South Fork Crooked - 17070303

8-Digit Hydrologic Unit Profile

FINAL

MAY 2005

Introduction

The South Fork Crooked 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 980,000 acres. Eighty percent of the subbasin is in Crook and Deschutes Counties. Three-fourths of the subbasin is rangeland, and the rest is mostly forest land, hayland, and pastureland. Overstocked lodgepole pine/ponderosa pine on the forest land and invasive weeds on the rangeland limit the productivity for timber, grazing, and wildlife habitat.

Thirty-eight percent of the subbasin is under private ownership. There are 27 farms and ranches and 43 operators in the subbasin.

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

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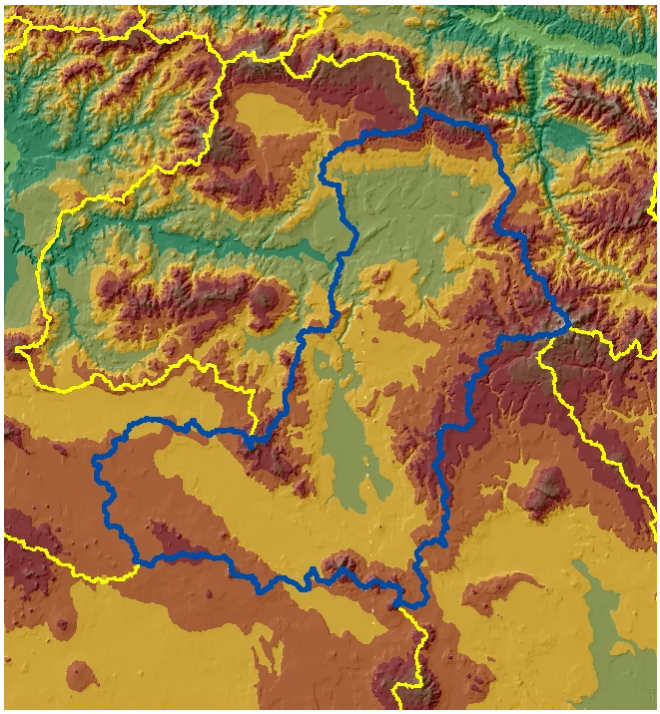

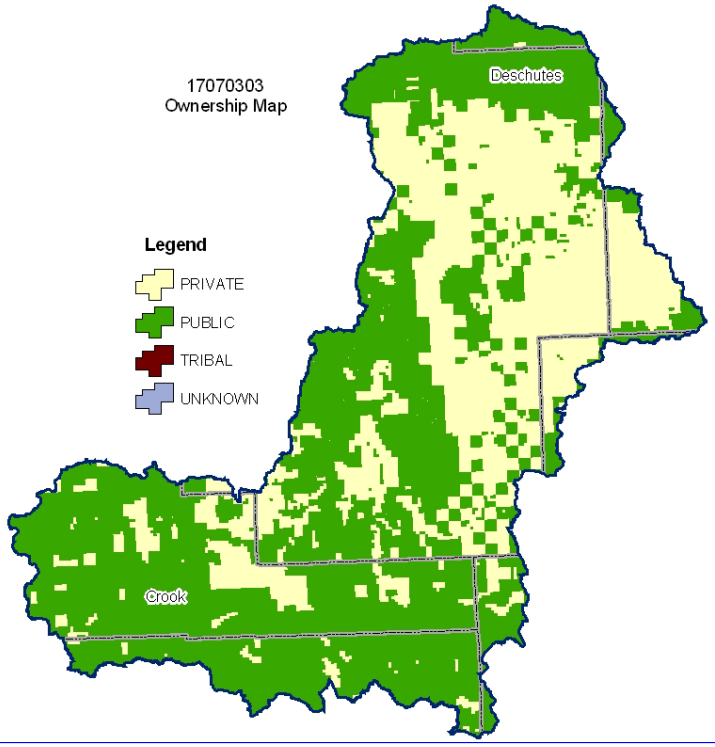

Produced by the Water Resources Planning Team Portland, OR

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Physical Description

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Land Cover/Land Use (NLCD[2])	Ownership - (2003 Draft BLM Surface Map Set[1])							
	Public		Private		Tribal		Totals	% of HUC
	Acres	%	Acres	%	*	%		
Forest	86,800	9%	30,800	3%	0	0%	117,600	12%
Grain Crops	*	---	*	---	0	0%	*	---
Conservation Reserve Program (CRP) Land [a]	0	0%	*	---	0	0%	*	---
Grass/Pasture/Hay	29,900	3%	71,000	7%	0	0%	100,900	10%
Orchards/Vineyards/Berries	0	0%	0	0%	0	0%	0	0%
Row Crops	*	---	*	---	0	0%	*	---
Shrub/Rangelands	492,500	50%	262,200	27%	0	0%	754,700	77%
Water/Wetlands/ Developed/Barren	*	---	*	---	0	0%	*	---
HUC Totals [b]	**611,100**	**62%**	**369,500**	**37%**	**0**	**0%**	**980,600**	**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:

- Approximately fifty percent of private forest land is under industrial forest ownership.
- Row crops and other specialty crops include potatoes, garlic, vegetable seed, mint, and nursery crops.

Irrigated Lands
(1997 NRI[3] Estimates for Non-Federal Lands Only)

Type of Land	ACRES	% of Irrigated Lands	% of HUC
Cultivated Cropland	0	0%	0%
Uncultivated Cropland	5,100	80%	<1%
Pastureland	1,300	20%	<1%
Total Irrigated Lands	**6,400**	**100%**	**1%**

(Continued on following pages)

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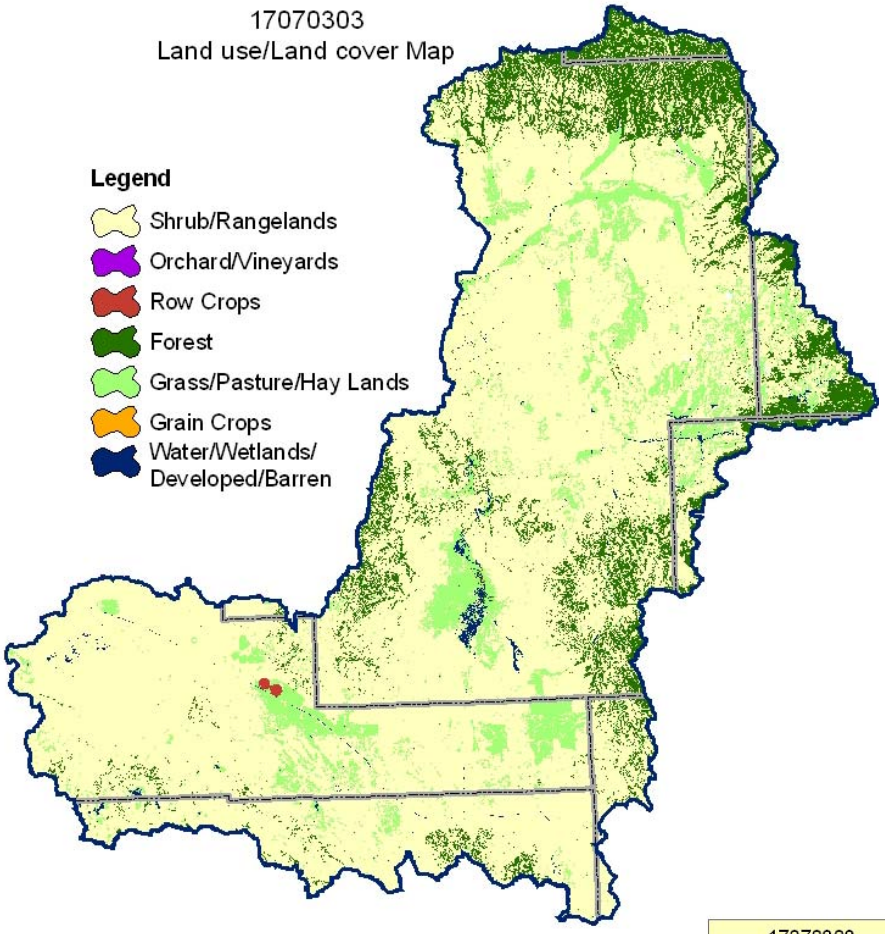

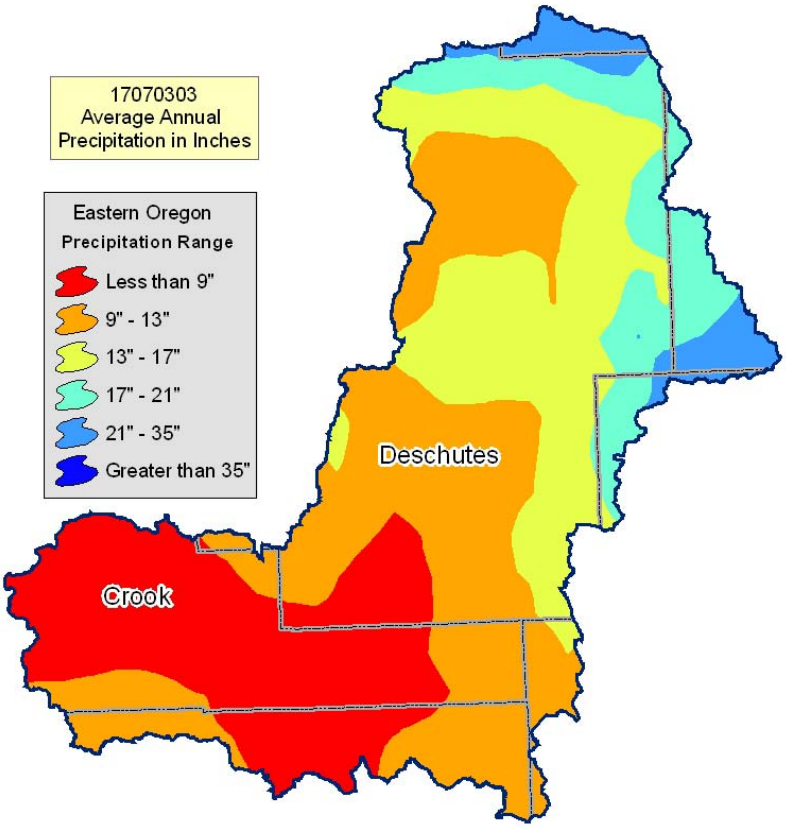

Common Resource Area Map

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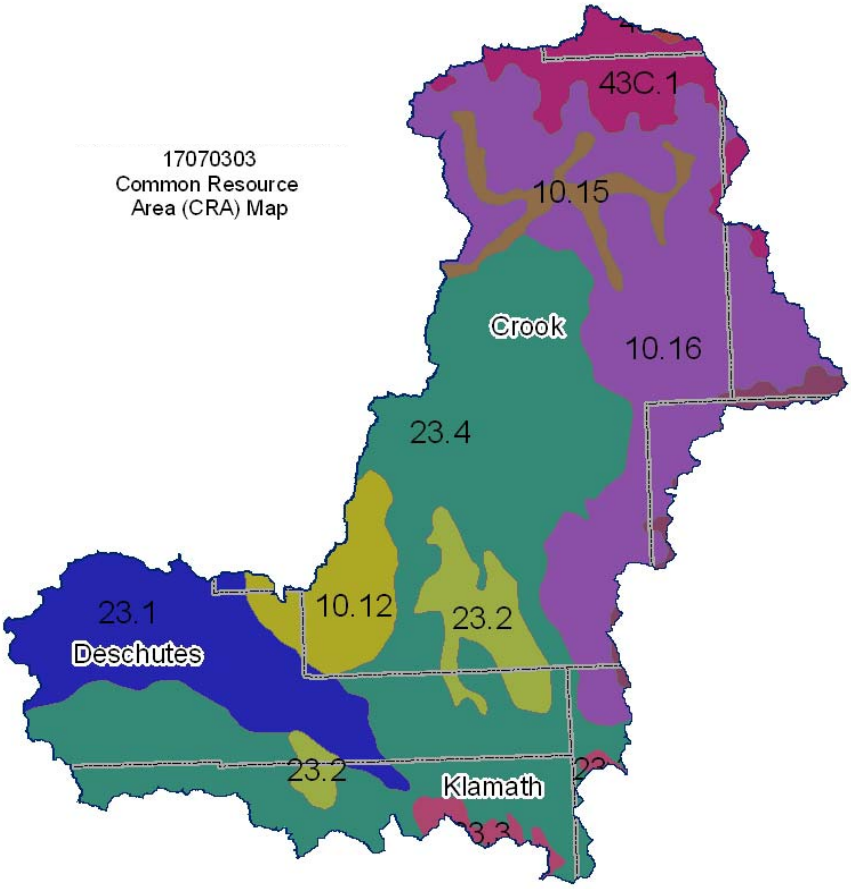
Only the major units are described below - for descriptions of all units within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



10.16 - Central Rocky and Blue Mountain Foothills - Cool Moist Blue Mountain Foothills: This unit is characterized by rangeland soils on hills and mountains associated with basalt. It is similar to the Lava Fields unit except that this unit has higher precipitation and a xeric soil moisture regime. The dominant soils are those of the Ateron, Durkee, Menbo, Merlin, and Observation series. The temperature regime is frigid, and the moisture regime is xeric. The mean annual precipitation is 12 to 20 inches. The vegetation is dominantly mountain big sagebrush and Idaho fescue.

23.1 - Malheur High Plateau - Ashy Pluvial Lake Basins: This unit is characterized by cold basins that contain significant amounts of volcanic ash. The basins are Millican Valley and Fort Rock Basin. The temperature regime is frigid, and the moisture regime is aridic. The dominant soils are those of the Fort Rock, Bonnick, Abert, Gardone, and Borobey series. Most of the soils are well drained. Few wetlands are present.

23.4 - Malheur High Plateau - High Lava Plains: This unit is on basalt plateaus and escarpments of fault-block mountains. The temperature regime is frigid or mesic, and the moisture regime is primarily aridic. The soils typically are shallow or moderately deep to bedrock or a cemented pan and have a strongly developed argillic horizon. The vegetation is dominantly low sagebrush, Wyoming big sagebrush, Idaho fescue, Thurber needlegrass, and bluebunch wheatgrass. Playas, small intermittent lakes, and clay that has high shrink-swell potential are common in the depressions.

43C.1 - Blue and Seven Devils Mountains - John Day-Clarno Highlands: This unit is characterized by forest land that is underlain by the John Day/Clarno Formation. The temperature regime is frigid, and the moisture regime is xeric. The vegetation is dominantly ponderosa pine and scattered Douglas-fir. The amount of volcanic ash on the soils is minimal. The soils typically are clayey and have a strongly developed argillic horizon.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	18,104	67,906
	Well	7,095	21,285
	Total Irrigated Adjudicated Water Rights	25,199	89,192
Stream Flow Data	USGS 14079500 CROOKED RIVER, AT POST, OR	**Total Avg. Yield**	238,040
		May – Sept. Yield	43,371
		MILES	**PERCENT**
Stream Data[5] **Percent of Total Miles of Streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	311	---
	303d/TMDL Listed Streams (DEQ)	135	43%
	Anadromous Fish Presence (StreamNet)	0	0%
	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	6,116	17%
	Grain Crops	21	0%
	Grass/Pasture/Hay	5,624	15%
	Orchards/Vineyards	0	0%
	Row Crops	2	0%
	Shrub/Rangelands – Includes CRP Lands	24,369	67%
	Water/Wetlands/Developed/Barren	609	2%
	Total Acres of 100-foot Stream Buffers	**36,741**	---
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**1** – slight limitations	0	0%
	2 – moderate limitations	2,500	28%
	3 – severe limitations	1,300	15%
	4 – very severe limitations	0	0%
	5 – no erosion hazard, but other limitations	1,100	12%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	4,000	45%
	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	**8,900**	---

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

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

Resource Concerns

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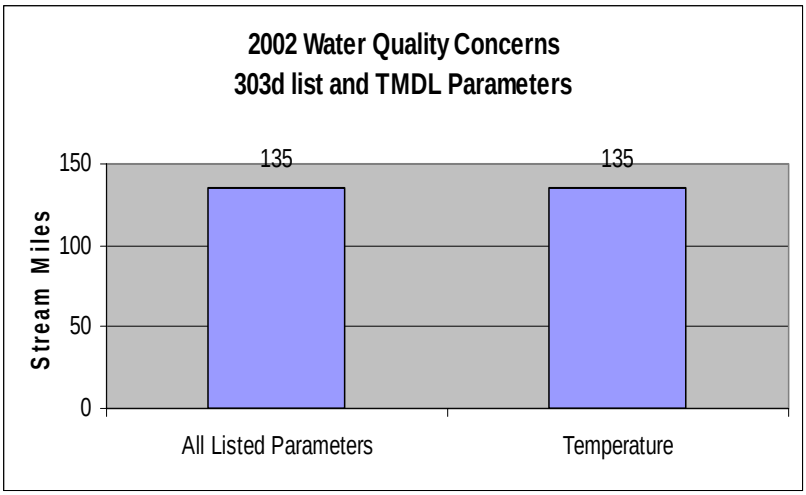
Tons of Soil Loss by Water Erosion: Due to the limited amount of non-Federal cropland and pastureland within this HUC, no reliable NRI soil loss estimates are available.

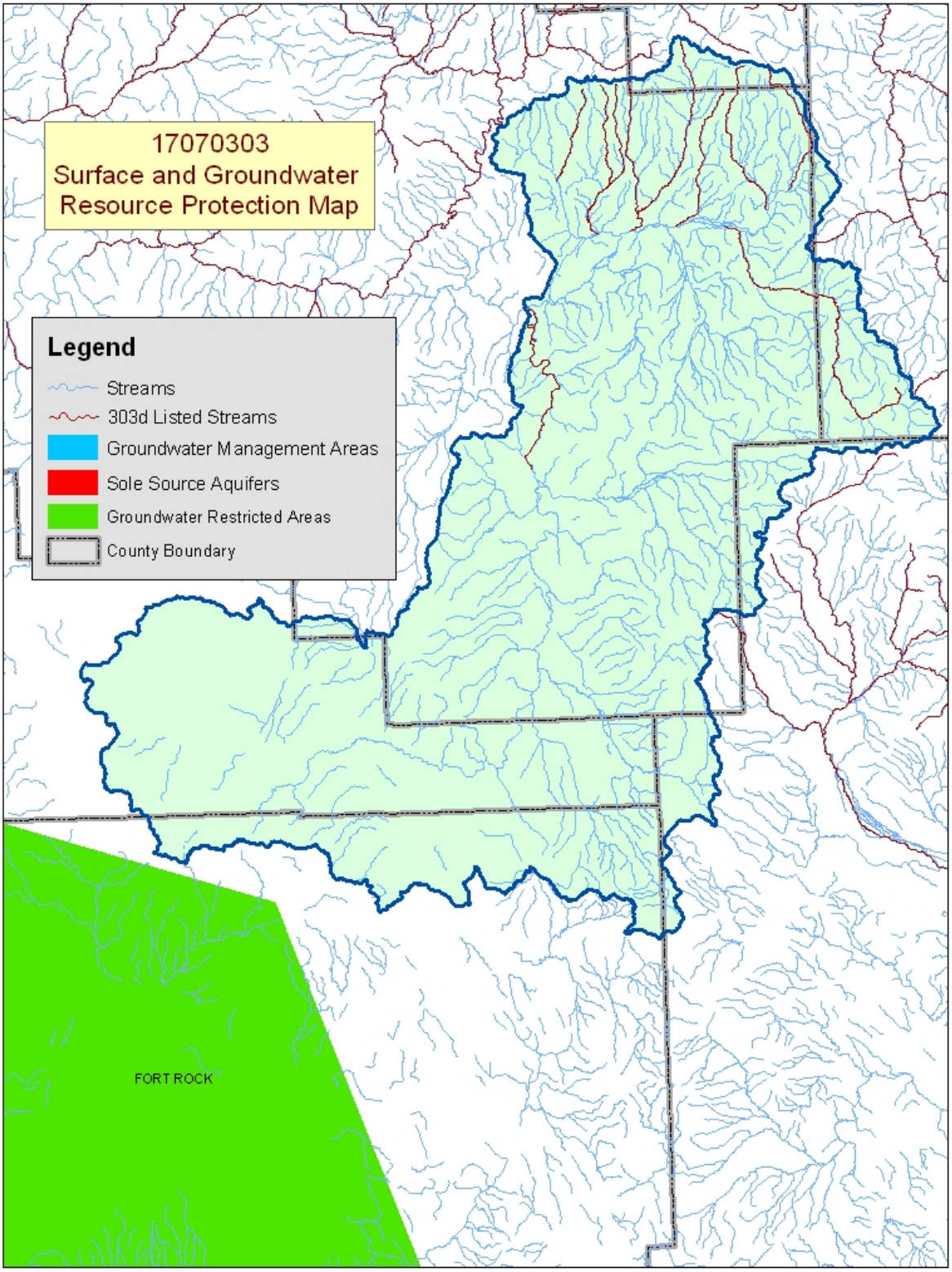


- All listed stream miles have temperatures exceeding State water quality standards. Elevated stream temperatures may be due to inadequate riparian shade, stream channel widening, warm irrigation return flows, and other anthropogenic or natural causes.
- Conservation practices that can be used to address these water quality issues include 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
None		None	
ODEQ TMDL's[8]		ODA Agricultural Water Quality Management Plans[9]	
Name	Status	Name	Status
None		Crooked River	Completed

OWEB Watershed Councils[10]	Watershed Council Assessments[11]	NWPCC Subbasin Plans & Assessments[18]
Crooked River and Bridge Creek Watershed Councils	Crooked River Watershed Assessment	Deschutes 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**	**Grass \ Pasture \ Hay**	**Grain Crops**	**Row Crops**	**Perennial Crops (Orch / Vine / Berries)**	**Shrub / Range**	**Forest**
Soil Erosion	Sheet and Rill					X	X
	Wind		X	X			
	Streambank	X				X	
	Irrigation Induced			X			
Soil Condition	Tilth, Crusting, Infiltration, Organic Matter		X	X			
Water Quantity	Water Management For Irrigated Land	X	X	X			
Water Quality, Surface	Nutrients and Organics			X			
Plant Condition	Productivity, Health, and Vigor	X				X	X
Plant Management	Establishment, Growth, and Harvest	X					
Animal Habitat, Domestic	Management	X					
Animal Habitat, Wildlife	Food, Cover, and/or Shelter					X	X
Human, Economics	Land Use Constraints/Restrictions					X	X
	High Capital/Financial Cost			X			
	High Labor Cost or Availability			X			
	Low or Unreliable Profitability	X	X			X	X
Human, Social	Low Community Well-Being						X
Human, Political	Inadequate Availability of Cost Share Programs						
	Lack of Technical Assistance	X	X	X		X	
	High Degree of Controversy						

Grass / Pasture / Hay

- The primary concerns in areas of irrigated pasture on farms and ranches are water and grazing management.
- Past management, in some instances, has accelerated streambank erosion and resulted in poor forage condition.
- Low profitability and insufficient technical assistance for ranches and small farms can hinder conservation efforts.

Grain and Row Crops

- Wind erosion and water management are resource concerns on irrigated cropland.
- High capital and labor cost to improve and manage more efficient irrigation systems is an obstacle to use of additional conservation practices.

Rangeland and Forest Land

- Overstocked lodgepole pine/ponderosa pine on forest land and invasive weeds (medusa head and cheatgrass) on rangeland limit the productivity for timber, grazing, and wildlife habitat.
- Juniper is encroaching onto rangeland and ponderosa pine sites.
- Low economic profitability and land use constraints (development, environmental pressure, etc.) discourage conservation activities.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES[12]	
THREATENED SPECIES	**CANDIDATE SPECIES**
Mammals - Canada lynx **Birds -** Bald eagle, Northern spotted owl **Fish** - Bull trout	**Birds –** Yellow-billed cuckoo **Amphibians and Reptiles –** Oregon spotted frog, Columbia spotted frog **PROPOSED SPECIES**: None
ESSENTIAL FISH HABITAT[13] – None	

Census and Social Data[/14]

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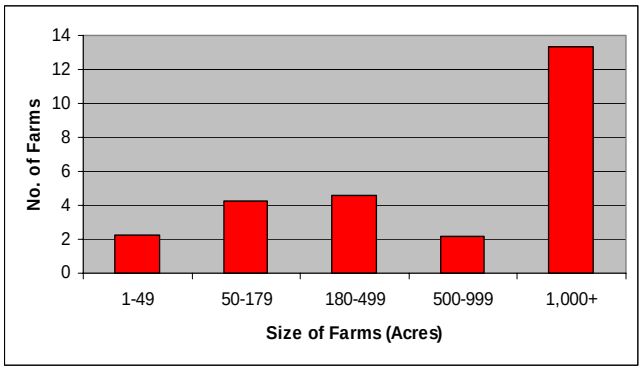
Number of Farms: 27

Number of Operators: 43

- Full-Time Operators: **13**
- Part-Time Operators: **30**

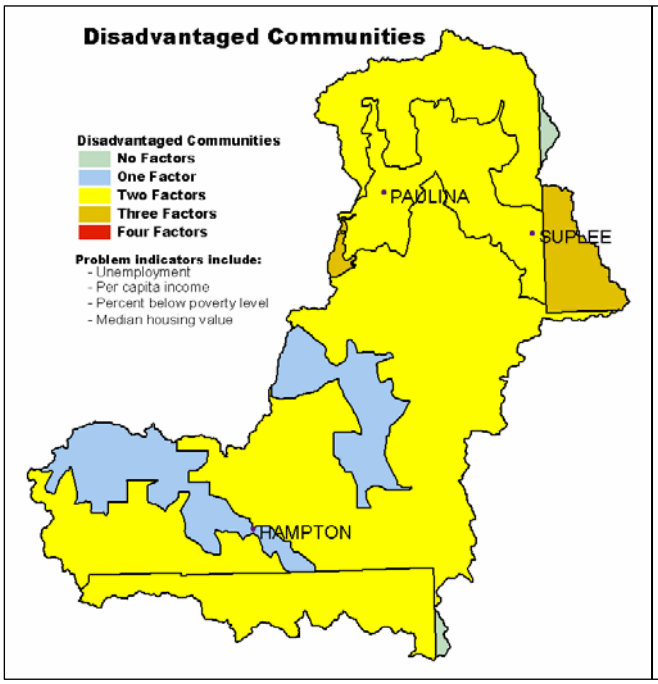


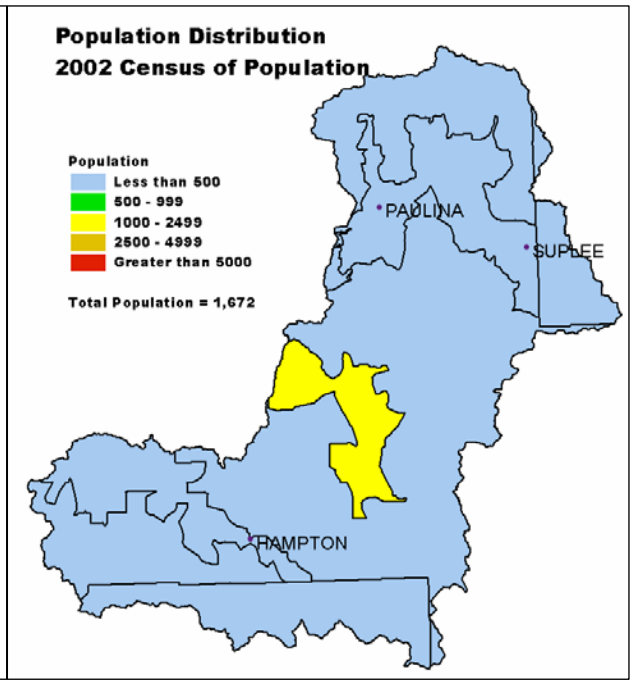
Estimated Level of Willingness and Ability to Participate in Conservation[/15]: MODERATE TO HIGH

The South Fork Crooked subbasin is sparsely populated. Most of the farmers and ranchers, however, are well educated, are aware of local natural resources problems and the relationship to their agricultural operation, and have a positive stewardship attitude. If conservation practices and systems can be demonstrated to be effective and of reasonable cost, can be implemented incrementally, and fit into their operation's management systems, it is likely that most operators in the subbasin would be able and willing to try them.

Evaluation of Social Capital[/16] *(Due to their proximity and size, South Fork Crooked and Upper Crooked subbasins have been combined)*: MODERATE TO HIGH

Indications are that the community in the South Fork Crooked and Upper Crooked subbasins is, for the most part, physically healthy, socially progressive, and economically stable. People tend to interact in everyday life through organizations and groups such as churches, civic groups, and recreational leagues. The community has experience in coming together to solve problems and complete community projects. It can be expected to support the adoption and diffusion of conservation practices throughout the subbasins.





Progress / Status

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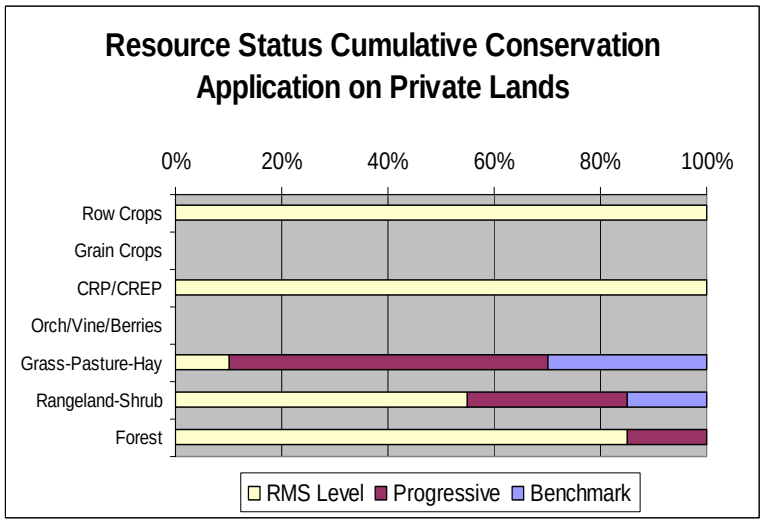
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg / Year	Total
Total Conservation Systems Planned (Acres)	0	0	0	0	0	0	0
Total Conservation Systems Applied (Acres)	0	0	1,845	0	0	369	1,845
Conservation Treatment							
Waste Management (Number)	0	0	0	0	0	0	0
Buffers (Acres)	0	0	0	0	0	0	0
Erosion Control (Acres)	0	0	0	0	0	0	0
Irrigation Water Management (Acres)	0	0	166	0	0	33	166
Nutrient Management (Acres)	0	0	0	0	0	0	0
Pest Management (Acres)	0	0	0	0	0	0	0
Prescribed Grazing (Acres)	0	0	1,845	0	0	369	1,845
Trees and Shrubs (Acres)	0	0	0	0	0	0	0
Conservation Tillage (Acres)	0	0	0	0	0	0	0
Wildlife Habitat (Acres)	0	0	0	0	0	0	0
Wetlands (Acres)	0	0	0	0	0	0	0



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

- Progress over the last five years has been focused on prescribed grazing on rangeland and pastureland.
- Cost to improve irrigation water management can hinder water conservation on cropland.
- Forested areas developed as homesites and recreational property commonly are not actively managed for timber or wildlife.
- Private, non-industrial forest land that is not managed commonly creates fire safety issues.

Lands Removed from Production through Farm Bill Programs

- Conservation Reserve Program (CRP): **478 acres**
- Wetland Restoration Program (WRP): **None**
- Conservation Reserve Enhancement Program (CREP): **None**

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, 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.