Lower John Day – 17070204

8-Digit Hydrologic Unit Profile

FINAL

AUGUST 2005

Introduction

The Lower John Day 8-Digit Hydrologic Unit Code (HUC) subbasin is slightly over 2 million acres and includes parts of 8 counties. Approximately one-half of the subbasin is rangeland, and the rest is forestland and areas used for grain crops, hay, and pasture. The main resource concerns on the rangeland and forestland include overstocked pine, juniper encroachment, invasive weeds, and a perceived high cost of conservation. Sheet, rill, and wind erosion are concerns for cropland, and waste management and a lack of riparian vegetation along streams are concerns for grassland and pastureland.

There are only about 327 farms and ranches in the Lower John Day subbasin. Most of these are grain crop operations in Gilliam and Sherman Counties that are more than 1,000 acres in size. Much of the forestland in Wheeler County consists of areas less than 1,000 acres in size. Much of this forestland is under private industrial ownership and is used for timber and grazing. Other private forestland and rangeland is used for fee hunting, which has become a significant source of income for area ranchers.

Conservation assistance in Oregon is provided by six soil and water conservation districts, one soil survey office, the Columbia Blue Mountain Resource Conservation and Development (RC&D) office, and the Mission satellite office, which serves the Umatilla Indian Reservation.

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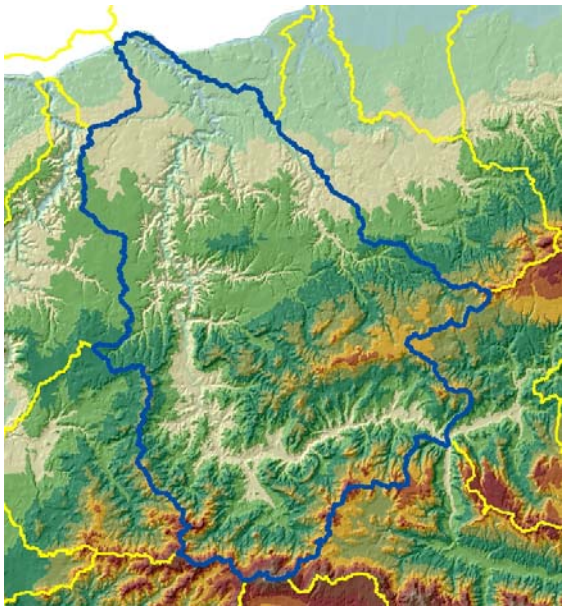

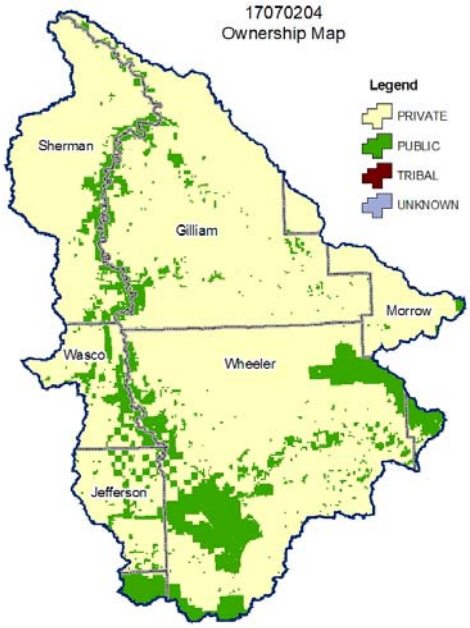

Produced by the Water Resources Planning Team Portland, OR

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Physical Description

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ALL NUMBERS IN THIS PROFILE ARE FOR OREGON ONLY

Land Cover/Land Use (NLCD[12])	Ownership - (2003 Draft BLM Surface Map Set[11])							
	Public		Private		Tribal		Totals	%
	Acres	%	Acres	%	Acres	%		
Forest	95,500	5%	299,900	15%	0	0%	395,400	20%
Grain Crops	---	*	266,300	13%	0	0%	267,100	13%
Conservation Reserve Program Land [a]	---	*	102,400	5%	0	0%	102,500	5%
Grass/Pasture/Hay	17,800	1%	118,100	6%	0	0%	135,900	7%
Orchards/Vineyards	0	0%	0	0%	0	0%	0	0%
Row Crops	0	0%	---	*	0	0%	---	*
Shrub/Rangelands	210,600	10%	888,500	44%	0	0%	1,099,100	54%
Water/Wetlands/Developed/Barren	---	*	13,200	1%	0	0%	19,600	1%
Oregon HUC Totals [b]	**331,200**	**16%**	**1,688,400**	**84%**	**0**	**0%**	**2,019,600**	**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 50 percent of the private forestland is under industrial forest ownership.
- Private non-industrial forestland is used for timber and grazing.
- Fee hunting on private forestland and rangeland has become a significant source of income for area ranchers.

Irrigated Lands (1997 NRI[13] Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	0	0%	0%
	Uncultivated Cropland	10,000	100%	<1%
	Pastureland	0	0%	0%
	Total Irrigated Lands	**10,000**	**100%**	**<1%**

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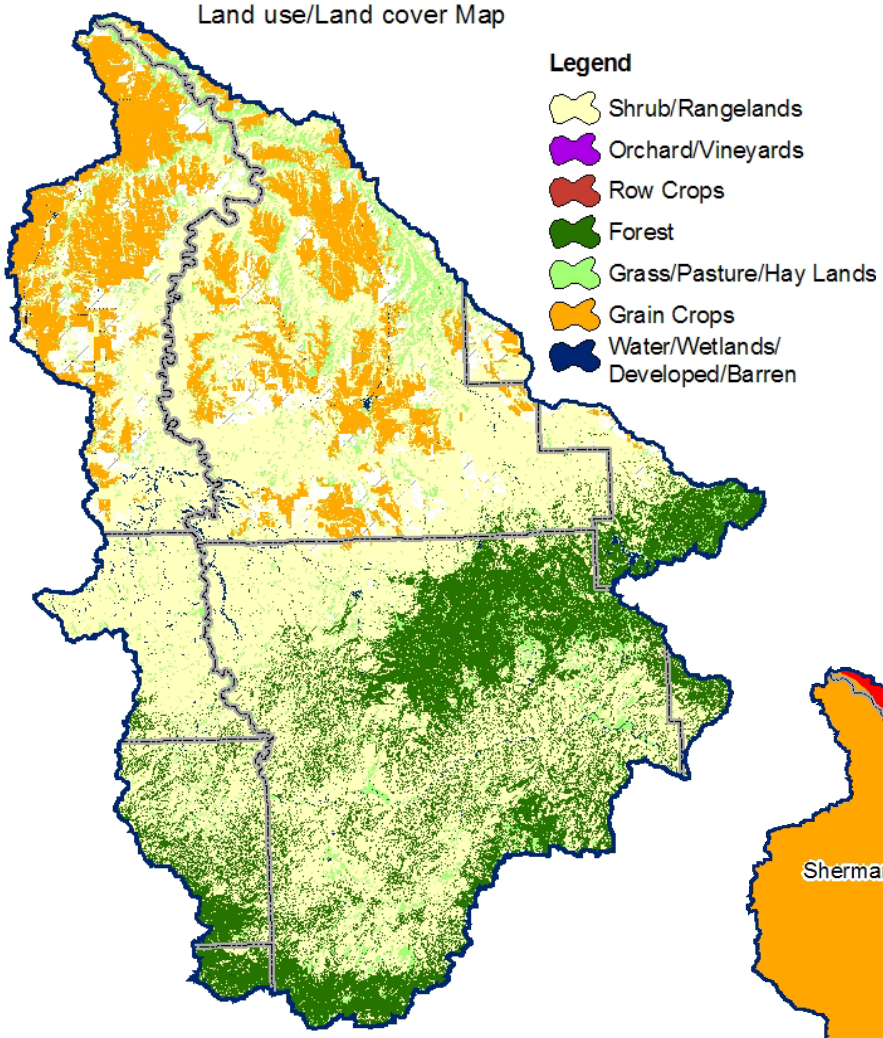
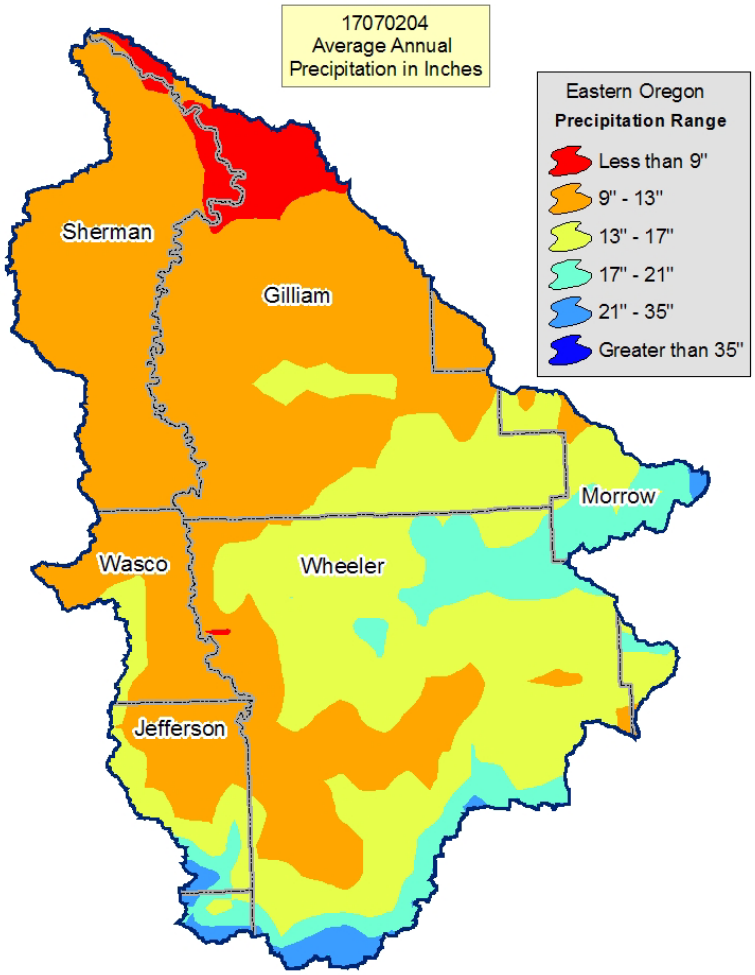
17070204
Land use/Land cover Map





Common Resource Area Map

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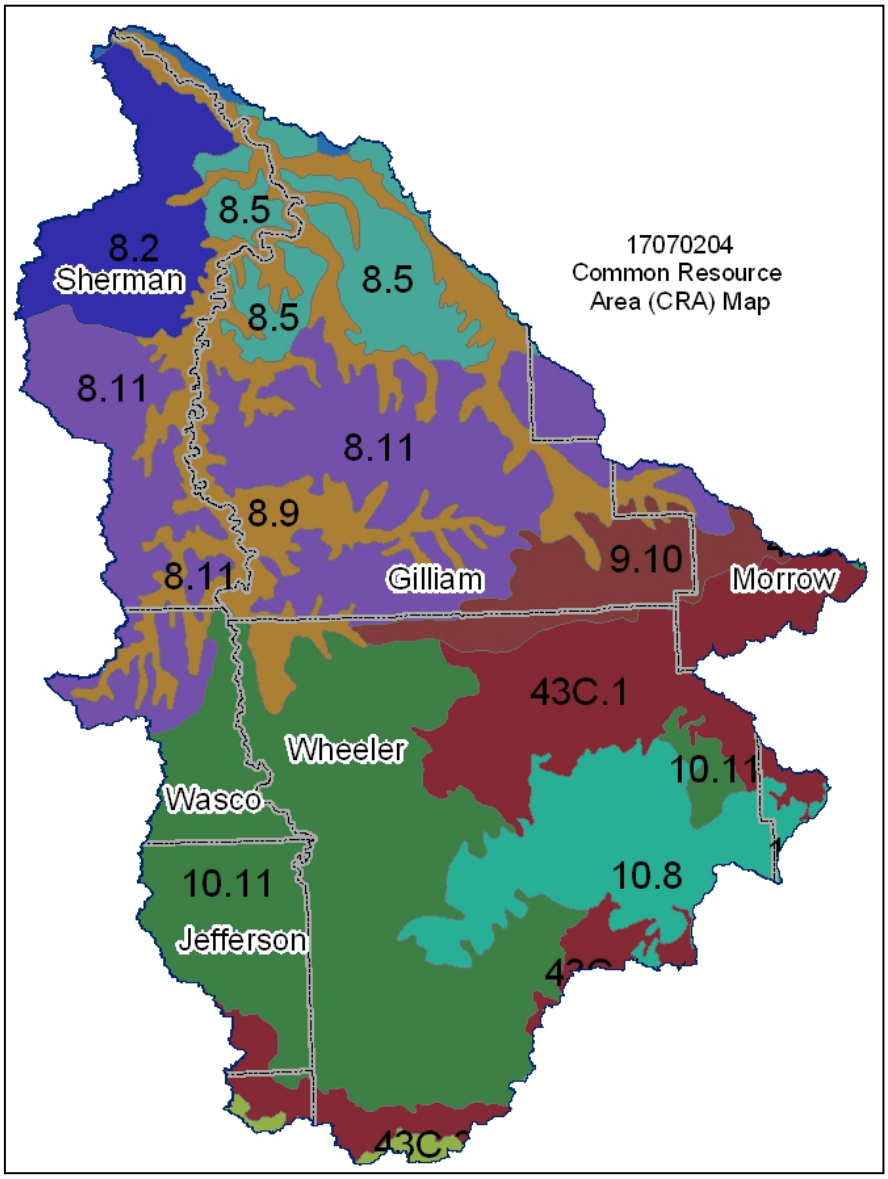
Only the major units are described below - for descriptions of all units within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



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

10.8 - Central Rocky and Blue Mountains Foothills - John Day-Clarno Moist Uplands: This unit is characterized by rangeland soils on hills or mountains associated with basalt. The dominant soils are those of the Waterbury, Gwin, and Rockley series. The temperature regime is mesic, and the moisture regime is xeric. Precipitation is about 12 to 18 inches. The vegetation is Wyoming big sagebrush with Idaho fescue and bluebunch wheatgrass (warm moist climate).

10.11 - Central Rocky and Blue Mountains Foothills - John Day-Clarno Uplands: This unit is characterized by rangeland soils on hills or 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.

43C.1 - Blue and Seven Devils Mountains - John Day-Clarno Highlands: This unit is characterized by forestland 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 are typically clayey textured with a strongly expressed argillic horizon.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	21,437	88,393
	Well	5,203	21,455
	Total Irrigated Adjudicated Water Rights	26,640	109,848
Stream Flow Data	USGS 14048000 JOHN DAY RIVER AT MCDONALD FERRY, OR	**Total Avg. Yield**	1,490,009
		May – Sept. Yield	536,928
		MILES	**PERCENT**
Stream Data[5] **Percent of total miles of streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	981	---
	303d/TMDL Listed Streams (DEQ)	343.6	35%
	Anadromous Fish Presence (StreamNet)	251.1	26%
	Bull Trout Presence (StreamNet)	15.0	1.5%
		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	18,568	21%
	Grain Crops	6,319	7%
	Grass/Pasture/Hay	5,233	6%
	Orchards/Vineyards	0	0%
	Row Crops	0	0%
	Shrub/Rangelands – Includes CRP Lands	55,578	63%
	Water/Wetlands/Developed/Barren	2,492	3%
	Total Acres of 100-Foot Stream Buffers	**88,190**	**100%**
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**1** – slight limitations	4,100	1%
	2 – moderate limitations	31,500	11%
	3 – severe limitations	220,500	80%
	4 – very severe limitations	15,400	6%
	5 – no erosion hazard, but other limitations	0	0%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	2,600	1%
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	900	0%
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0	0%
	Total Croplands & Pasturelands	**275,000**	**---**

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

Animal Type	Dairy	Feedlot	Poultry	Swine	Mink	Other
No. of Permitted Farms	1	2	0	0	0	0
No. of Permitted Animals	115	1,850	0	0	0	0

Resource Concerns

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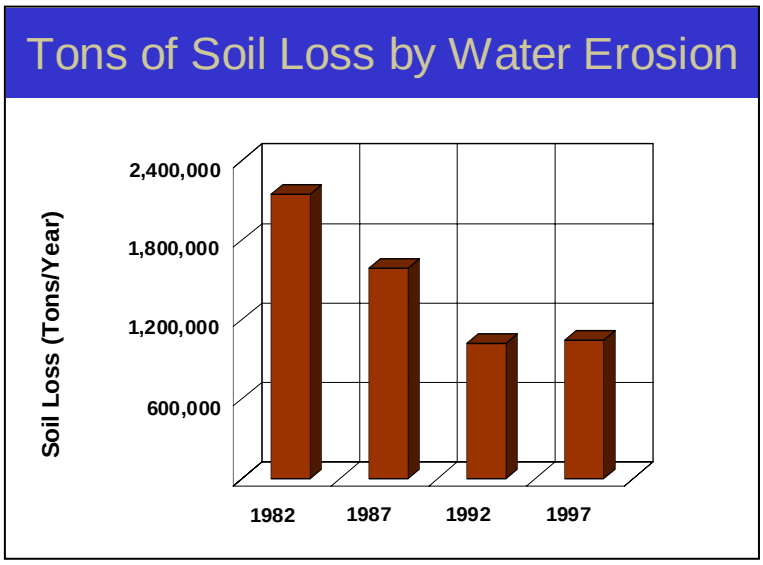
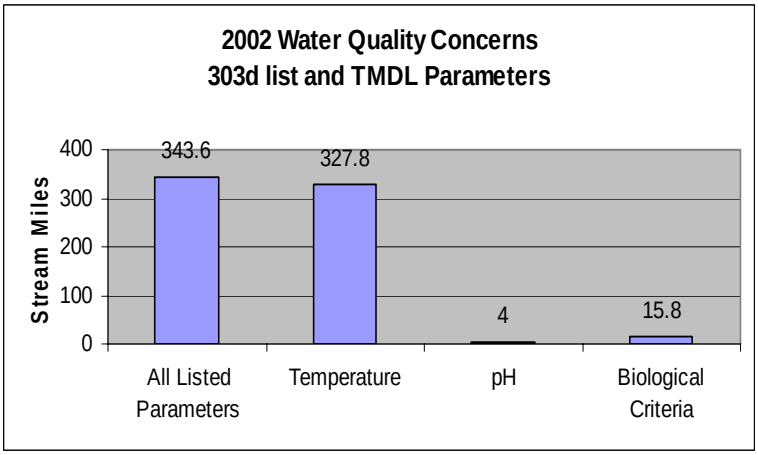


- Sheet and rill erosion by water on the cropland and pastureland has been reduced nearly 1.1 million tons of soil per year from 1982 to 1997.
- NRI estimates indicate that 153,900 acres of the agricultural land still had water erosion rates above a sustainable level in 1997.
- Controlling erosion not only sustains the long-term productivity of the land, but 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, erosion rates on cultivated cropland fell 24 percent, from 5.3 tons/acre/year to 4.0 tons/acre/year, from 1982 to 1997.

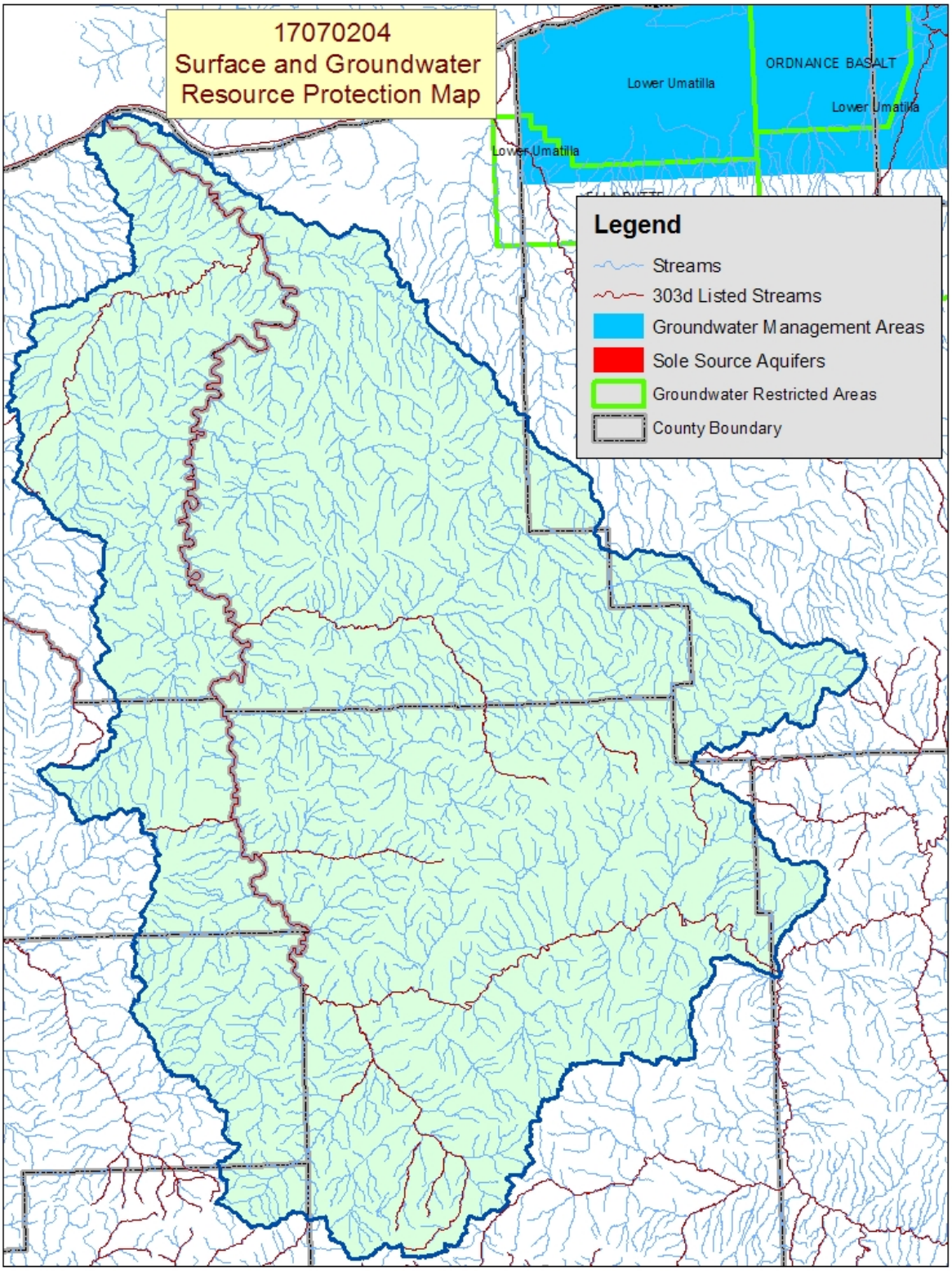


- Ninety-five percent of the 303d listed stream miles have temperatures that exceed State water quality standards. Elevated stream temperatures may be due to inadequate riparian shade, stream channel widening, warm irrigation return flows, and other anthropogenic or natural sources.
- Conservation practices that can be used to address these water quality issues include grazing management and use of riparian buffers.

Watershed Projects, Plans, Studies, and Assessments			
NRCS Watershed Projects[6]		NRCS Watershed Plans, Studies, and Assessments[7]	
Name	Status	Name	Status
Rock Creek Dry Creek	Deauthorized Active	None	
ODEQ TMDL's[8]		ODA Agricultural Water Quality Management Plans[9]	
Name	Status	Name	Status
None		Lower John Day Middle Fork John Day	Completed Completed

OWEB Watershed Council[10]	Watershed Council Assessments[11]	NWPCC Subbasin Plans & Assessments[18]
Bridge Creek, Gilliam-East John Day, Grass Valley Canyon, Middle Fork John Day, North Sherman, and Pine Hollow Watershed Councils	Hay Creek/Scott Canyon Watershed Assessment	John Day 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				
	Concentrated Flow or Gully						X
	Irrigation Induced	X					
Soil Condition	Tilth, Crusting, Infiltration, and Organic Matter		X			X	
Water Quantity	Water Management For Irrigated Land	X					
Water Quality, Surface	Nutrients and Organics	X					
	Suspended Sediments and Turbidity		X			X	X
Plant Suitability	Site and Intended Use Suitability					X	
Plant Condition	Productivity, Health, and Vigor					X	
Human, Economics	High Capital/Financial Cost	X	X			X	X
	High Labor Cost or Availability	X	X			X	X
	Low or Unreliable Profitability	X	X			X	X
Human, Political	Inadequate Availability of Cost Share Programs	X	X			X	X
	Lack of Technical Assistance		X			X	

Grass / Pasture / Hay

- Streambank and irrigation-induced erosion are associated with pastures that commonly are adjacent to streams.
- Management of nutrients and livestock waste can be an issue on grazing lands.
- Pastures adjacent to streams commonly lack adequate riparian vegetation to shade and buffer streams.

Grain Crops

- Sheet and rill erosion remains a resource concern.
- On sandy soils in the northern part of the watershed, wind erosion can be a problem.
- Low profitability, inadequate funding, and lack of technical assistance commonly hinder use of additional conservation practices.

Rangeland and Forestland

- Much of the private forestland is managed by private industrial owners who generally comply with State forest practices.
- Some private non-industrial forestland is associated with small woodlots or rural homesites, which are not actively managed for timber production.
- Private woodlots commonly suffer from hygrading (harvesting the best trees) or poor stand management (overstock stands).
- Overstocked lodgepole pine/ponderosa pine on forestland and invasive weeds (medusahead and cheatgrass) on rangeland limit the productivity for timber, grazing, and wildlife habitat.
- Juniper is encroaching onto both rangeland and ponderosa pine sites.
- Low economic profitability and a perceived high cost of conservation discourage conservation activities.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES[12]	
THREATENED SPECIES	**CANDIDATE SPECIES**
Mammals - Canada lynx **Birds –** Bald eagle **Fish –** Steelhead, Sockeye salmon, Chinook salmon, Bull trout	**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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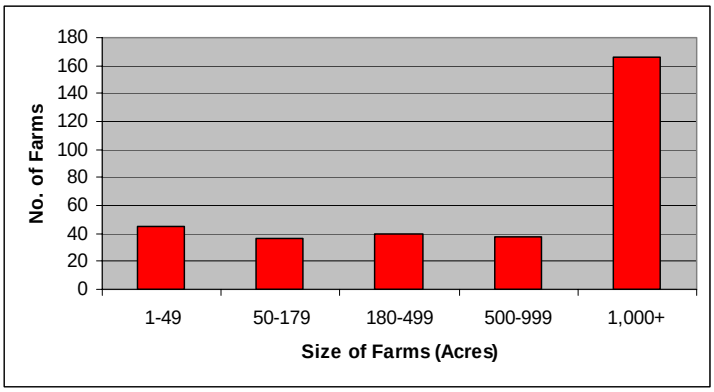
Number of Farms: 327

Number of Operators: 554

- Full-Time Operators: **229**
- Part-Time Operators: **325**

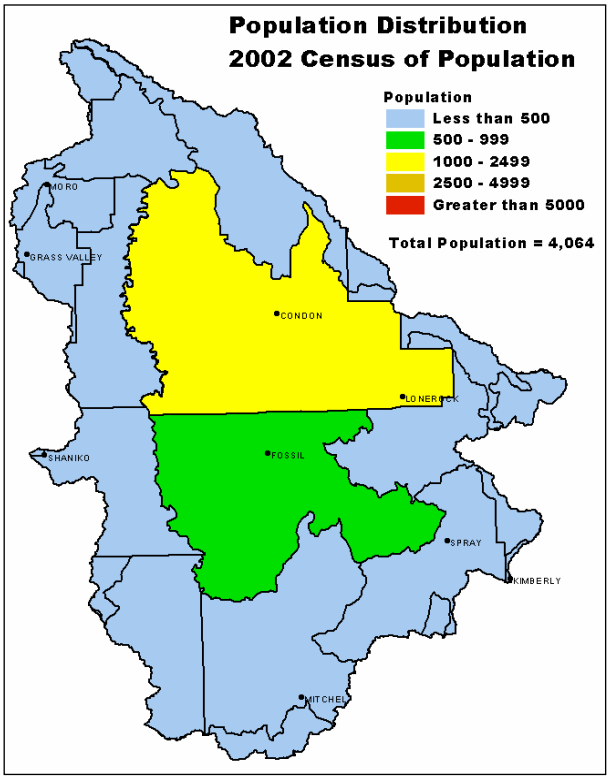


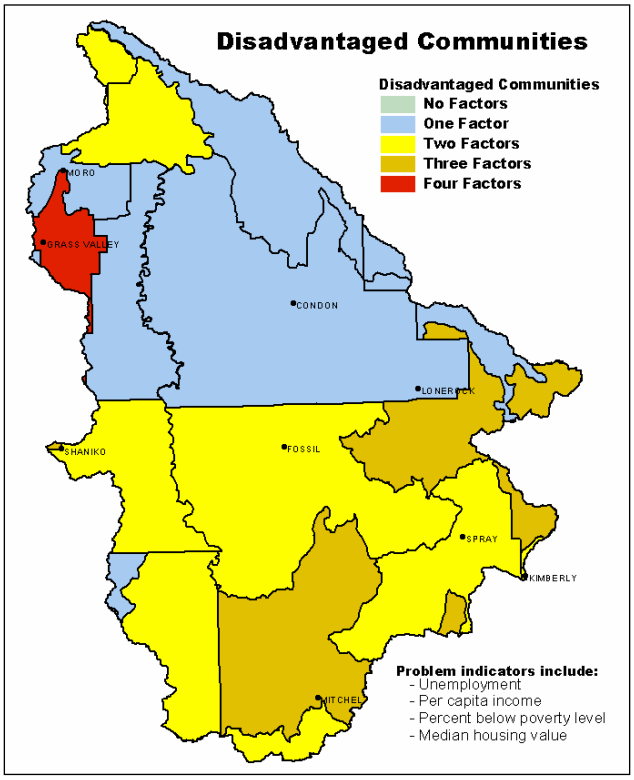
Estimated Level of Willingness and Ability to Participate in Conservation[/15]: MODERATE TO HIGH

The operators of the larger farms in the subbasin tend to understand and appreciate the benefits of conservation and have a history of adopting conservation systems. They tend to have the ability and resources to adopt conservation systems. The operators of the smaller farms, particularly the newer owners, tend to lack some awareness of both on-farm and local resource concerns. They are apt to have the resources and inclination to adopt conservation systems, but they may require additional technical assistance.

Evaluation of Social Capital[/16] LOW TO MODERATE

Social capital in the Lower John Day subbasin is moderate. In the part of the subbasin where the operations are larger, the mainstream agricultural communities flourish and are supportive of conservation. In the part where the operations are smaller or are run by industry or absentee landowners, the community is not as strong, experienced, and adept at addressing local issues and solving communitywide problems. Areas where the social capital is low might benefit from community development assistance in public participation, effective leadership, and problem solving.





Progress / Status

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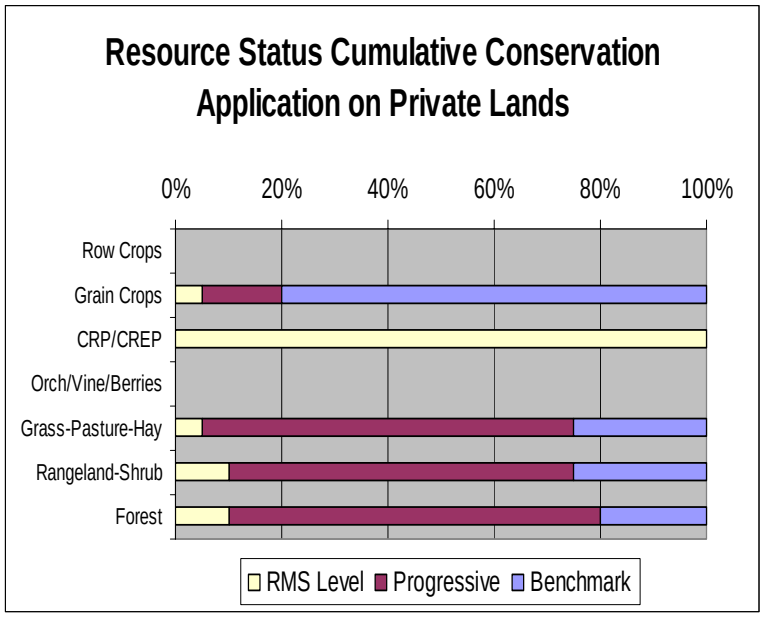
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg / Year	Total
Total Conservation Systems Planned (Acres)	29,561	52,020	24,547	27,649	24,166	31,589	157,943
Total Conservation Systems Applied (Acres)	26,860	85,761	73,551	27,957	48,845	52,595	262,974
Conservation Treatment							
Waste Management (number)	0	0	0	0	0	0	0
Buffers (acres)	39	206	87	123	918	275	1,373
Erosion Control (acres)	21,219	37,153	27,398	9,906	14,046	21,944	109,722
Irrigation Water Management (acres)	0	0	514	0	0	103	514
Nutrient Management (acres)	0	3,105	5,222	795	2,260	2,276	11,382
Pest Management (acres)	0	11,305	7,758	1,032	2,229	4,465	22,324
Prescribed Grazing (acres)	2,717	54,285	36,895	17,974	9,523	24,279	121,394
Trees & Shrubs (acres)	109	332	0	143	544	226	1,128
Conservation Tillage (acres)	719	10,127	15,708	4,820	5,789	7,433	37,163
Wildlife Habitat (acres)	17,601	21,368	21,097	5,630	18,229	16,785	83,925
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 5 years has been focused on:
  - Erosion control, nutrient and pest management, and conservation tillage in areas used for grain crops.
  - Prescribed grazing on rangeland and pastureland.
  - Wildlife habitat improvement.
- Most irrigated pasture and hay is well managed for irrigation efficiency; however, the areas have at least one or two remaining resource concerns, such as nutrient and pest management.
- Most rangeland is well managed, although invasive weeds, such as medusahead or knapweed, have led to low plant productivity and soil erosion in some areas.
- Forestland is generally profitable and provides wildlife habitat. State forest practice act requirements are implemented on most private forestland. The remaining issues are lack of fencing and water facilities to manage livestock and competition between livestock and wildlife for food and water.

Lands Removed from Production through Farm Bill Programs

- Conservation Reserve Program (CRP): **102,387 acres**
- Wetland Restoration Program (WRP): **None**
- Conservation Reserve Enhancement Program (CREP): **1,044 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.