plans, Studies, and Assessments[7]	
Name	**Status**	**Name**	**Status**
Buck Hollow	Active	Buck Hollow	Plan completed - 1994
ODEQ TMDL's[8]		**ODA Agricultural Water Quality Management Plans[9]**	
Name	**Status**	**Name**	**Status**
None		Middle Deschutes Lower Deschutes	Completed Completed

OWEB Watershed Councils[10]	Watershed Council Assessments[11]	NWPCC Subbasin Plans & Assessments[18]
Bakeoven, Fifthteenmile, Fulton/Gordon Canyons, Mack's Canyon, Trout Creek, and White River Watershed Councils	None	Deschutes River Subbasin Plan

(Continued on page 8)



Map Footnote [17]

Resource Concerns - Continued

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Resource Concerns / Issues by Land Use							
SWAPA +H Concerns	**Specific Resource Concern / Issue**	**Pasture \ Hay**	**Grain Crops**	**Row Crops**	**Orchards / Vnyrd**	**Shrub / Range**	**Forest**
Soil Erosion	Sheet and Rill		X				
Soil Condition	Tilth, Crusting, Infiltration, Organic Matter		X				
Water Quality	Water Conservation. For Irrigated Land			X			
	Suspended Sediments and Turbidity		X				
Plant Suitability	Site and Intended Use Suitability	X					
Plant Condition	Productivity, Health, and Vigor	X				X	
Plant Management	Establishment, Growth, and Harvest	X					X
Animal Habitat, Domestic	Lack of Grazing Management					X	
Animal Habitat, Wildlife	Water Quantity & Quality			X			
	Lack of Wildlife Management						X
Human, Economics	High Capital/Financial Cost			X			
	Low or Unreliable Profitability	X	X			X	X
Human, Political	Inadequate Financial or Technical Assistance	X					X
	ESA List Species or Other Regulation			X		X	

None Present in HUC

Grass / Pasture / Hay

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

Grain Crops

- Direct seeding and annual cropping has been successful in the higher rainfall (14 inches plus) zone.
- Soil erosion and low organic matter content remain resource concerns in the lower rainfall zone, where grain-fallow rotation is still used.

Row Crops

- Competition for clean, plentiful water for fish and wildlife mandates water conservation on irrigated row crops.
- High capital cost associated with irrigation improvements hinder conservation efforts.

Shrub / Rangelands

- Noxious weeds and poor range condition limit productivity of vegetation for livestock and wildlife.
- The presence of rangelands adjacent to watershed streams results in concerns about the impact (habitat and temperature) to fisheries.

Forest Land

- Most of the non-Federal forest land is managed by the Confederate Tribes of the Warm Springs Reservation or by private industrial landowners.
- An incidental amount of forest land is associated with small woodlots that are not actively managed for timber production.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES[/12]	
THREATENED SPECIES	**CANDIDATE SPECIES**
Marine - None **Mammals –** Canada lynx **Birds -** Bald eagle, Northern spotted owl **Fish –** Steelhead, Chinook salmon, Bull trout **Invertebrates –** None **Plants –** None	**Fish** - None **Birds –** Yellow-billed cuckoo **Amphibians and Reptiles –** Oregon spotted frog **Plants** – Northern wormwood **PROPOSED SPECIES** None
ESSENTIAL FISH HABITAT[/13] **–** Chinook salmon, Coho salmon	

Census and Social Data[14]

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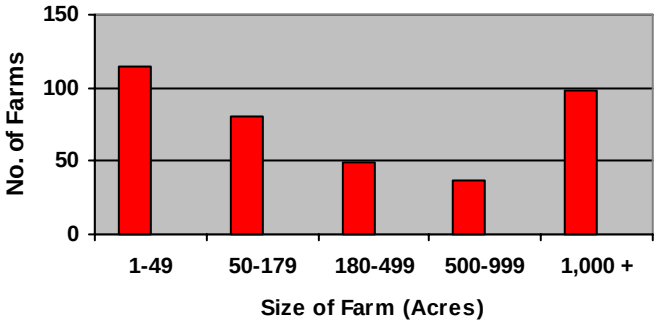
Number of Farms: 380

Number of Operators: 610

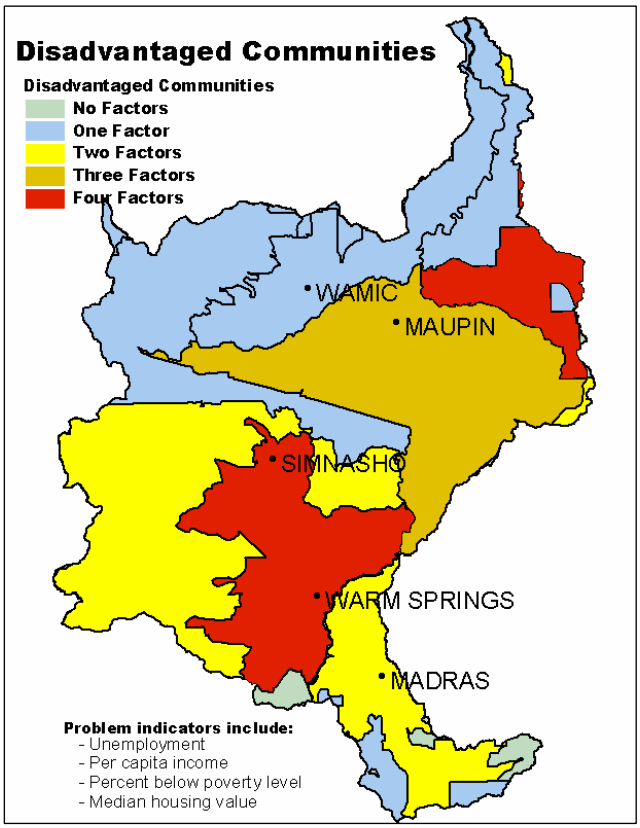
- Full-Time Operators: **202**
- Part-Time Operators: **408**

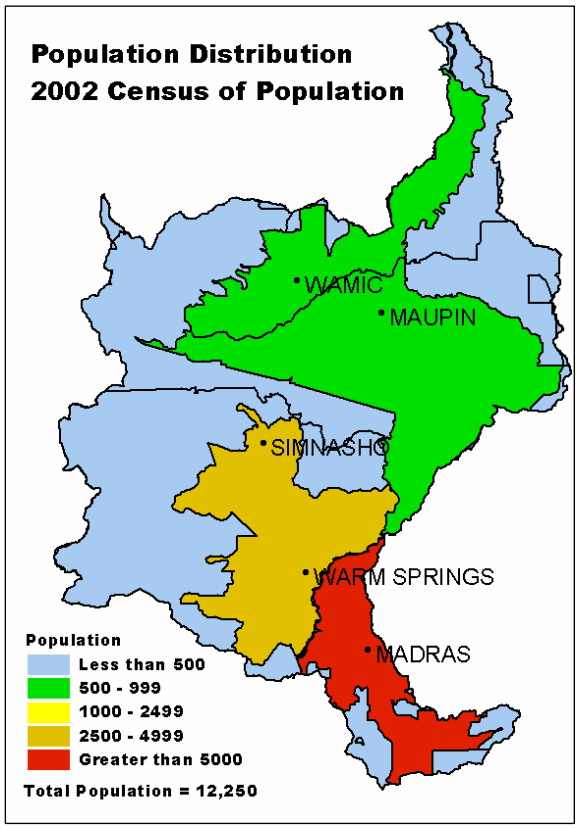


Estimated Level of Willingness and Ability to Participate in Conservation[15]: Moderate (*50 to 78 percent*)

Evaluation of Social Capital[16]: Low to Moderate *(scores range from 34 to 66)*

There are wide variations in conservation participation and community social capital in the Lower Deschutes HUC. High social capital and estimates of participation are positively correlated. Conservation is greatest in areas where there are mostly full-time, well-connected, knowledgeable farmers that have successful farms, have a positive perception of conservation systems, and live in a community known for its strong leadership and ability to work together to solve problems. Problems arise in other areas. Notably, in areas where the principal operator works more than 200 days off-farm and the landowner is not involved in community decisions and is not active in local organizations (agricultural or other).





Progress / Status

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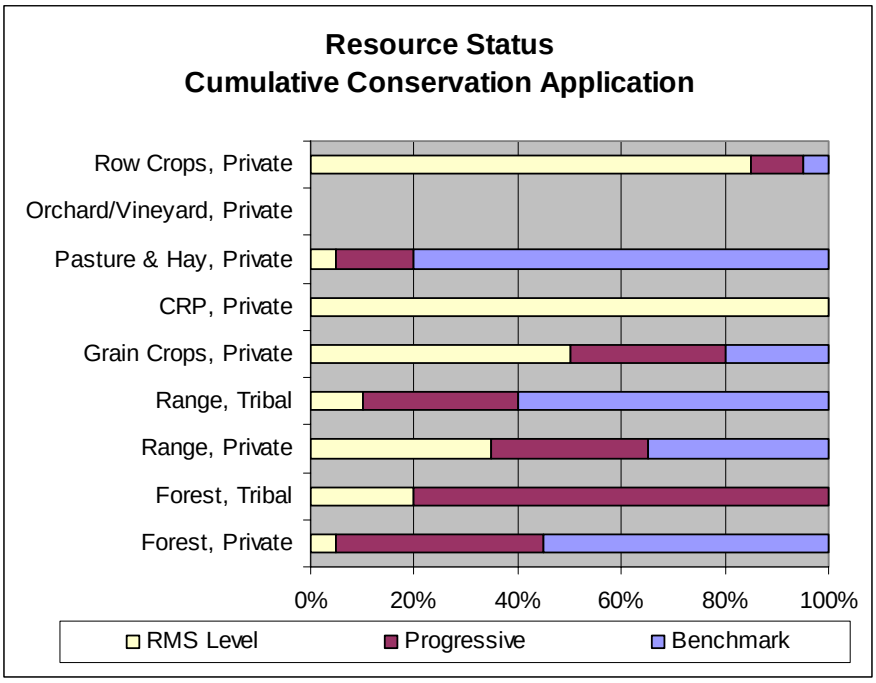
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg / Year	Total
Total Conservation Systems Planned (Acres)	41,365	23,150	122,232	15,851	6,762	41,872	209,360
Total Conservation Systems Applied (Acres)	36,916	28,485	36,395	5,011	26,556	26,673	133,363
Conservation Treatment							
Waste Management (Number)	0	0	0	0	0	0	0
Riparian Forest Buffers (Acres)	0	182	0	277	526	197	985
Erosion Control (Acres)	41,410	13,605	7,769	1,724	2,939	13,489	67,447
Irrigation Water Management (Acres)	0	508	310	1,821	984	725	3,623
Nutrient Management (Acres)	690	0	0	0	210	180	900
Pest Management (Acres)	1,358	649	0	28	228	453	2,263
Prescribed Grazing (Acres)	28,803	32,122	28,145	12,967	8,515	22,110	110,552
Trees and Shrubs (Acres)	160	50	258	326	519	263	1,313
Conservation Tillage (Acres)	388	1,789	1,807	0	133	823	4,117
Wildlife Habitat (Acres)	12,295	21,592	9,979	7,453	1,778	10,619	53,097
Wetlands (Acres)	0	5	0	0	0	1	5



- Progress over the last five years has been focused on:
  - ~ Erosion control on nonirrigated grain.
  - ~ Irrigation water management.
  - ~ Prescribed grazing on grazed rangeland and forest land.
  - ~ Wildlife habitat management in riparian areas and on uplands.
- Most resource concerns in areas of irrigated row crops are being addressed.
- NRCS and SWCDs have not focused conservation efforts on non-CRP grasslands (pasture & hay).
- Marginal yields and profit in the low precipitation zone make it less feasible to use direct seeding and annual cropping.
- Resource issues are being addressed on tribal forest land.
- Private non-industrial forest land that is not managed for timber commonly does not meet State forest practices requirements.

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

Lands Removed from Production through Farm Bill Programs

- Conservation Reserve Program (CRP): **51,190 acres**
- Wetland Restoration Program (WRP): **None**
- Conservation Reserve Enhancement Program (CREP): **1,578 acres**

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/wrexport.shtml

5. StreamNet is a cooperative venture of the Pacific Northwest's fish and wildlife agencies and tribes and is administered by the Pacific States Marine Fisheries Commission. StreamNet provided data and data services in support of the region's fish and wildlife program and other efforts to manage and restore the region's aquatic resources. Official StreamNet website: http://www.streamnet.org/

6. Natural Resources Conservation Service, Watershed Projects Planned and Authorized, http://www.nrcs.usda.gov/programs/watershed/Purpose.

7. Natural Resources Conservation Service, Watershed Plans, Studies, and Assessments completed, http://www.nrcs.usda.gov/programs/watershed/Surveys_Plng.html#Watershed%20Surveys%20and%20Plan

8. Oregon Department of Environmental Quality Total Maximum Daily Loads, http://www.deq.state.or.us/wq/TMDLs/TMDLs.htm

9. Oregon Department of Agriculture, Agricultural Water Quality Management Plans, http://www.oregon.gov/ODA/NRD/water_agplans.shtml

Footnotes/Bibliography Continued

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10. Oregon Watershed Enhancement Board, http://oregon.gov/OWEB/WSHEDS/index.shtml

11. Watershed Assessments completed by local watershed councils following the Oregon Watershed Assessment Manual, http://oregon.gov/OWEB/docs/pubs/ws_assess_manual.shtml.

12. NRCS Field Office Technical Guide, Section II, Threatened and Endangered List.

13. Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265. As amended through October 11, 1996.

14. Data were taken from the 2002 Agricultural Census and adjusted by percent of HUC in the county or by percent of zip code area in the HUC, depending on the level of data available. Data were also taken from the U.S. Population Census, 2000.

15. Conservation participation was estimated using NRCS Social Sciences Technical Note 1801, Guide for Estimating Participation in Conservation, 2004. Four categories of indicators were evaluated: Personal characteristics, farm structural characteristics, perceptions of conservation, and community context. Estimates are based on information received from local conservationists in the watershed.

16. Social capital is an indicator of the community's ability and willingness to work together to solve problems. A high amount of social capital helps a community to be physically healthy, socially progressive, and economically vigorous. A low amount of social capital typically results in community conflict, lack of trust and respect, and unsuccessful attempts to solve problems. The evaluation is based on NRCS Technical Report Release 4.1, March, 2002: Adding Up Social Capital: An Investment in Communities. Local conservationists provided information to measure social capital. Scores range from 0 to 76.

17. Surface and Groundwater Resource Protection Map
    a. 2002 303d Listed Streams designated by Oregon Department of Environmental Quality and approved by the Environmental Protection Agency, Section 303d Clean Water Act, http://www.deq.state.or.us/wq/303dlist/303dpage.htm
    b. Groundwater Management Areas designated by the Oregon Department of Environmental Quality, Oregon Revised Statutes – Ground Water ORS 468B.150 to ORS 468B.190, http://www.deq.state.or.us/wq/groundwa/wqgw.htm
    c. Groundwater Restricted Areas designated by Oregon Water Resources Commission, Oregon Department of Water Resources, http://egov.oregon.gov/OWRD/PUBS/aquabook_protections.shtml
    d. The Sole Source Aquifer (SSA) Protection Program is authorized by Section 1424(e) of the Safe Drinking Water Act of 1974 (Public Law 93-523, 42 U.S.C. 300 et. seq), http://www.epa.gov/safewater/ssanp.html

18. Subbasin assessments and plans are developed by local groups (SWCDs, watershed councils, tribes, and others) as part of the Northwest Power and Conservation Council's fish and wildlife program in the Columbia River Basin. This program is funded and implemented by the Bonneville Power Administration. http://www.nwcouncil.org/fw/subbasinplanning/Default.htm.