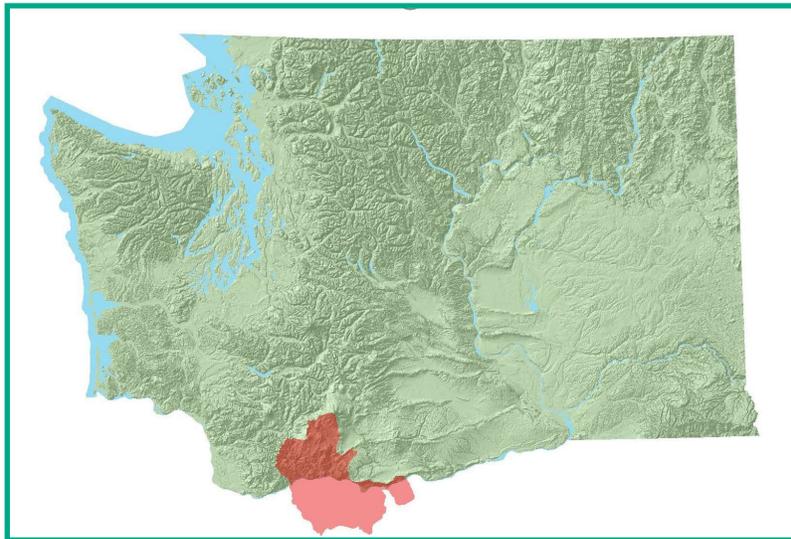


Middle Columbia-Hood Watershed

HUC: 17070105

Rapid Watershed Assessment



This assessment involves the collection of quantitative and qualitative information to develop a watershed profile, sufficient analysis of that information to make qualitative statements as to resource concerns and conditions, and the generation of information with which to make decisions about conservation needs and recommendations. These assessments are conducted through the use of Geographic Information System (GIS) technology and by conservation planning teams working within the watershed, meeting with landowners and conservation groups, inventorying agricultural areas, assessing current levels of resource management, identifying conservation recommendations and, making qualitative estimates of the impacts of conservation on local resource concerns.

October 19, 2006

The Middle Columbia-Hood watershed is located in south central Washington State.

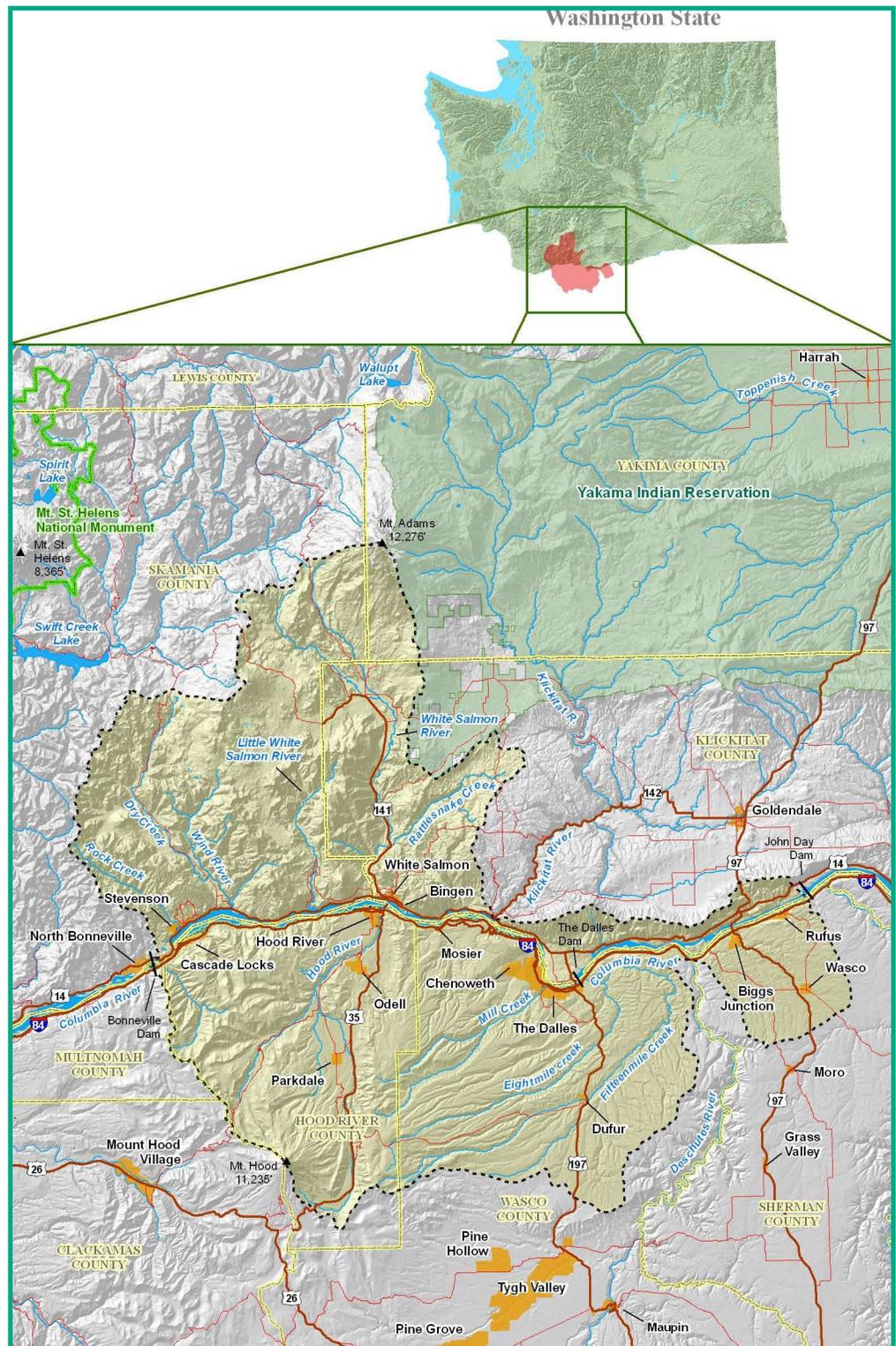
The Washington portion of the Mid Columbia Hood, 8-Digit Hydrologic Unit Code (HUC) subbasin is approximately 639,156 acres in size. The watershed is 35% privately owned and 65% publicly owned.

The majority of the watershed is forest, range and cropland. Cropland is located mostly in the lower elevations. Agricultural enterprises include cow-calf operations, hay and pasture (both irrigated and dryland), cereal grains, fruit production and irrigated agriculture.

The cities of White Salmon and Stevenson make up the largest urban areas in the watershed. The watershed is in both Skamania County and Klickitat County on the Washington side.

Major resource concerns are soil erosion on dry cropland, streambank erosion, impaired water quality, forest health issues, and invasive weeds.

Primary natural resource technical assistance is provided by the Brush Prairie NRCS Field Office, and Underwood Conservation District.



The profile content for the Rapid Watershed Assessments in Washington is outlined in the following five categories:

Content	Page
---------	------

Physical Descriptions of the Watershed	4
---	---

- | | |
|--|--|
| <ul style="list-style-type: none"> • General Soils • Relief • Precipitation • Land Use / Land Cover • Common Resource Areas • Wind Erosion • Stream Fish Use and Barriers • Sole Source Aquifers | <ul style="list-style-type: none"> • Ownership • Farmland Classification • 303d Listed Surface Water • Particulate Matter Maintenance Area • Riparian Land Use/ Cover • Irrigated Cropland, Hayland and Pastureland • Cultural and Historic Sites |
|--|--|

Resource Concerns	20
--------------------------	----

- Concerns
- Threatened, Endangered and Proposed Species
- AFO/CAFO
- Compliance Issues

Farm Bill Programs	22
---------------------------	----

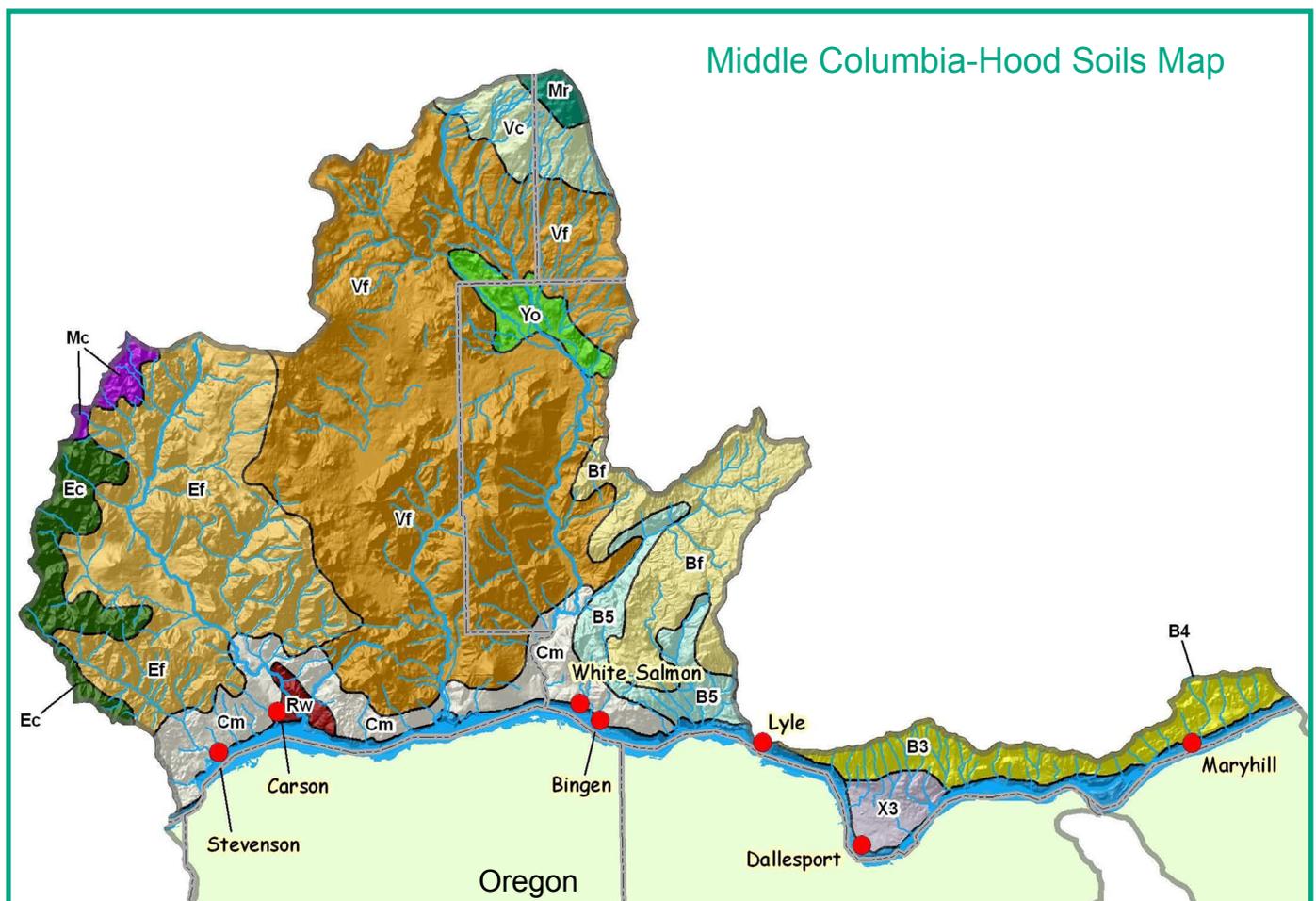
- Acres Enrolled in Farm Bill Programs
- NRCS - Protracts Progress and Status Summary

Reports	23
----------------	----

- Census Data
 - 2002 Ag Census Data
 - Population, Ethnicity, Income
- Special Projects
 - Watershed Projects, Studies and Monitoring

Footnotes and Bibliography	28
-----------------------------------	----

The soils in this watershed are formed in volcanic ash, pumice and cinders over basalt, andesite, breccia or tuff in the higher elevation coniferous forest and stony rangeland soils that are shallow to moderately deep to basalt bedrock in the lower elevations. The forest soils are on moderately to very steep slopes and have ashy or medial loam, sandy loam surface textures and can be gravelly or stony. The lower elevation range soils lack the ash component and have stony, gravelly or cobbly loam, sandy loam or silt loam surface textures. The climate pattern in this watershed provides a low risk of wind erosion but water erosion can be a concern on steeper slopes and when surface residue is removed by intensive crop/forest management practices or wildfire in the lower precipitation areas.



B3 - Stony rangeland soils of shallow to moderate depth; these soils have slightly dark, humus-rich topsoils. Aridic to Xeric/Mesic; Kuhl-Rock Creek-Badge-Lickskillet.

B4 - Stony rangeland and cropland soils; shallow to deep; these soils have dark-colored, humus-rich topsoils. Xeric/Mesic; Goldendale-Laufer-Clint.

(General Soils information continued on next page.)

B5 - Stony rangeland soils; shallow to deep; some soils formed under scattered Oregon white oak or ponderosa pine; most have very dark, humus-rich topsoils. Xeric/Mesic; Gwinly-Teakison-Lyville-Mallory-Anatone-Leidl.



Bf - Cool, stony forest soils; transitional between B5 and Vf or Vhf. Xeric/Frigid to Mesic; Loneridge-Jumpe-Berson-Para-McGowan-Gunn-Sutkin.

Cm - Well- to poorly- drained soils on terraces; most have developed in alluvium of early to middle Pleistocene age under a combination of coniferous forest and prairie vegetation; many are base-rich. Xeric, Aquic, and Udic/Mesic; Hillsboro-Dollar-Kelso-St. Martin.

Ec - Cold, stony soils of the mountains, developed in volcanic ash over basalt, andesite or breccia. Udic/Cryic; Stahl-Reichel.

Ef - Cool soils of foothills, developed in volcanic ash over andesite, basalt, breccia or tuff. Xeric to Udic/Frigid to Mesic; Jonas-Dobbs-Beigle-Zynbar-Domell-Cinnamon.

Mc - Medial-skeletal and medial soils, most have pumice or volcanic ash influence in the upper part and formed from glacial till or colluvium. Udic/Cryic; Playco-Kindy-Hatchet-Wollard-Getchell-Rock Outcrop.

Mr - Rock Outcrop, snowfields, and soils formed under cold climate-stunted trees or alpine meadow vegetation. Udic/Cryic; no series mapped.

Rw - Well- to excessively-drained soils; most have a dry season when irrigation is needed for agricultural production. Xeric to Aquic/Mesic; Skagit-Puget-Puyallup-Chehalis-Caples-Oridia.

Vc - Cold, stony soils of mountains that stay moist all year due to late snowmelt; forest soils formed in volcanic ejecta and basalt with grassland soils formed from loess and basalt on south slopes. Udic/Cryic; Naxing-Pird-Alfir-Saydab-Darland-Ganis.

Vf - Cool, deep, stony forest soils formed in a layer of volcanic ash (or ash and pumice) over basalt. Xeric/Frigid to Mesic; Surveyors-Satus-Grandpon-MountAdams-McElroy.

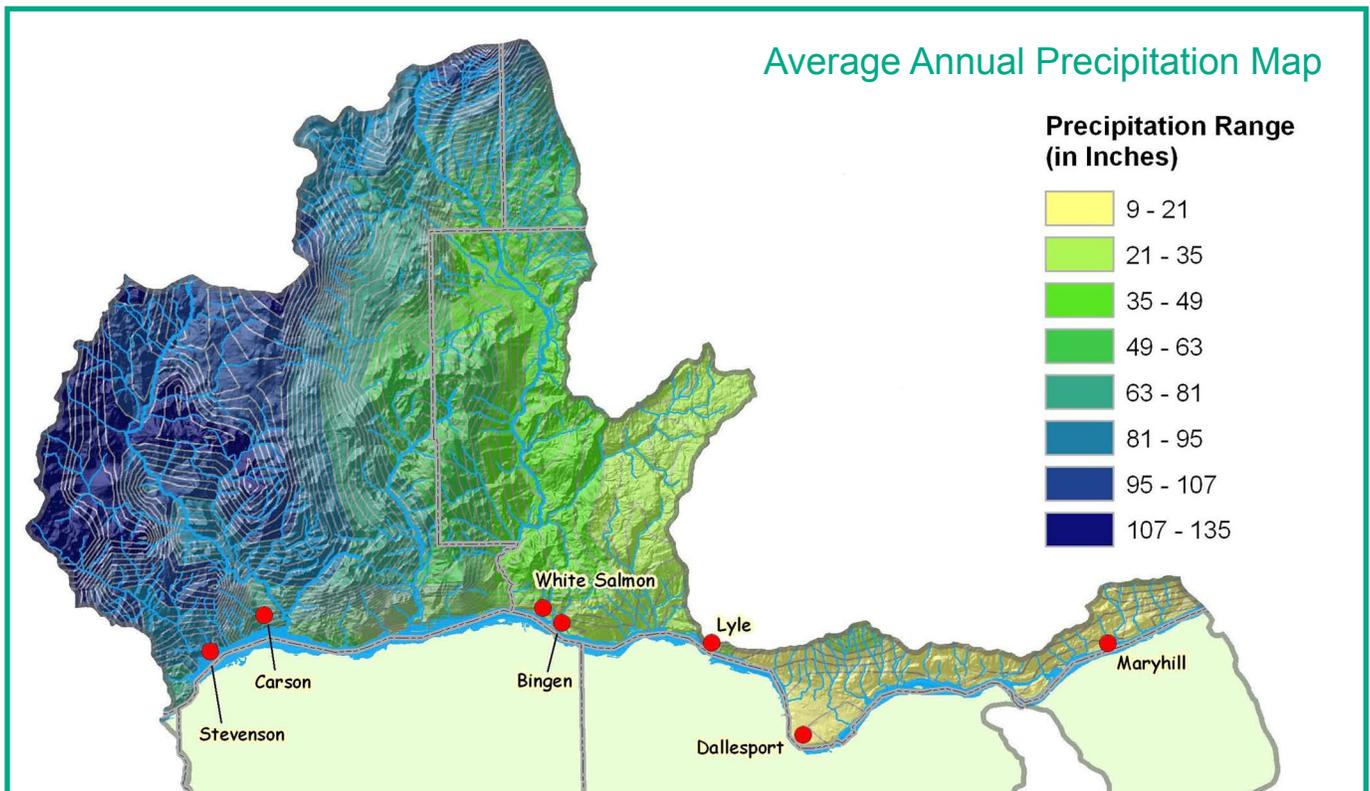
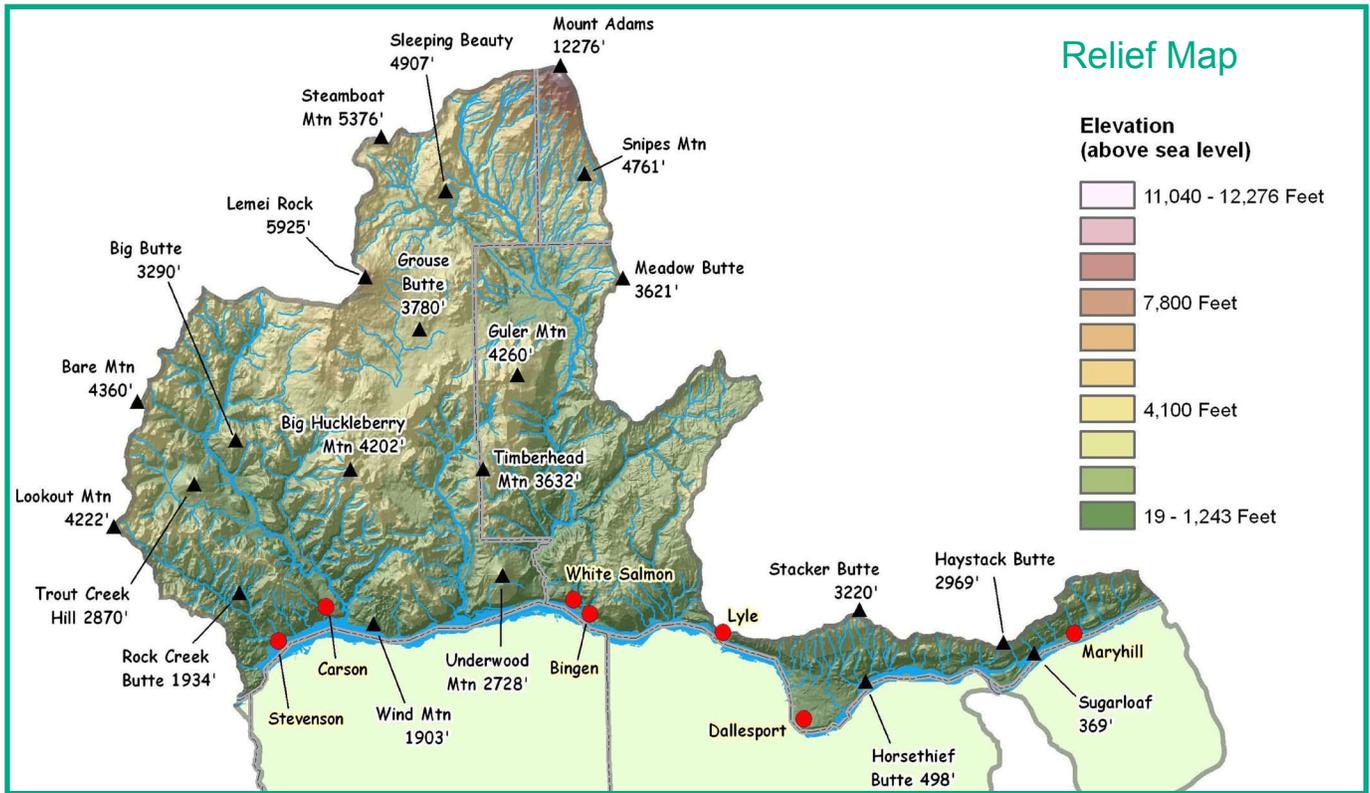
X3 - Soils of the Channeled Scablands: shallow, stony soils formed in loess over cataclysmic glacial outburst flood-scoured basalt occur in complex landscape patterns with moderately deep soils formed in loess over silty, sandy, or cobbly flood sediment; includes small areas of very deep loessial soils and poorly drained salt-affected alluvial soils; X3, X4 and X5 have dark topsoils. Aridic/Mesic; Anders-Bakeoven-Benge-Lickskillet.

Yo - Poorly- to well-drained soils formed in alluvium, glacial outwash, and volcanic ash, under forest vegetation. Xeric to Aquic/Mesic; Guler-Conboy-Chemawa-Glen.

Physical Descriptions

Relief ³ and Precipitation ⁴

Middle Columbia-Hood
 1,384,474 Total Acres
 HUC# 17070105

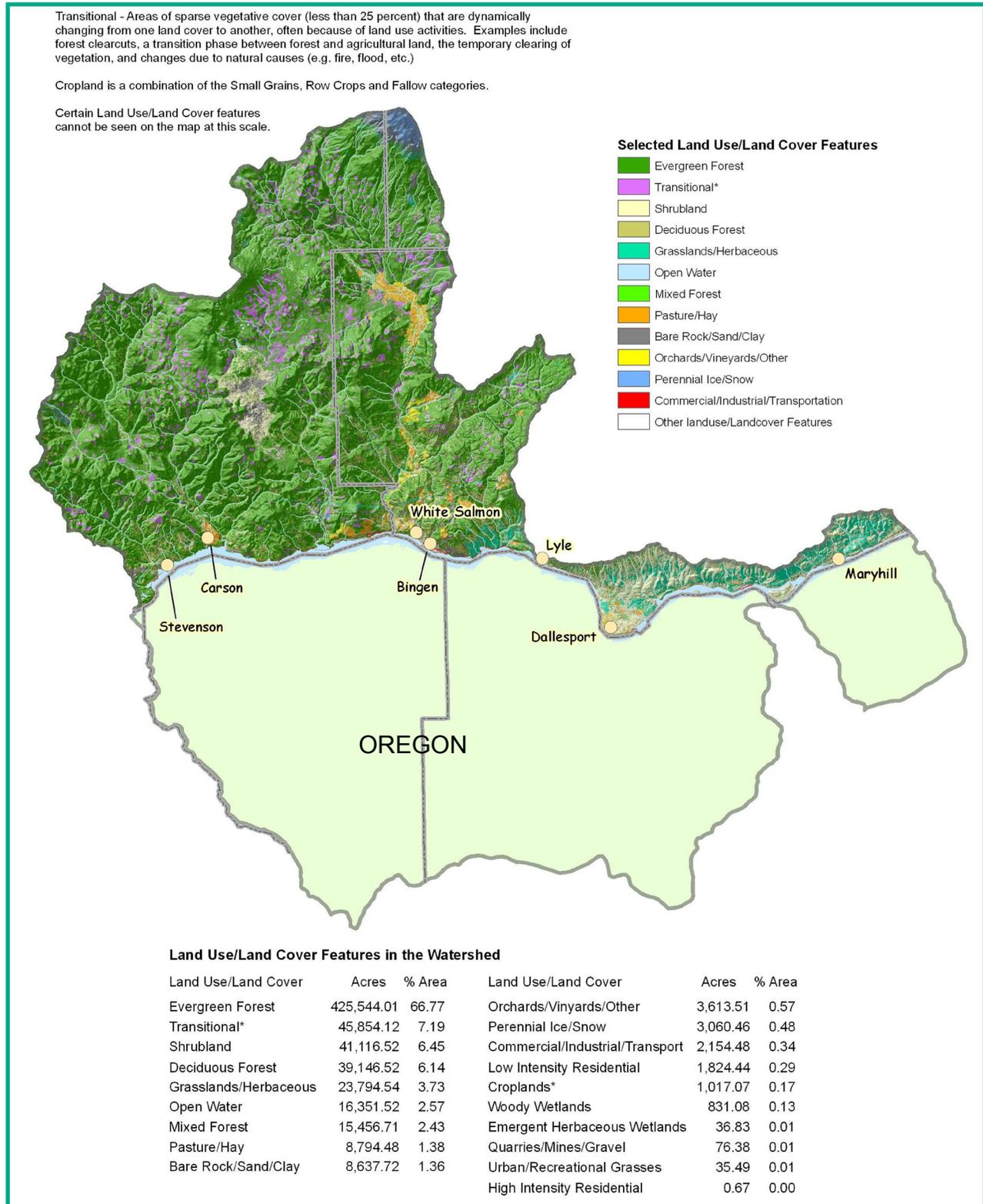


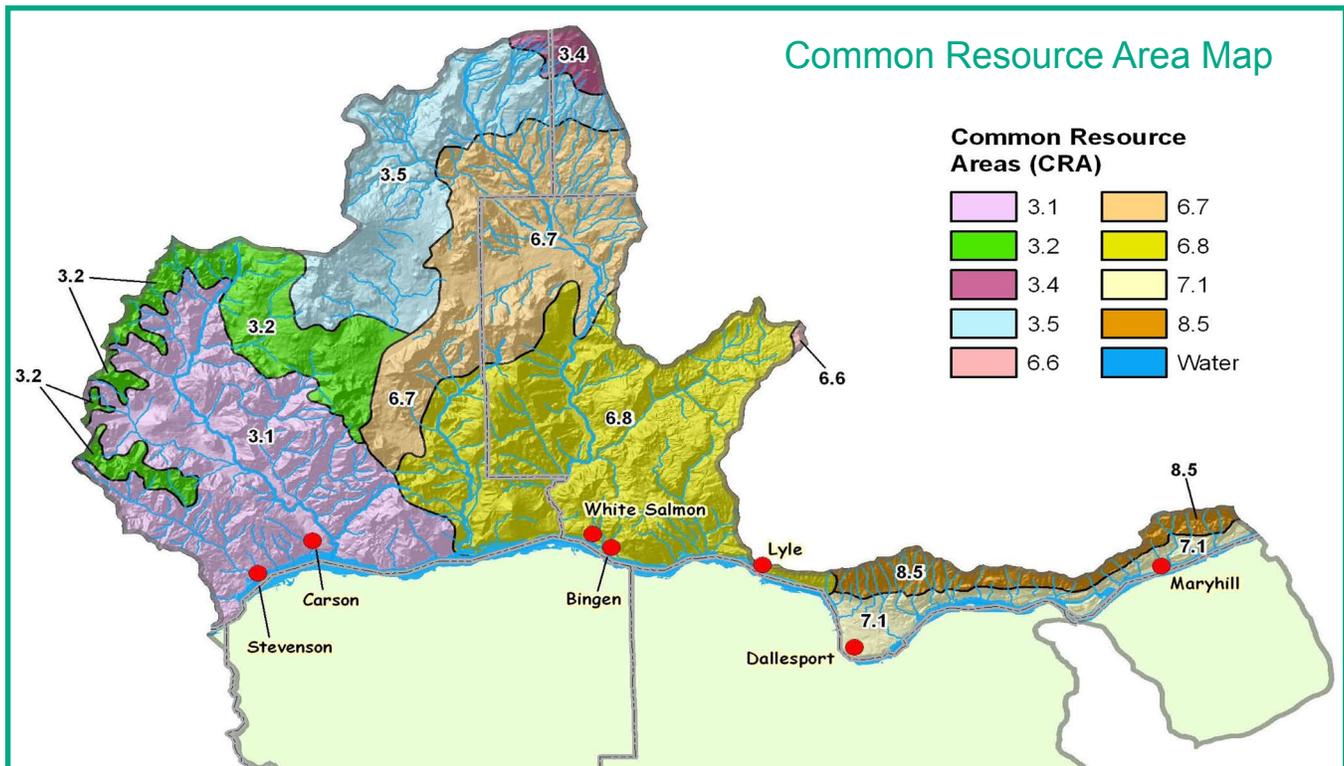
Physical Descriptions

Land Use / Land Cover ⁵

Middle Columbia-Hood
 1,384,474 Total Acres
 HUC# 17070105

Landuse is a term used for a designation of a land area. NRCS uses official designations, based on use, such as cropland, forestland and rangeland. The Mid Columbia map shows the primary landuse designations; Evergreen Forest, Transitional areas, Shrubland, Deciduous Forest, and Grasslands/Herbaceous. These 5 major landuses make up 90% of the watershed. Minor landuses are displayed in the table.





1.1 - Northern Pacific Coast Range, Foothills, and Valleys – Volcanic. This unit is comprised of mountains having basalt bedrock outside of the “fog belt”. Temperature regime is mesic, frigid and small area of cryic. The moisture regime is udic. Vegetation is Douglas-fir and western hemlock.

3.1 - Olympic and Cascade Mountains - Western Cascades Lowlands and Valleys. This unit comprises the lower elevations of the Cascade Mountains adjacent to the Valley Foothills CRA. Bedrock is basalt, andesite and rhyolite. Vegetation is Douglas-fir and western hemlock. It is one of the most important timber producing areas in the Northwest. Temperature regime is mesic and the moisture regime is udic.

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

3.4 - Olympic and Cascade Mountains - Cascade Subalpine-Alpine. This unit is an area of high, glaciated, volcanic peaks that rise above subalpine meadows. It is characterized by bare rock outcrop, lava flows and volcanic peaks. Elevations range from 5,600 to 12,000 feet. Active glaciation occurs on the highest volcanoes and decreases from north to south. The winters are very cold and the growing season is extremely short. Flora and fauna adapted to high elevations include

herbaceous and shrubby subalpine meadow vegetation and scattered patches of mountain hemlock, subalpine fir, and whitebark pine.

3.5 - Olympic and Cascade Mountains - Northern Cascade Crest Montane Forest. This unit consists of an undulating plateaus punctuated by volcanic buttes and cones that reach a maximum elevation of about 6,500 feet. The unit is extensively forested with mountain hemlock and Pacific silver fir. Temperature regime is cryic and the moisture regime is udic. Although this unit has the same moisture and temperature regime as the Southern Cascade Crest Montane Forest CRA, it is noticeably more moist and the break between the Southern Cascade Crest Montane Forest CRA and this unit is transitional.

6.6 - Cascade Mountains, Eastern Slope - Yakima Plateau and Slopes. This unit was not glaciated and is characterized by plateaus, buttes, and canyons, a dry continental climate, and open woodlands dominated by ponderosa pine. Fire is an integral part of its ecosystem.

6.7 - Cascade Mountains, Eastern Slope - Grand Fir Mixed Forest. This unit is not extensive in Oregon but is in Washington. The vegetation is a mix of grand fir, Douglas-fir, and ponderosa pine. This unit is lower in elevation than the Northern Cascade Crest Montane Forest CRA. Temperature regime is frigid and the moisture regime is udic with a deep annual snowpack. It is characterized by high, glaciated plateaus and mountains.

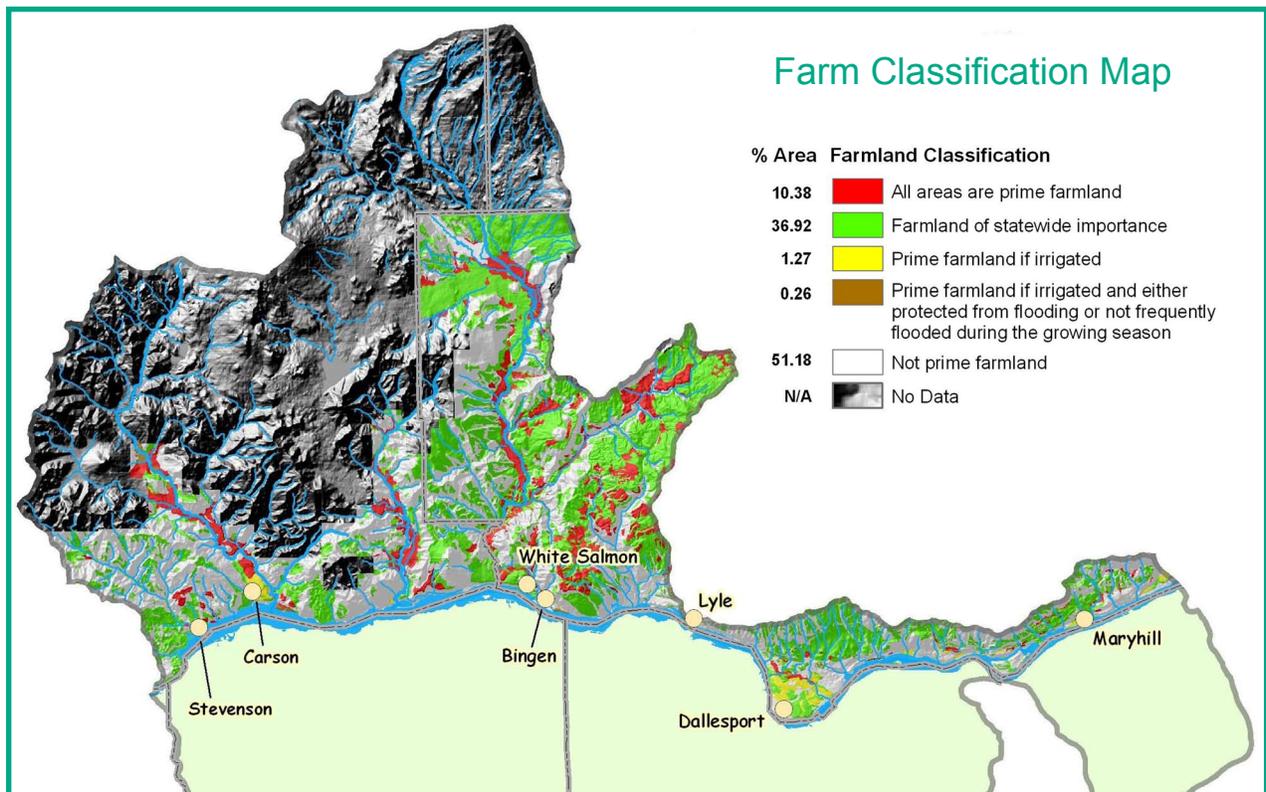
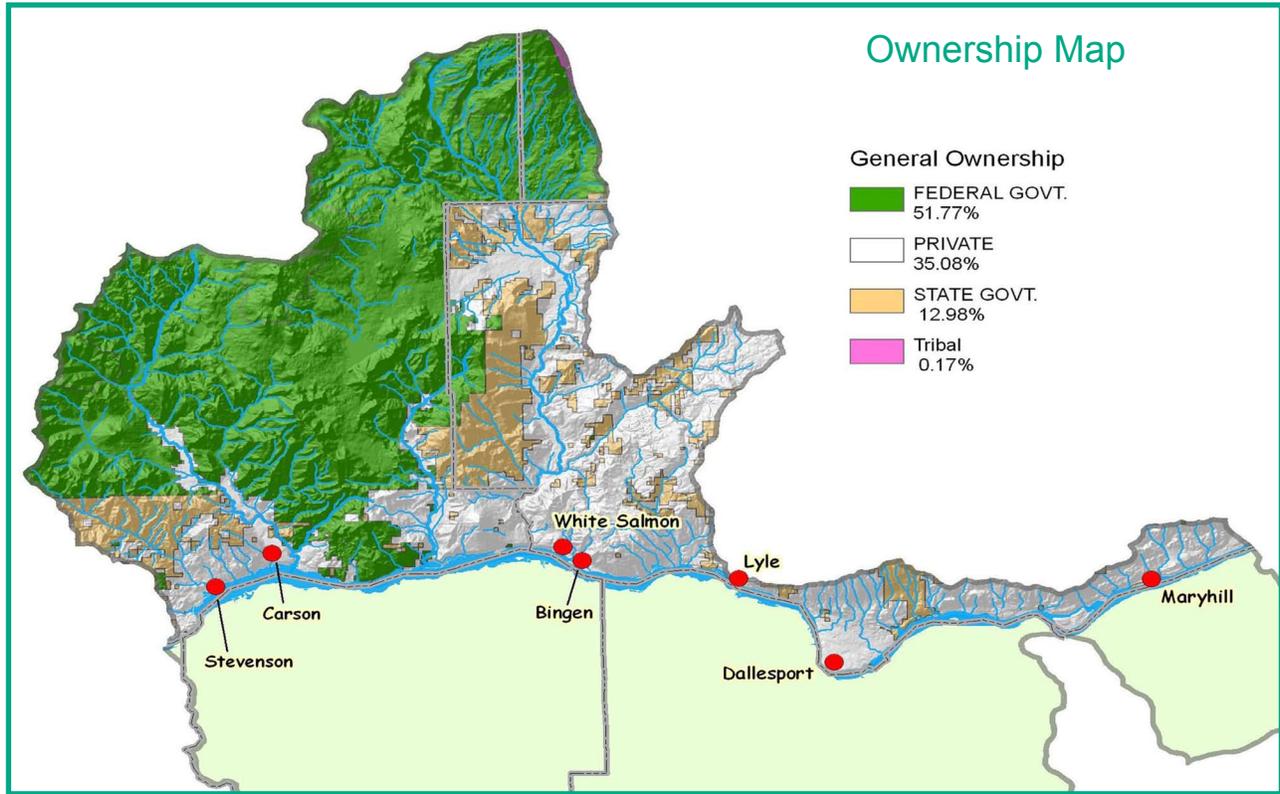
6.8 - Cascade Mountains, Eastern Slope - Oak-Conifer Eastern Cascades-Columbia Foothills. This unit occurs at the eastern extreme of the Columbia River Gorge . It is characterized by vegetation of Oregon white oak, ponderosa pine and Douglas-fir. This unit and its vegetation are characteristic of the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

7.1 - Columbia Basin - Sandy Missoula Flood Deposits. This unit once contained vast temporary lakes that were created by flood waters from glacial Lake Missoula. Mean annual precipitation is 6 to 9 inches. The soils are dominantly sand, loamy sand or sandy loam in texture. Soil series are Quincy, Sagehill, Roloff, Olex and Koehler. Temperature regime is mesic and the moisture regime is aridic. Native vegetation consists of bluebunch wheatgrass and sagebrush. Major irrigation projects provide Columbia River water and have allowed the conversion of large areas of sagebrush to agriculture. Water supply is not limited but groundwater quality is a major issue.

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 enters Oregon east of Wallula Gap on the Columbia River. The ridges are composed of basalt layers up to 12,000 feet thick. Loess blankets the south-facing slopes and supports dryland wheat farming, while grazing occurs on steep, rocky north slopes. Located in the rain shadow of the Cascade Range, it receives 9 to 15 inches of precipitation. Temperature regime is mesic and the moisture regime is aridic. Sagebrush and bunchgrass associations dominate plant communities outside of heavily farmed or grazed areas.

Physical Descriptions Ownership ¹⁰ and Farmland Classification¹¹

Middle Columbia-Hood
1,384,474 Total Acres
HUC# 17070105



Physical Descriptions

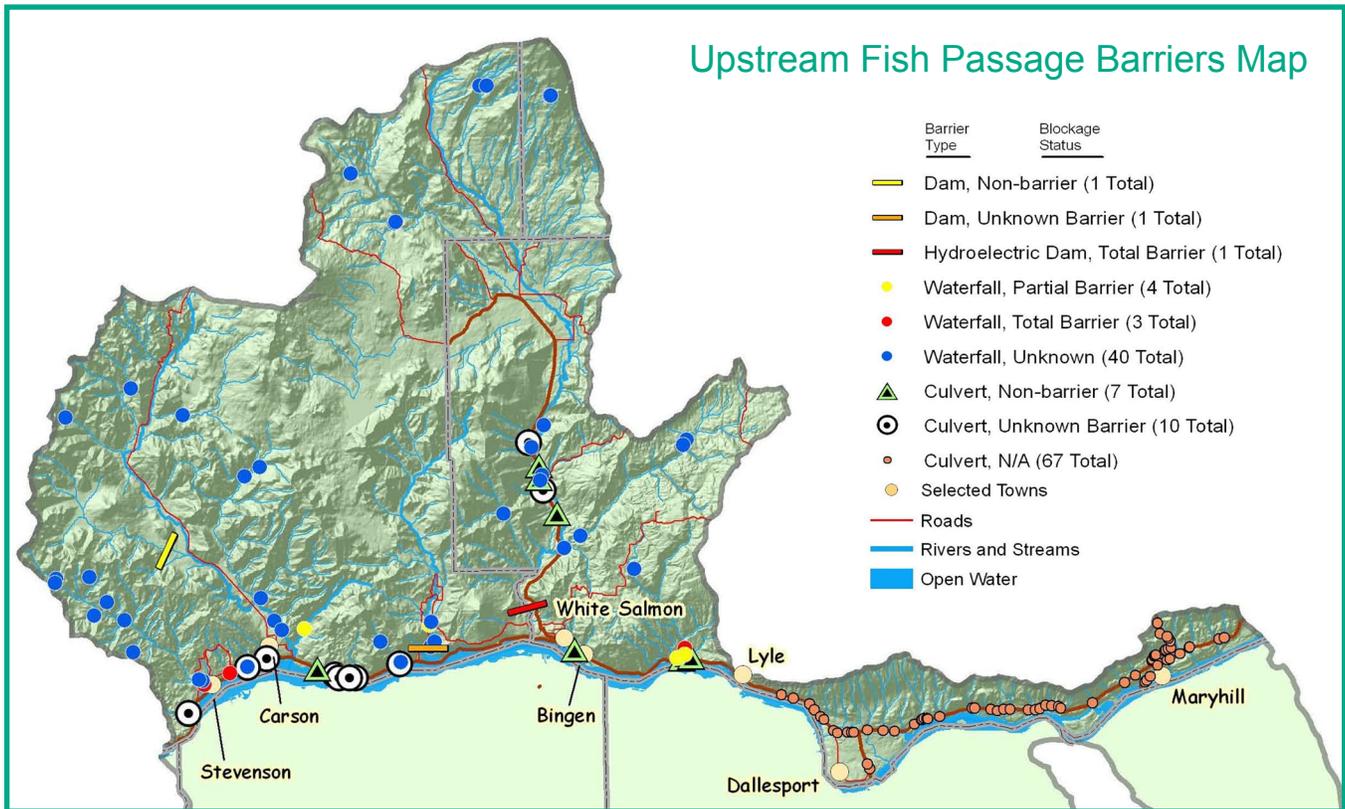
Middle Columbia-Hood

Streams, Fish Species and Passage Barriers^{7,8,9,18,19}

1,384,474 Total Acres

HUC# 17070105

Statewide - these fish groups are exotic (introduced): catfish, spiny-rays (perch, sunfish, bass), pike, shad, mosquitofish, killifish, weatherfish, striped bass and goby.



Fish Species Found in the Middle Columbia - Hood Watershed		
Fish Group	Native	Exotic
Catfish		3
Lamprey	3	
Minnow, carp	8	2
Mosquitofish		1
Perch, walleye		2
Salmonid (anadromous)	4	
Salmonid (resident)	3	
Sand roller	1	
Sculpin	3	
Shad		1
Stickleback	1	
Sturgeon	1	
Sucker	3	
Sunfish, bass, crappie		6
Watershed Total	27	15
Statewide total	53	41

Stream Statistics for the Middle Columbia - Hood Watershed	
Total streams	820
Named streams	280
Total stream miles	2,524
Intermittent miles	1,402
Intermittent %	56 %

Middle Columbia - Hood Watershed

Salmonid (resident) - *native*: rainbow, bull trout; mountain whitefish.

Salmonid (anadromous) - Chinook, coho, sockeye salmon; steelhead.

Physical Descriptions

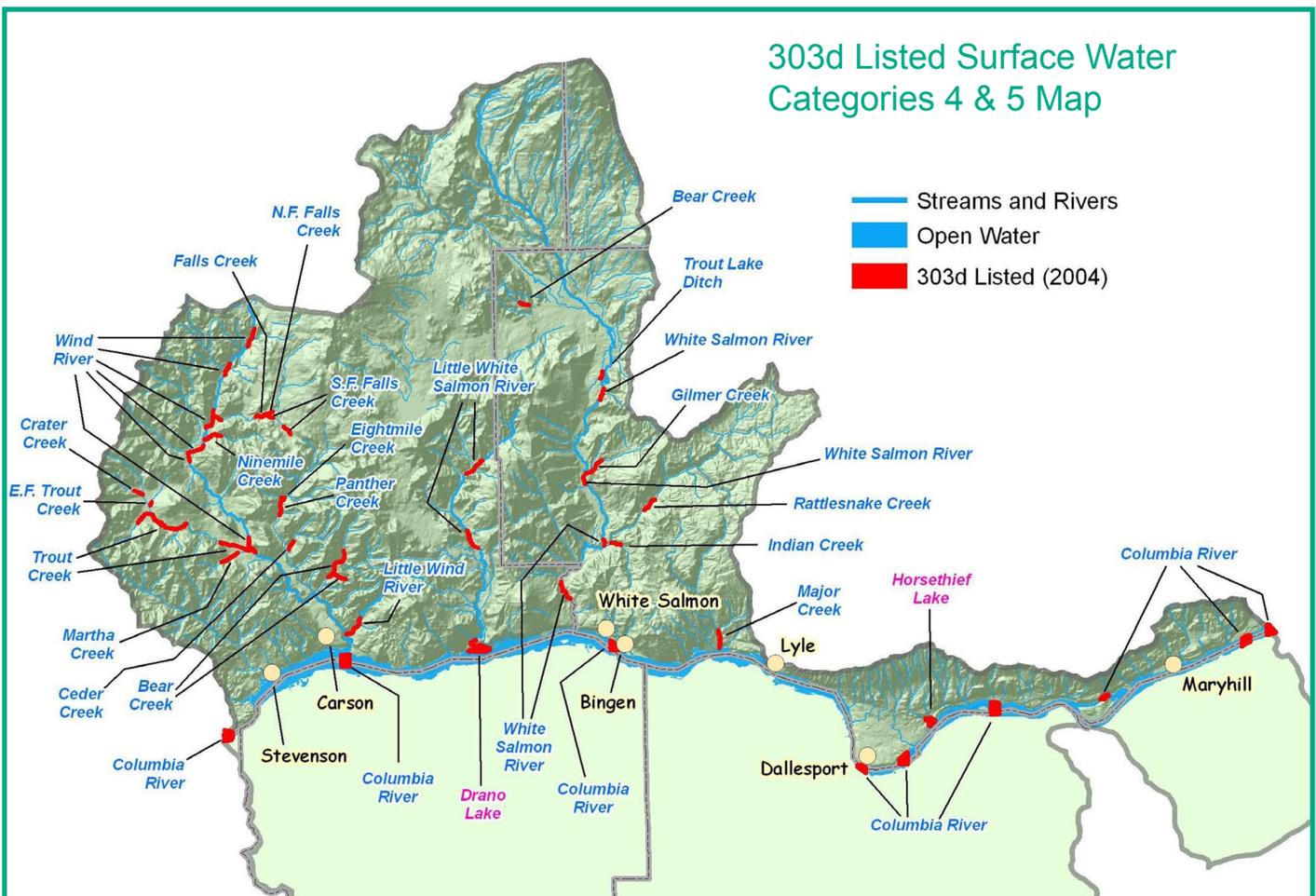
303d Listed Surface Water¹²

Middle Columbia-Hood
1,384,474 Total Acres
HUC# 17070105

Section 303(d) of the federal Clean Water Act requires each state periodically to prepare a list of all surface waters in the state for which beneficial uses of the water – such as for drinking, recreation, aquatic habitat, and industrial use – are impaired by pollutants. These are water quality limited estuaries, lakes, and streams that fall short of state surface water quality standards and are not expected to improve within the next two years.



Waters placed on the 303(d) list require the preparation of Total Maximum Daily Loads (TMDLs), a key tool in the work to clean up polluted waters. TMDLs identify the maximum amount of a pollutant that can be released into a waterbody without impairing the uses of the water. TMDL's can be allocated amount among various pollution sources. In addition, even before a TMDL is completed, the inclusion of a water body on the 303(d) list can reduce the amount of pollutants allowed to be released under permits issued by Ecology.



(303d Listed Surface Water continued on next page.)

Physical Descriptions

303d Listed Surface Water

Middle Columbia-Hood

1,384,474 Total Acres

HUC# 17070105

Washington State's Water Quality Assessment lists the status of water quality for a particular location in one of 5 categories recommended by EPA. Categories 1 – 4 represent the status of waters for the 305(b) Report, while Category 5 represents those waters placed on the 303(d) list.



Category 4: Polluted waters that do not require a TMDL is for waters that have pollution problems that are being solved in one of three ways.

Category 4a: **“has a TMDL”** is for water bodies that have an approved TMDL in place and are actively being implemented.

Category 4b: **“has a pollution control plan”** is for water bodies that have a plan in place that is expected to solve the pollution problems. While pollution control plans are not TMDLs, they must have many of the same features and there must be some legal or financial guarantee that they will be implemented.

Category 4c: **“is impaired by a non-pollutant”** is for water bodies impaired by causes that cannot be addressed through a TMDL. These impairments include low water flow, stream channelization, and dams. These problems require complex solutions to help restore streams to more natural conditions.

Category 5: Polluted waters that require a TMDL. The 303(d) list is the traditional list of impaired water bodies. Placement in this category means that Washington State Department of Ecology has data showing that the water quality standards have been violated for one or more pollutants, and there is no TMDL or pollution control plan. TMDLs are required for the water bodies in this category.

(303d Listed Surface Water continued on next page.)

Physical Descriptions

Riparian Land Use / Land Cover ⁵

Middle Columbia-Hood
1,384,474 Total Acres
HUC# 17070105

The current condition and quality of riparian areas adjacent to water bodies is often times dependent on the land use and land cover characteristics.



This data set is based on a riparian width of 100 feet on each side of all streams in the watershed.

Land Cover/Use		
Based on a 100-foot stretch on both sides of all streams in the 100K Hydro GIS Layer	ACRES	% of Buffer Area
Bare Rock/Sand/Clay	193	0.8%
Commercial/Industrial/Transportation	55	0.2%
Deciduous Forest	1,760	7.3%
Emergent Herbaceous	1	0.0%
Evergreen Forest	15,148	62.8%
Fallow	9	0.0%
Grasslands/Herbaceous	614	2.6%
Low Intensity Residential	46	0.2%
Mixed Forest	617	2.6%
Open Water	2,633	10.9%
Orchards/Vineyards/Other	131	0.6%
Pasture/Hay	247	1.0%
Perennial Ice/Snow	13	0.1%
Row Crops	3	0.0%
Shrubland	1,411	5.9%
Small Grains	21	0.1%
Transitional	973	4.0%
Urban/Recreational Grasses	0	0.0%
Woody Wetlands	111	0.5%
Grand Total	24,101	100.0%

Physical Descriptions

Irrigated Cropland, Hayland and Pastureland ¹⁴

Middle Columbia-Hood
 1,384,474 Total Acres
 HUC# 17070105

The Natural Resource Inventory (NRI) of 1997 was used to estimate acres of irrigated and cultivated cropland, uncultivated cropland (hayland) and pastureland in the watershed.



These estimates were then verified by the Brush Prairie office staffs.

Irrigated Lands <i>(1997 NRI³ Estimates for Non-Federal Lands Only)</i>			
Type of Land	ACRES	Percent of	Percent of HUC
Cultivated Cropland	0	0%	0%
Uncultivated Cropland	0	0%	0%
Pastureland	0	0%	0%
Total Irrigated Lands	0	0%	0%

Animal Feeding Operations					
Animal Type	Dairy	Beef Feedlot	Heifer Feedlot	Poultry (Egg & Fryer)	Swine
No. of Farms	3	0	0	0	0



Cultural resources are important to most residents in the watershed. Cultural Resources are considered equivalent to “historic properties” as defined in the National Historic Preservation Act. They include any prehistoric or historic district, site, building, structure or object listed in or eligible for listing in the National Register of Historic Places (maintained by the Secretary of the Interior). They also include all records, artifacts and physical remains associated with the historic properties. They may consist of the traces of all of the past activities and accomplishments of people.

Cultural resources that are also protected under other authorities (such as the American Indian Religious Freedom Act) include:

- (1) tangible traces such as districts, sites, buildings, structures and objects;
- (2) less tangible traces such as dance forms, aspects of folk life, landscapes, vistas, cultural or religious practices;
- (3) historical documents;
- (4) and some landscapes, vistas, cemeteries (if they have historic or cultural value) and life ways.

Native Americans have inhabited the area for thousands of years. Members of most of the inland and coastal tribes traveled through this watershed as this area connected the coastal area to the inland area of the Pacific Northwest. The Columbia River supported many runs of anadromous fish was a main diet for many tribes. Many cultural resource sites have been located and recorded. These sites are protected through provisions of federal and state laws. Many sites from European settlers are also located in the watershed. The type of sites found are from, mining camps, mining shafts, homestead cabins, cemeteries and logging camps.

Activities carried out in the watershed by Federal agencies, where the agency has control of the out come, is subject to provisions of the National Historic and Preservation Act. The Act requires Federal agencies to take into account the effects of their undertakings on any cultural resources or historic properties that meet the National Register of Historic Places criteria. Part of this process involves taking action to avoid or minimize harm to eligible resources.

Physical Descriptions

Air Quality, Ground Water and Wind Erosion

Middle Columbia-Hood

1,384,474 Total Acres

HUC# 17070105

Resource concerns related to air quality, ground water and wind erosion are not present in this watershed.



Resource Concerns

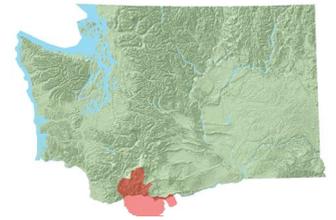
Resource Concerns

Middle Columbia-Hood
1,384,474 Total Acres
HUC# 17070105

The Local Work Group (LWG) has identified the following resource concerns as being the top priority for cost share assistance:

SOIL
Maintain or improve soil condition.
Reduce soil erosion.
Wind Erosion System.
WATER
CNMP needed.
Confinement areas adjacent to streams will be relocated creating buffers with livestock exclusion.
Heavy use areas need stabilization to improve water quality and/or quantity.
Improve ground water quality.
Improve the quality and/or reducing the quantity of run-off from furrow irrigation.
Improve water quality by improving a manure waste transfer system.
Improve water quantity through irrigation water management.
Improved irrigation efficiency on non-surface systems.
Improving air quality and water quality with animal waste application by soil injection.
Irrigation induced erosion.
Maintain or improve water quality and quantity.
Nutrient Management plan needed.
Sediment to salmonid-bearing streams.
Storage is needed for animal manure.
Streambank stabilization.
Surface Irrigation conversion to a more efficient system.
AIR
Air Quality System.
Improving air quality and water quality with animal waste application by soil injection.
PLANT
Forest stand improvement to improve understory forage production, aesthetics, wildlife & fish habitat, recreation, hydrologic conditions; to improve or sustain timber production; to initiate forest stand regeneration; or a combination of purposes.
Improve or maintain the health & vigor of the desired plant community.
Improve plant condition (Health & Vigor) on forage ground.
Lack of adequate water quantity or availability and/or, lack of adequate cross-fencing are limiting factors for achieving proper grazing distribution.
Noxious weeds and/or woody vegetation.
Prescribed grazing needed.
Tree and/or Shrub Planting for forest products, long-term erosion control, afforestation, and improvement of water quality.
ANIMAL
Improve or maintain animal health and productivity.

The following Chart shows the listed plant and animal species under the Endangered Species Act (ESA). These species are a resource concern that must be addressed during the planning process. For additional information contact the United States Fish & Wildlife Service (USF&W) and/or the National Marine Fisheries Service (NMFS).



If planned practices will be applied in an area where potential listed species or its designated critical habitat may be affected either positively or negatively, than a Biological Assessment (BA) must be conducted.

Animal and Plant Species Included in the Endangered Species Act for the Middle Columbia - Hood Watershed		
Common Name	Scientific Name	Type
<i>Endangered Species</i>		
None		
<i>Threatened Species</i>		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	<i>Bird</i>
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	<i>Bird</i>
Northern Spotted Owl	<i>Strix occidentalis caurina</i>	<i>Bird</i>
Steelhead	<i>Oncorhynchus mykiss</i>	<i>Fish</i>

Farm Bill Programs

Performance Results ²⁰

Middle Columbia-Hood
1,384,474 Total Acres
HUC# 17070105

This section highlights the conservation application that has been reported from FY 2001 through FY 2006. Performance Results System (PRS) data was extracted from PRS reports by year, conservation systems by Hydrologic Unit Code (HUC). HUC reports were not available where NA. For additional information and other performance reports visit <http://ias.sc.egov.usda.gov/prshome/>.

	FY02	FY03	FY04	FY05	FY06	Total
Conservation Systems						
Total Conservation Systems Planned	110	0	NA	3,011	5,625	8,746
Total Conservation Systems Applied (acres)	45	34	NA	2,940	48	3,067
Conservation Treatments						
Waste Management (no.)	0	0	0	0	0	0
Buffers (Riparian Forest)	72	6	23	0	0	101
Erosion Control (tons/year)	0	0	NA	0	0	0
Erosion Control (acres)	0	0	NA	0	0	0
Irrigation Management (acres)	0	0	0	0	0	0
Nutrient Management (acres)	0	0	0	0	0	0
Pest Management (acres)	0	0	6	0	0	6
Prescribed Grazing (acres)	10	0	71,000	1,187	0	72,197
Trees/Shrubs (acres)	55	6	35	0	0	96
Wildlife Habitat (acres)	89	0	23	1	0	113

This table lists the farm bill program participation in the watershed during the last five years. Data was collected from Conservation Systems Planned using Farm Bill Programs from PRS reports for the hydrologic unit area. NA indicates that the information was not available.

	FY02	FY03	FY04	FY05	FY06	Total
Conservation Systems Planned Using Farm Bill Programs (acres)						
Conservation Reserve Program (CRP)	45	0	0	0	0	45
Conservation Security Program (CSP)	NA	NA	NA	7,124	-	7,124
Environmental Quality Incentives Program - Ground and Surface Water (EQIP-GSWC)	-	0	0	0	0	0
Environmental Quality Incentives Program (EQIP)	0	0	454	1,352	5,625	7,431
Farmland Protection Program (FPP)	0	0	0	0	0	0
Forestry Incentives Program (FIP)	0	0	0	0	0	0
Grassland Reserve Program (GRP)	-	0	0	0	0	0
Wetlands Reserve Program (WRP)	0	0	0	0	0	0
Wildlife Habitat Incentive Program (WHIP)	0	0	0	0	0	0

Reports

Census Data - Ethnicity and Economic Characteristics ^{22,23}

There are 702 farms in Klickitat County and 99 farms in Skamania County, the core counties comprising 99% of the agricultural operations in the watershed. An analysis of the 2002 Agricultural Census data by zip code suggests there are 249 agricultural operations in the watershed. Klickitat County has 80% of the agricultural operations in the watershed. The county average farm size in the 2002 Census of Agriculture was 864 acres for Klickitat and 58 acres for Skamania.



For Klickitat County, the 2002 average market value of agricultural products sold was \$74,680 with a net cash farm income of \$17,344. The Klickitat County net cash farm income was 51% of the statewide average. For Skamania County, the 2002 average market value of agricultural products sold was \$116,446 with a net cash farm income of \$67,593. The Skamania County net cash farm income was 199% of the statewide average.

The average farm size for Washington State in the 2002 Census of Agriculture was 426 acres with an average market value of agricultural products sold of \$148,327 and an average net cash farm income of \$33,925.

Population Ethnicity by County	Klickitat	Skamania	Washington
White persons, percent, 2004 (a)	94.2%	95.7%	85.3%
Black persons, percent, 2004 (a)	0.3%	0.3%	3.5%
American Indian and Alaska Native persons, percent, 2004 (a)	3.1%	2.1%	1.6%
Asian persons, percent, 2004 (a)	0.7%	0.6%	6.3%
Native Hawaiian and Other Pacific Islander, percent, 2004 (a)	0.1%	0.1%	0.5%
Persons reporting two or more races, percent, 2004	1.5%	1.2%	2.9%
Persons of Hispanic or Latino origin, percent, 2004 (b)	8.1%	4.6%	8.5%
White persons, not Hispanic, percent, 2004	86.5%	91.4%	77.5%

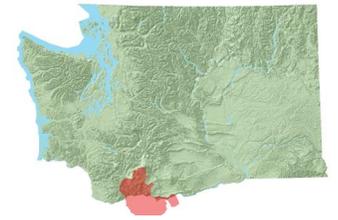
Economic Characteristics by County	Klickitat		Skamania		Washington	
	Number	%	Number	%	Number	%
INCOME IN 1999						
Households	7,481	100	3,761	100	2,272,261	100
Less than \$10,000	892	12	367	10	171,863	8
\$10,000 to \$14,999	679	9	238	6	124,848	6
\$15,000 to \$24,999	1,141	15	482	13	265,131	12
\$25,000 to \$34,999	1,103	15	554	15	284,630	13
\$35,000 to \$49,999	1,378	18	718	19	389,434	17
\$50,000 to \$74,999	1,418	19	851	23	486,392	21
\$75,000 to \$99,999	522	7	314	8	264,498	12
\$100,000 to \$149,999	253	3	150	4	188,513	8
\$150,000 to \$199,999	34	1	49	1	47,615	2
\$200,000 or more	61	1	38	1	49,337	2
Median household income (dollars)	34,267	0	39,317	0	45,776	0

Economic Characteristics by County	Klickitat		Skamania		Washington	
	Number	%	Number	%	Number	%
Employed civilian population 16 years and	7,848		4,340		2,793,722	
OCCUPATION						
Management, professional, and related	2,339	30	1,225	28	993,198	36
Service occupations	1,140	15	818	19	416,056	15
Sales and office occupations	1,594	20	868	20	723,256	26
Farming, fishing, and forestry occupations	548	7	77	2	43,495	2
Construction, extraction, and maintenance	827	11	559	13	263,767	9
Production, transportation, and material moving occupations	1,400	18	793	18	353,950	13
INDUSTRY						
Agriculture, forestry, fishing, hunting, and	1,025	13	218	5	68,976	3
Construction	599	8	448	10	194,871	7
Manufacturing	958	12	717	17	348,646	13
Wholesale trade	240	3	159	4	113,526	4
Retail trade	798	10	359	8	338,772	12
Transportation and warehousing, and utilities	434	6	273	6	150,985	5
Information	141	2	86	2	95,669	3
Finance, insurance, real estate, and rental	292	4	154	4	170,622	6
Professional, scientific, management, administrative, and waste management	455	6	242	6	272,466	10
Educational, health and social services	1,596	20	695	16	541,214	19
Arts, entertainment, recreation, accommodation and food services	557	7	573	13	221,656	8
Other services (except public administration)	326	4	151	4	135,379	5
Public administration	427	5	265	6	140,940	5
CLASS OF WORKER						
Private wage and salary workers	5,179	66	2,985	69	2,125,029	76
Government workers	1,832	23	977	23	459,722	17
Self-employed workers in own not	814	10	361	8	199,827	7
Unpaid family workers	23	0	17	0	9,144	0

Census Data - Ag Census Data ²¹



2002 AG CENSUS DATA	Klickitat	Skamania
Farms (number)	702	99
Land in farms (acres)	606,794	5,712
Total cropland (acres)	213,035	2,262
Irrigated land (acres)	25,280	475
Principal operator by primary occupation - Farming (number)	377	54
Principal operator by place of residence - On farm operated (number)	604	78
Farms by Size		
Average size of farm (acres)	864	58
1 to 9 acres	53	13
10 to 49 acres	201	47
50 to 69 acres	54	15
70 to 99 acres	51	10
100 to 139 acres	36	7
140 to 179 acres	30	3
180 to 219 acres	21	1
220 to 259 acres	23	0
260 to 499 acres	55	3
500 to 999 acres	62	0
1,000 to 1,999 acres	41	0
2,000 acres or more	75	0
Livestock and Poultry		
Inventory - Cattle and calves (farms)	267	34
Inventory - Cattle and calves - Beef cows (farms)	196	24
Inventory - Cattle and calves - Milk cows (farms)	13	0
Inventory - Hogs and pigs (farms)	17	8
Inventory - Sheep and lambs (farms)	61	6
Inventory - Layers 20 weeks old and older (farms)	67	7
Inventory - Broilers and other meat-type chickens (farms)	4	0



2002 AG CENSUS DATA	Klickitat	Skamania
Selected Crops Harvested (acres)		
Harvested cropland (acres)	96,440	1,171
Harvested cropland - Irrigated (acres)	19,555	436
Corn for grain (acres)	0	0
Corn for grain - Irrigated (acres)	0	0
Corn for silage or greenchop (acres)	0	0
Corn for silage or greenchop - Irrigated (acres)	0	0
Wheat for grain, all (acres)	38,530	0
Wheat for grain, all - Irrigated (acres)	1,701	0
Wheat for grain, all - Winter wheat for grain (acres)	23,111	0
Wheat for grain, all - Spring wheat for grain (acres)	15,419	0
Barley for grain (acres)	4,827	0
Barley for grain - Irrigated (acres)	0	0
Oats for grain (acres)	74	0
Oats for grain - Irrigated (acres)	0	0
Potatoes (acres)	280	0
Sugarbeets for sugar (acres)	0	0
Forage - land used for all hay, haylage, grass silage, and greenchop (acres)	42,036	590
Forage - land used for all hay, haylage, grass silage, and greenchop - Irrigated (acres)	8,285	0
Vegetables harvested for sale (acres)	1,542	0
Land in orchards (acres)	6,603	510
Land in orchards - Irrigated (acres)	6,484	410



Many natural resource and socio-economic studies have been conducted in the Mid Columbia Hood watershed. Most of these studies are associated to Washington’s WRIA’s 29, Wind-White Salmon. Many of these studies have focused on water quality issues and have been conducted in cooperation with Washington Department of Ecology.

In addition, to water quality studies, the U.S. Forest Service, Gifford Pinchot National Forest address resource needs on National Forest lands within the Mid Columbia Hood Watershed as part of their Forest planning process. The Washington Department of Natural Resources conducts studies ranging from road inventories, culvert location and Habitat Conservation Plans.

The following list and links are from the Washington Department of Ecology:

WRIA 29, Wind-White Salmon

Title	Number	Date
Progress on Watershed Planning and Setting Instream Flows	05-11-038	December 2005
Wind River Watershed Temperature Total Maximum Daily Load: Detailed Implementation Plan	04-10-037	May 2004
Wind River Watershed Temperature Total Maximum Daily Load Submittal Report	02-10-029	June 2002
Wind River Watershed Temperature Total Maximum Daily Load	02-03-010	March 2002
River and Stream Ambient Monitoring Report for Water Year 1997	99-332	August 1999
River and Stream Ambient Monitoring Report for Wateryear 1996	98-317	1998
River and Stream Ambient Monitoring Report for Wateryear 1995	96-355	1997

Footnotes and Bibliographies

All information 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. Rapid Watershed Assessment (RWA) 8-digit Hydrologic Unit (HU) boundaries are from the U.S. Geological Survey huc250k vector data layer published in 1994. The data is based on the Hydrologic Unit Maps published by the U.S. Geological Survey Office of Water Data Coordination, together with the list descriptions and the name of the region, subregion, accounting unit, and cataloging unit. The hydrologic units are encoded with an eight-digit number that indicates the hydrologic region (first two digits), hydrologic subregion (second two digits), accounting unit (third two digits), and cataloging unit (fourth two digits). The HU data was downloaded from the NRCS Geospatial Data Gateway at: <http://datagateway.nrcs.usda.gov/>. Tribal reservation boundaries are from the Washington State Department of Ecology (WDOE) 1:100,000 scale State Tribal Lands vector data layer. This layer can be downloaded from <http://www.ecy.wa.gov/services/gis/data/data.htm#tribal>.
2. General Soils were derived from the General Soil Map, Washington (1:500,000 scale), by Maureen Boling, Bruce Frazier and Alan Busacca, Washington State University, 1998. The soil map is the product of the combined efforts of Washington State University and its National Cooperative Soil Survey Partners, the USDA Natural Resources Conservation Service and Forest Service. More information visit <http://remotesens.css.wsu.edu/washingtonsoil/index.htm>.
3. The Relief map was created using a seamless, statewide, 30-meter resolution USGS digital elevation model (DEM) raster clipped to the watershed boundary. This DEM was colored to represent relative relief and draped over a 30-meter hillshade grid derived from the statewide DEM to create a 3-D effect. The mountain peaks and town locations are from the 2004 USGS Geographic Names Information System (GNIS) Non-populated Places and Populated Places datasets. The GNIS data was downloaded from the NRCS Geospatial Data Gateway <http://datagateway.nrcs.usda.gov/>.
4. Average Annual Precipitation is from the Parameter-elevation Regressions on Independent Slopes Model (PRISM) raster data. This annual precipitation data is derived from the climatological period of 1961-1990. The PRISM raster data is the underlying dataset from which the polygons and vectors were created. For more information about PRISM visit http://www.ocs.orst.edu/prism/prism_new.html. Precipitation data was downloaded from the NRCS Geospatial Data Gateway <http://datagateway.nrcs.usda.gov/>.
5. The Land Use/Land Cover data was generated from the National Land Cover Dataset (NLCD) compiled from Landsat satellite TM imagery (circa 1992) with a spatial resolution of 30 meters and supplemented by various ancillary data (where available). The data was assembled by the USGS and published in June of 1999. The analysis and interpretation of the satellite imagery was conducted using very large, sometimes multi-state image mosaics. 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. For more information about NLCD visit <http://landcover.usgs.gov/natl/landcover.php>. The data was downloaded from the NRCS Geospatial Data Gateway <http://datagateway.nrcs.usda.gov/>. For more information on Land Use designations, refer to the NRCS Planning Procedures Handbook, March 2003.

Footnotes and Bibliographies



6. Common Resource Area (CRA) Map delineations are defined as geographical areas where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a CRA. For more information about a CRA visit <http://soils.usda.gov/survey/geography/cra.html>.
7. Fish species distribution for both streams and lakes was obtained by overlaying a clear plastic outline of Washington State, with the chosen watershed highlighted, onto a similar-sized fish-distribution map found for each fish species in the publication, "Inland Fishes of Washington". Wydoski, R. S. and R. R. Whitney. 2003. Inland Fishes of Washington (2nd edition). American Fisheries Society and University of Washington Press. 320 pp. Many fish species are shown as living only in the main stem Columbia or Snake Rivers. If one of these rivers runs through, or is a boundary of a target watershed, river-borne species were included in the watershed. Likewise, estuary-type fish such as starry flounders, that are often found well upstream from saltwater, are included in most watersheds that drain to salt water.
8. Fish barrier information was downloaded from the SalmonScape website at: (<http://wdfw.wa.gov/mapping/salmonscape/>). This Washington Department of Fish and Wildlife website offers an online source of maps at the 1:24,000 scale for planners to identify and prioritize their stream restoration and protection activities. The site merges fish presence and habitat data collected by state, federal, tribal and local biologists and presents it in an integrated system that can be readily accessed by other agencies and the public. It is part of the larger StreamNet program for Northwestern States.
9. Stream statistics were obtained from 1:100,000 scale StreamNet data layers found at: <http://www.streamnet.org/pnwr/fileaccess.html>. StreamNet (<http://www.streamnet.org/>) 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 (<http://www.psmfc.org/>). It is recognized that a 100K map scale may show less streams and less stream miles than a 24K map, but it still gives a useful comparison between watersheds.
10. General Ownership is derived from the 1:100,000 scale Washington Public Lands (2005) layer. The layer is comprised of the best available data compiled at 1:100,000 scale. This data layer is a compilation of the Washington State Department of Natural Resources (WDNR) Managed Land Parcels layer and the Washington State Major Public Lands (Non-DNR or NDMP) layer. The combination of these two data layers is intended to reflect the most current general ownership (and extent of public lands) digital data in Washington State at the 1:100,000 scale. These data layers were downloaded from the WDNR Available GIS Data website: <http://www3.wadnr.gov/dnrapp6/dataweb/dmmatrix.html>. The RWA map describes occurrences within the watershed of land ownership/management areas for federal, tribal, state, local and private entities. For current ownership status, consult official records at appropriate Federal, State, and county offices.

Footnotes and Bibliographies



11. Farmland classifications were derived using the Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) tabular and spatial data. This information can be referenced through the NRCS Field Office Technical Guide, Section II, Soils: soils data and interpretation databases. The following surveys were used:

Klickitat County Area., WA (WA639) Published 2006 01 05
Skamania County, WA (WA659) Published 2006 01 03

These surveys and tabular databases were downloaded from the NRCS Soil Data Mart at <http://soildatamart.nrcs.usda.gov>. Farmland classification layers were created using the soil surveys in the NRCS Soil Data Viewer (SDV). Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.

12. Washington Department of Ecology:
http://www.ecy.wa.gov/programs/wq/303d/wq_assessment_cats.html.
Washington State Water Quality Categories website:
<http://apps.ecy.wa.gov/wats/WATSQBHome.asp> (In the first drop-down box, click on your WRIA of interest)
13. 303d listed streams were derived from the Washington State Department of Ecology's (WDOE) 2004 Washington Water Quality Assessment/303(d) List. This information was downloaded from the WDOE Statewide Datasets website: <http://www.ecy.wa.gov/services/gis/data/data.htm>.
14. 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/> .
15. NRCS General Manual, Part 401 - Cultural Resources (Archeological and Historic Properties) http://policy.nrcs.usda.gov/scripts/lpsiis.dll/GM/GM_420_401_a.htm .

Footnotes and Bibliographies



16. USFWS website for all federally listed animals and plants in Washington State.
http://ecos.fws.gov/tess_public/StateListing.do?state=WA&status=listed .
17. Washington State's Rare Plant Species Populations and Endangered Ecosystems from the Washington Natural Heritage Program WNHP (Current and Historic) Data Set (September 2005). In designing the WNHP Data Set, Washington Natural Heritage Program sought to license and distribute a GIS data set for use in land use planning and management. In order to balance the interests of data users with species protection, the precise locations of rare plant populations are not included. These locations are instead represented by 'areas-of-concern'. Occurrences of species considered critically imperiled are generalized as larger areas-of-concern polygons. Some known element occurrences have been completely removed from this data set before distribution because information on these elements is considered sensitive at this time.
For more information please visit the WNHP website at: www.dnr.wa.gov/nhp.
18. ESA-listed bull trout population delineations (termed by USFWS as a DPS, or Distinct Population Segment) were obtained from the following 1:100,000 scale StreamNet data layer: sp1498_Bulltrout_Icc. Similar information can be viewed in the Federal Register publication of the USFWS, 50 CFR Part 17, "Endangered and Threatened Wildlife Plants; Designation of Critical Habitat for the Bull Trout; Final Rule" September 26, 2005; page 56267:
<http://www.fws.gov/pacific/bulltrout/final/pdf/Bull%20Trout%20CH%20FR%20notice.pdf> .
19. ESA-listed salmon and steelhead population delineations (termed by NMFS as an ESU, or Evolutionary Significant Unit) were obtained from data layers compiled by a GIS group from the Bonneville Power Administration, using written descriptions in National Marine Fisheries Service (NMFS) status reviews and mapping provided by NMFS. Drainage basin delineation and upstream barriers were based on 1:100,000 stream hydrography and available digital topography (1:250,000). General ESU maps can be found at the NMFS website:
<http://www.nwr.noaa.gov/ESA-Salmon-Listings/Salmon-Populations/Maps/>.
20. Performance Results System (PRS) data was extracted from PRS reports by year, conservation systems, and practices by Hydrologic Unit Code (HUC) and Farm Bill Program. HUC level reports were not available where NA is listed. For additional information and other performance reports visit <http://ias.sc.egov.usda.gov/prshome/> .

Footnotes and Bibliographies



21. Ag Census data is from the National Agricultural Statistics Service (NASS) Website. For more information on individual census queries visit the NASS website at: <http://www.nass.usda.gov/>. HUC specific data was derived from the 2002 Agricultural Census and adjusted by percent of zip code area/county in the HUC.
22. Population ethnicity data were extracted from the Census 2000 Summary File 3 compiled by the U.S. Census Bureau for Washington State. For more information on census data and definitions visit <http://www.census.gov/Press-Release/www/2002/sumfile3.html>.
23. Urban population and median household income data were derived from the American FactFinder assembled by the U.S. Census Bureau. American FactFinder is a quick source for population, housing, income and geographic data. For other census items and trends visit http://factfinder.census.gov/home/saff/main.html?_lang.
24. Washington Department of Ecology website: <http://www.ecy.wa.gov/biblio/wria03.html>
Publications listed by a Watershed Resource Inventory Area, WRIA 29, Wind-White Salmon.

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD). 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.