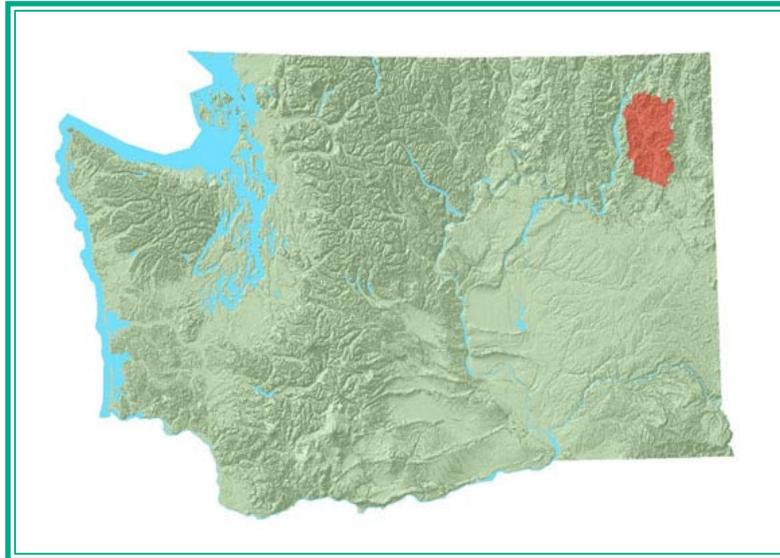


Colville Watershed

HUC: 17020003

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.

September 18, 2006

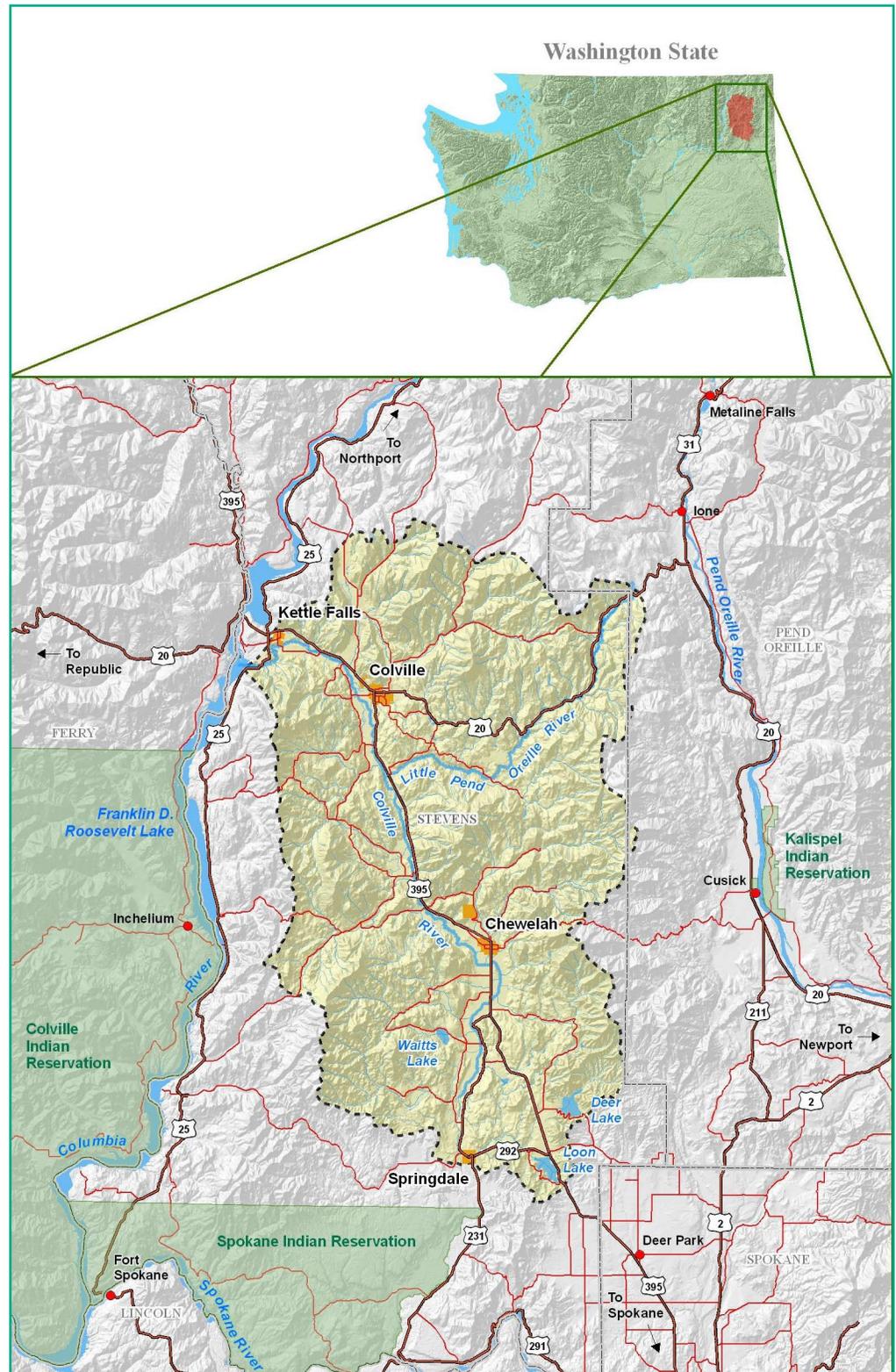
The Colville River Watershed is located in the northeast corner of Washington State. The Colville River, 8-Digit Hydrologic Unit Code (HUC) subbasin is about 649,270 acres in size. The watershed consists of 420,753 privately owned acres and 228,527 publicly owned.

The majority of the watershed is forest and range. Cropland is located mostly in the floodplain and terraces of the Colville River and its tributaries. Agricultural enterprises include cow-calf operations, hay and pasture (irrigated and dryland), cereal grains, dairies and tree nurseries.

The cities of Colville and Kettle Falls are the largest urban areas in the watershed. Nearly the entire watershed is located in Stevens County with minor portions in Pend Oreille County.

Major resource concerns are soil erosion on dry cropland, streambank erosion, impaired water quality, forest health issues, invasive weeds, poor quality range condition, and urbanization issues associated with large farms and ranches being subdivided.

Primary natural resource technical assistance is provided by the Colville NRCS Field Office, Stevens Conservation District, and the Upper Columbia Resource and Conservation Area.



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



Content	Page
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Physical Descriptions of the Watershed	4
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- General Soils
- Relief
- Precipitation
- Land Use / Land Cover
- Common Resource Areas
- Wind Erosion
- Stream Fish Use and Barriers
- 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	18
--------------------------	-----------

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

Farm Bill Programs	20
---------------------------	-----------

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

Reports	21
----------------	-----------

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

Footnotes and Bibliography	26
-----------------------------------	-----------

The soils in this watershed are dominated by surface layers of Mazama and to a lesser degree Mt. St. Helens volcanic ash, especially in the forested parts of the watershed. The soils have textures of ashy silt loam, ashy loam, ashy very fine sandy loam or ashy fine sandy loam. The climate pattern in this watershed provides a low risk of wind erosion although the soils are susceptible to wind and water erosion when surface residue is removed by wildfire or intensive crop/forest management practices.

Ag - Cool to cold soils developed in volcanic ash and some loess over weathered granitic bedrock on unglaciated foothills and mountain slopes; these soils have medial topsoils except on south slopes. Xeric/Frigid to Cryic; Moscow-Vassar-Prouty-Brickel-Mobate.

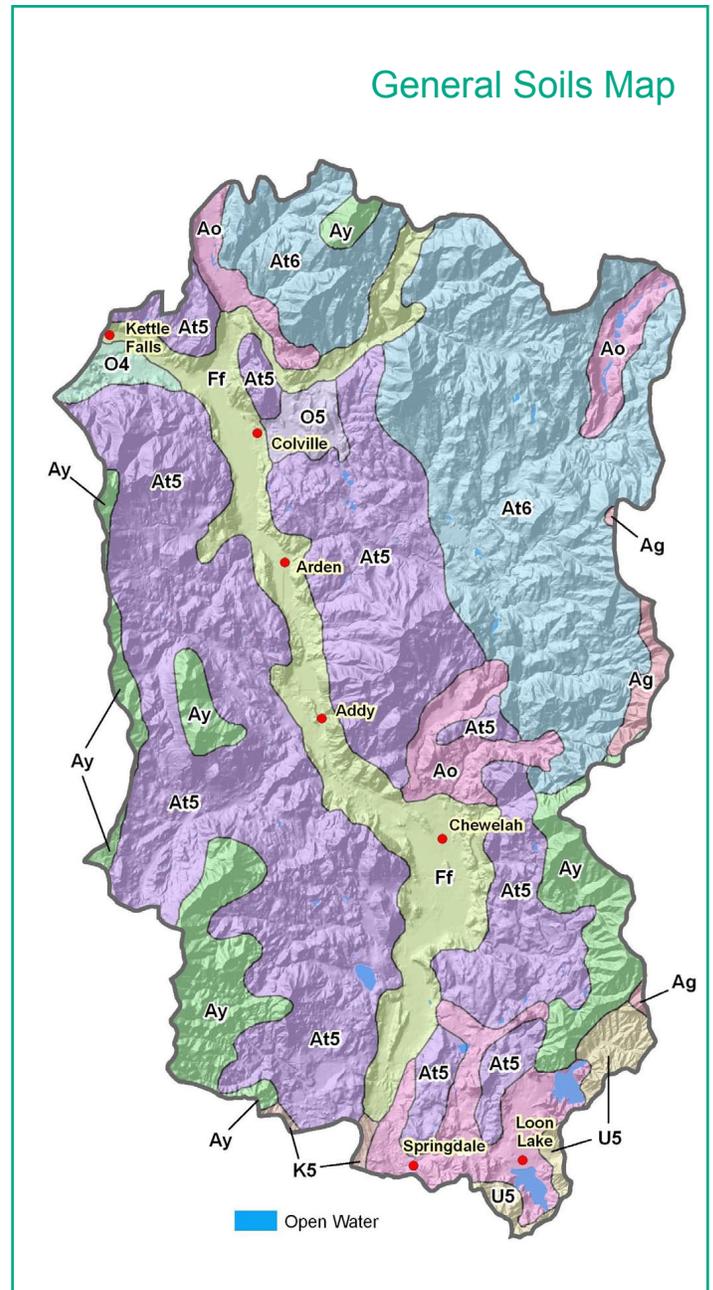
Ao - Cool, deep, sandy and silty, pale forest soils of mountain valleys; these soils formed in volcanic ash and glaciofluvial or glaciolacustrine deposits. Xeric/Frigid; Bonner-Eloika-RosylN-Martella-Natkim.

At5 - Cool, stony soils developed in volcanic ash over glacial till on glaciated hills and valleys; some soils have pale, medial topsoils. Xeric/Frigid to Mesic; Aits-Newbell-Waits-Maki-Donavan.

At6 - Cool to cold, stony soils developed in volcanic ash over glacial till on glaciated hills and valleys; many soils have pale, medial topsoils. Xeric/Frigid to Cryic; Aits-Newbell-Manley-Ahren-Smackout-Inkler-Thout.

Ay - cold to cool, stony, pale forest soils developed in volcanic ash over shale bedrock on steep mostly unglaciated mountain slopes; on open south slopes soils are dark-colored, loess-influenced and developed under grass. Xeric to Udic/Cryic to Frigid; Huckleberry-Hartill-Buhrig-Raisio-Rock Outcrop.

Ff - Young, somewhat cool, dark-colored, wooded, alluvial soils of low terraces; most soils are very deep, nearly level, and well-to somewhat poorly-drained. Aquic to Xeric/Mesic to Frigid; Colville-Narcisse-Malo.



(Soils descriptions continued on next page.)



K5 - Wooded soils developed on glacial till, glaciolacustrine, or glaciofluvial deposits; most soils have minor loess or ash influence in the upper part, pale topsoils; some have subsoil accumulations of clay. Xeric/Mesic to Frigid; Bernhill-Green Bluff-Clayton-Cusick-Cedonia.

O4 - Soils derived from glacial outwash on river terraces; most soils are strongly loess-influenced in the upper part, gravelly or sandy in the lower part, and have low water-holding capacity; some are influenced by volcanic ash in the upper part. Xeric/Mesic; Springdale.

O5 - Soils derived from glacial outwash on river terraces; most soils are strongly loess-influenced in the upper part, gravelly or sandy in the lower part, and have low water-holding capacity; some are influenced by volcanic ash in the upper part. Xeric/Mesic; Springdale-Garrison-Spens-Bisbee.

U5 - Soils on unglaciated hills; loess-influenced, but primarily derived from weathered granitic rocks, andesite, sandstone or schist; soils have dark-colored, humus-rich topsoils; many have clay-enriched subsoils. Xeric/Mesic; Spokane-Tekoa-Dragoon-Schumacher.

Physical Descriptions

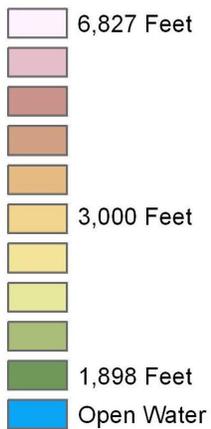
Relief ³ and Precipitation ⁴

Colville Watershed
 649,270 Total Acres
 HUC # 17020003

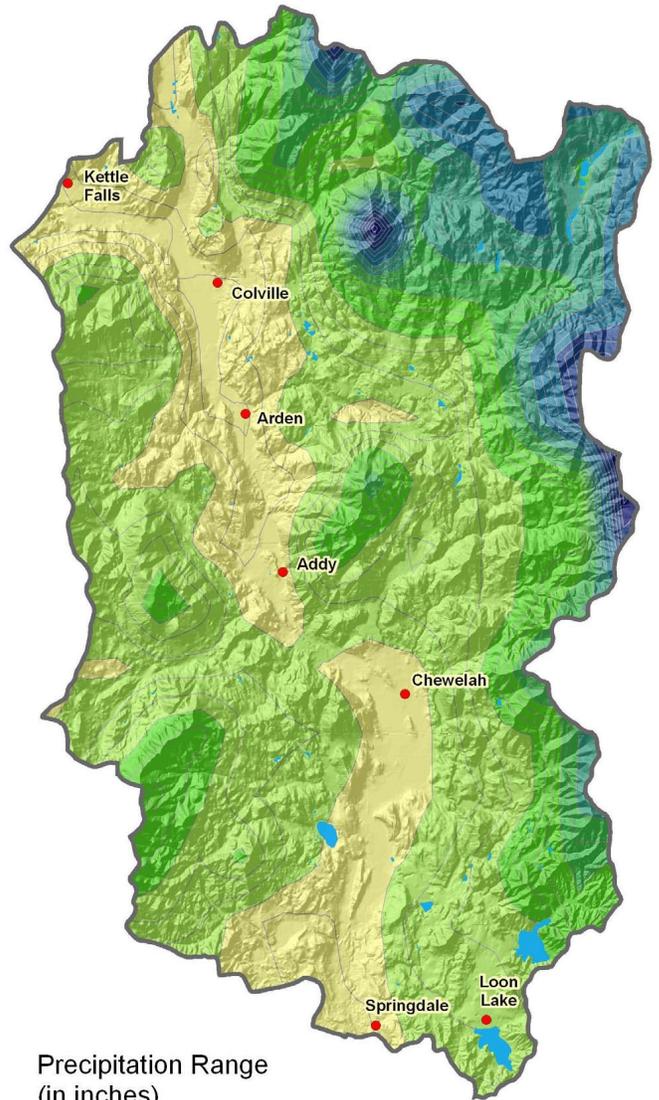
Relief Map



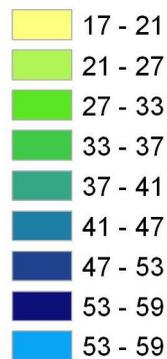
Elevation
 (above sea level)



Average Annual Precipitation Map



Precipitation Range
 (in inches)



Physical Descriptions

Land Use / Land Cover ⁵

Colville Watershed
649,270 Total Acres
HUC # 17020003

Landuse is a term used for the designation of a land area. NRCS uses official designations, based on use, such as cropland, forestland and rangeland. The Colville River watershed maps show the following primary landuse designations: Evergreen Forest, Transitional Areas, Pasture/Hay, Croplands, and Grasslands/Herbaceous. These 5 major landuses make up 93% of the watershed. Minor landuses are displayed in the table.

Selected Landuse/Landcover Features

- Evergreen Forest
- Transitional*
- Pasture/Hay
- Croplands*
- Grasslands/Herbaceous
- Low Intensity Residential
- Open Water
- Other Landuse/Landcover Features

Landuse/Landcover Features in the Watershed

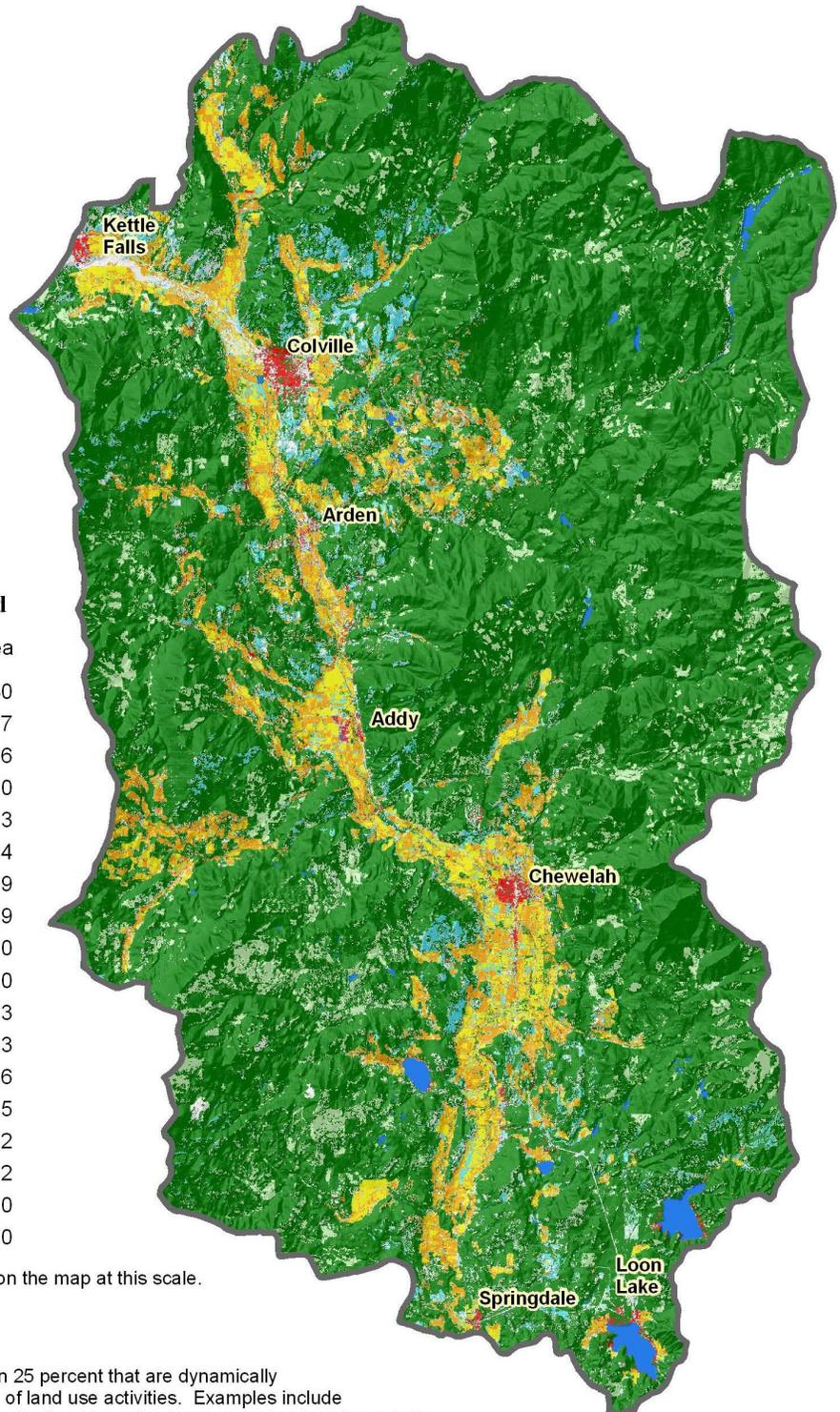
Land Use/Land Cover	Acres	% Area
Evergreen Forest	482,411.98	74.30
Transitional*	39,395.79	6.07
Pasture/Hay	38,717.31	5.96
Croplands*	24,649.05	3.80
Grasslands/Herbaceous	21,639.52	3.33
Mixed Forest	13,254.31	2.04
Shrubland	12,246.74	1.89
Open Water	5,118.38	0.79
Low Intensity Residential	4,529.91	0.70
Deciduous Forest	2,625.36	0.40
Commercial/Industrial/Transport	2,124.84	0.33
Woody Wetlands	1,467.66	0.23
Bare Rock/Sandy/Clay	396.71	0.06
Quarries/Strip Mines/Gravel Pits	343.15	0.05
Emergent Herbaceous Wetlands	161.36	0.02
Urban/Recreational Grasses	134.57	0.02
Orchards/Vineyards/Other	19.78	0.00
High Intensity Residential	0.22	0.00

Certain Land Use/Land Cover features cannot be seen on the map at this scale.

*NOTES:

Transitional - Areas of sparse vegetative cover (less than 25 percent that are dynamically changing from one land cover to another, often because of land use activities. Examples include forest clearcuts, a transition phase between forest and agricultural land, the temporary clearing of vegetation, and changes due to natural causes (e.g. fire, flood, etc.)

Cropland is a combination of the Row Crops, Small Grains and Fallow categories.



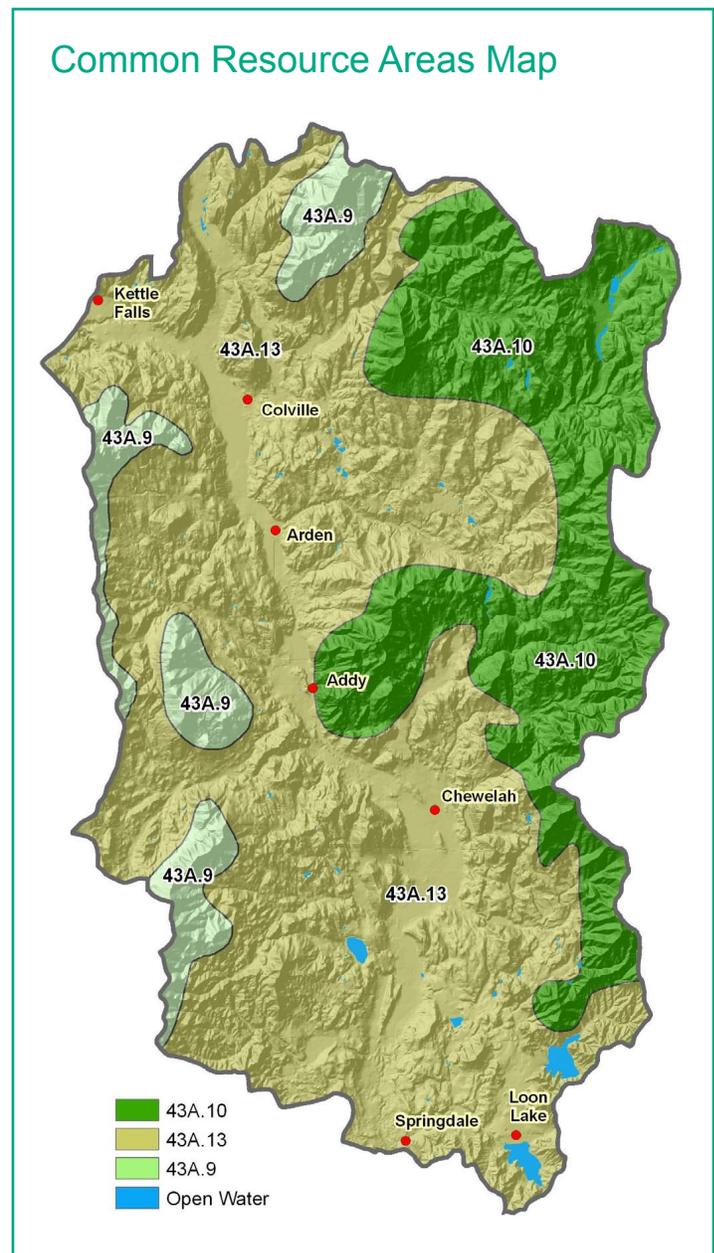
43A.9 - Northern Rocky Mountains--Western

Selkirk Maritime Forest: The mountainous Western Selkirk Maritime Forest ecoregion is dominated by Douglas-fir dominates or co-dominates most forest overstories. Maritime species such as grand fir, western red cedar, and western hemlock are more common than in the rain shadow of the North Cascades in Washington's Okanogan Highland. Boreal influence is absent in contrast to the northern Selkirk Mountains.

43A.10 - Northern Rocky Mountains--Selkirk

Mountains: The dissected, partly glaciated Selkirk Mountains ecoregion is rugged, covered in mixed coniferous forest, and mantled by volcanic ash that increases forest productivity. Both Pacific species (grand fir, western red cedar, and western hemlock) and Rocky Mountain species (western larch, western white pine, and lodgepole pine) are common. A combination of weather patterns, high relief, and very narrow valleys result in more summer precipitation, fog, and relative humidity at low and mid-elevations than elsewhere in northern Idaho and northeastern Washington. Boreal influence is stronger, subalpine fir-spruce forests are lower, and whitebark pine forests are more extensive than in the rest of the Northern Rockies. Boreal influence increases toward the north and some north-facing valleys have extensive peatlands. This region includes the largest contiguous old growth cedar-hemlock forest in the interior U.S., extensive peat lands, and important lynx and grizzly bear habitat. It supports the only woodland caribou herd in the conterminous U.S.. Erosion hazards can be high where road beds intercept perched water tables above subsurface compacted tills. Avalanche chutes are common.

43A.13 - Northern Rocky Mountains--Okanogan-Colville Xeric Valleys and Foothills: The Okanogan-Colville Xeric Valleys and Foothills CRA consists of the major river valleys (Columbia, Colville, and Kettle) and the lower slopes of the Okanogan Highlands. The CRA corresponds to the distribution of glacial drift and till in the valleys and on lower slopes to 3,500 feet elevation. The soils are gravelly, stony, and droughty with a dry forest cover of ponderosa pine, larch, and Douglas fir. Vegetation pattern is strongly driven by soil pattern and the gentle elevational gradient in valleys. Deciduous shrubs (ninebark, oceanspray, and snowberry) are common understory. Woodland grazing and logging are more important land uses.



Physical Descriptions

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

Colville Watershed
649,270 Total Acres
HUC # 17020003

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



Fish Species distribution in the Colville Watershed

Fish Group	Native	Exotic
Catfish	0	1
Minnow, carp	7	2
Perch, walleye	0	1
Salmonid (resident)	3	3
Sculpin	4	0
Sucker	2	0
Sunfish, bass, crappie	0	4
Watershed total	16	11
Statewide total	53	41
ESA-listed populations	0	

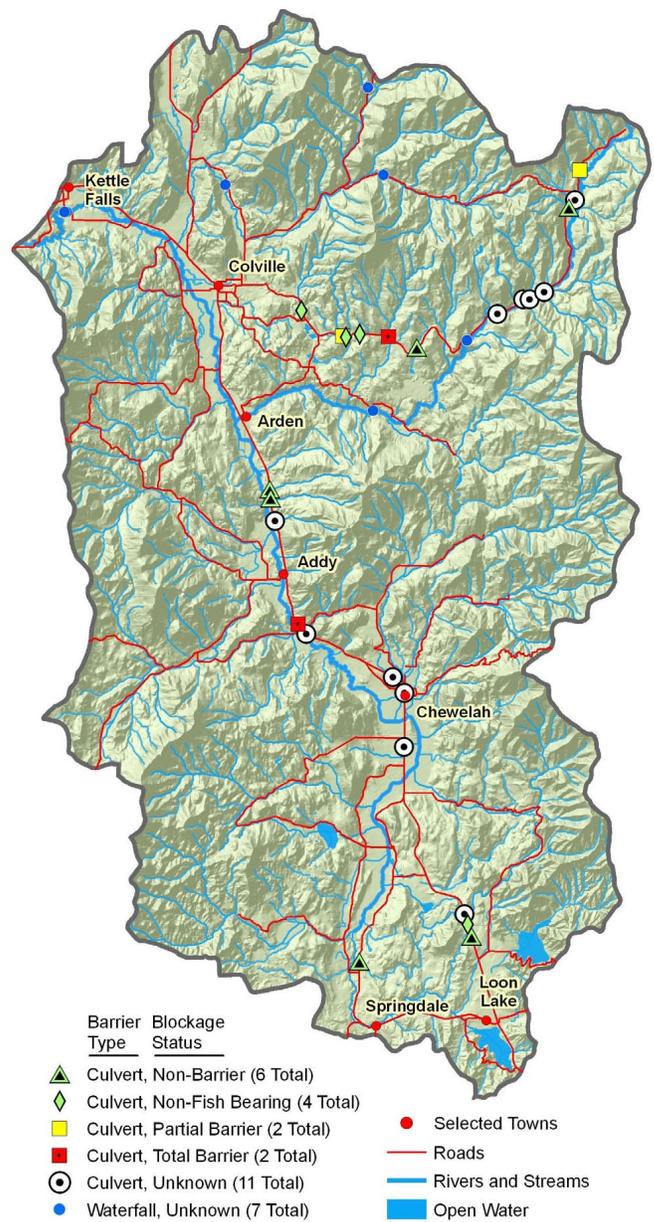
Salmonid (resident)

Native: westslope cutthroat, rainbow, kokanee, mountain whitefish.

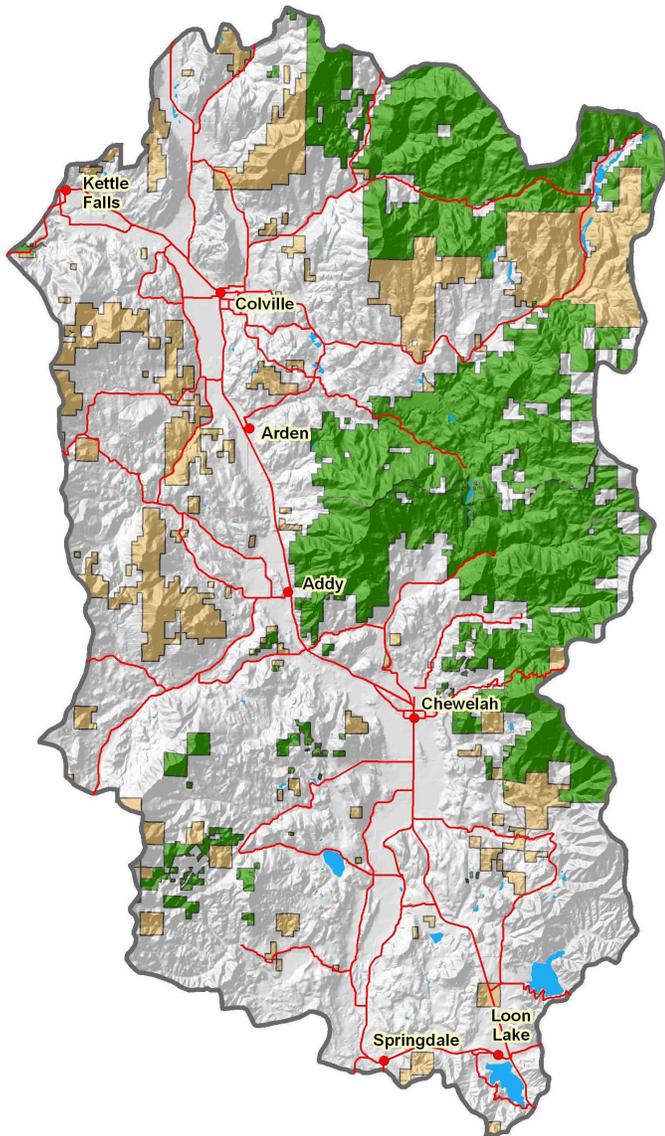
Non-native: brown, brook, lake trout (found in only six other watersheds).

Stream Statistics for the Colville Watershed	
Total streams	479
Named streams	96
Total stream miles	1228 mi
Intermittent miles	603 mi
Intermittent %	49%

Upstream Fish Passage Barriers



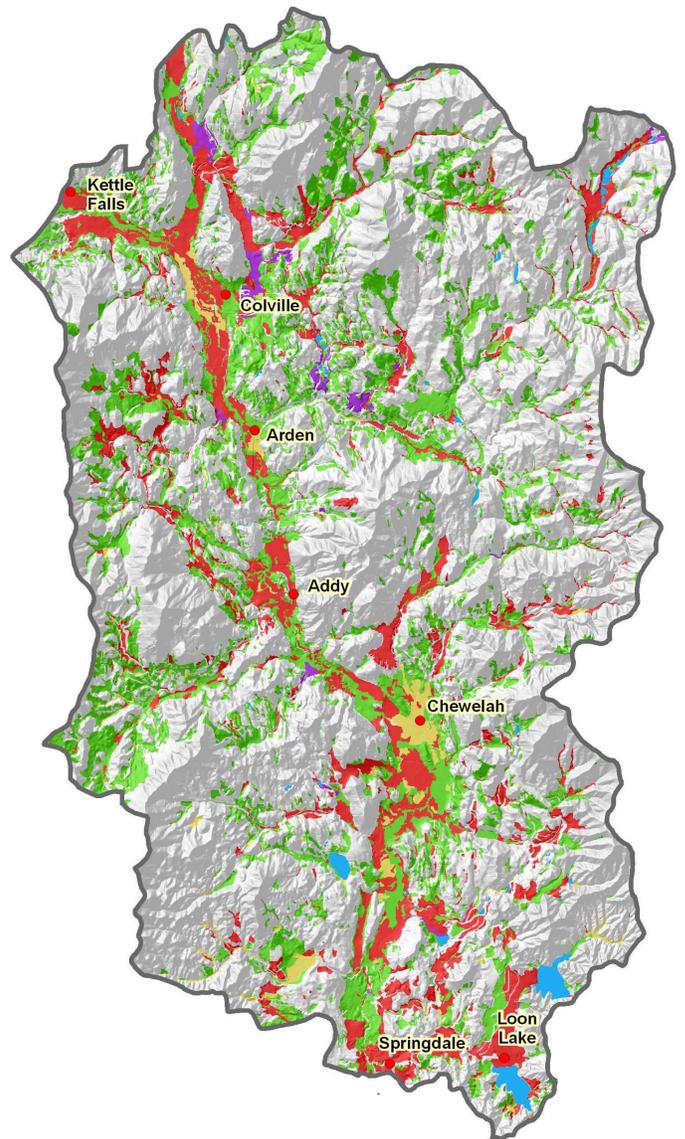
Ownership Map



General Ownership

- FEDERAL GOVT.
23.85%
- STATE GOVT.
11.35%
- PRIVATE
64.80%
- Open Water
- Roads

Farmland Classification Map



% Area Farmland Classification

- 10.0 All areas are prime farmland
- 19.0 Farmland of statewide importance
- 1.5 Prime farmland if drained
- 0.5 Prime farmland if irrigated
- 69.0 Not prime farmland
- Open Water

Physical Descriptions

303d Listed Surface Water ^{12,13}

Colville Watershed
649,270 Total Acres
HUC # 17020003



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.

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.

303d Listed Surface Water Category 4 & 5



(303d continued on next page.)



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.

(Table of 303d Listed Surface Waters on next page.)

Physical Descriptions

303d Listed Surface Water

Colville Watershed
649,270 Total Acres
HUC # 17020003

303d Listed Streams and Surface Waters ¹³

Water Body	Fecal	Dissolved Oxygen	Temperature	pH	Turbidity	Ammonia - N	Total Phosphorus	Invasive Exotic Species
Bestrom Creek	x	x	x	x				
Blue Creek	x	x						
Chewelah Creek	x		x					
Colville River	x	x	x	x	x	x		
Cottonwood Creek	x	x	x	x				
Deer Creek	x							
Haller Creek	x			x				
Huckleberry Creek	x							
Kinman Creek	x							
Little Pend Oreille River	x	x	x	x				
Mill Creek	x		x	x				
North Fork Chewelah Creek	x	x	x	x				
North Fork Mill Creek	x		x	x				
Sheep Creek	x	x						
Sherwood Creek	x		x	x				
South Fork Chewelah Creek	x	x	x	x				
South Fork Mill Creek	x	x	x	x				
Stensgar Creek	x	x	x					
Stranger Creek	x		x					
Waits Creek	x							
Wilson Creek	x	x	x	x				
Black Lake							x	x
Gillette Lake	x	x	x	x			x	x
Heritage Lake							x	x
Loon Lake							x	x
McDowell Lake								x
Sherry Lake							x	x
Starvation Lake	x						x	x

Physical Descriptions

Riparian Land Use / Land Cover ⁵

Colville Watershed
649,270 Total Acres
HUC # 17020003



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.

Riparian Land Use / Land Cover		
Based on a 100-foot width on both sides of all streams in the 100K Hydro GIS Layer	ACRES	% of Buffer Area
Evergreen Forest	21,643	71.87%
Pasture/Hay	2,117	7.03%
Transitional	1,601	5.32%
Grasslands/Herbaceous	935	3.10%
Open Water	668	2.22%
Shrubland	502	1.67%
Small Grains	502	1.67%
Mixed Forest	474	1.57%
Woody Wetlands	365	1.21%
Row Crops	352	1.17%
Fallow	342	1.14%
Low Intensity Residential	264	0.88%
Deciduous Forest	198	0.66%
Commercial/Industrial/Trans	110	0.37%
Emergent Herbaceous	21	0.07%
Bare Rock/Sand/Clay	20	0.06%
Orchards/Vineyards/Other	0	0.00%
Total Acres of 100-Foot Stream Buffers	30,114	100.00%

Physical Descriptions

Irrigated Cropland, Hayland and Pastureland ¹⁴

Colville Watershed
649,270 Total Acres
HUC # 17020003

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 Colville office staffs.

Irrigated Lands <i>(1997 NRI Estimates for Non-Federal Lands Only)</i>			
Type of Land	Acres	Percent of Irrigated Lands	Percent of HUC
Cultivated Cropland	400	13%	0%
Uncultivated Cropland	2,300	74%	<1%
Pastureland	400	13%	0%
Total Irrigated Lands	3,100	100%	<1%

Animal Feeding Operations					
Animal Type	Dairy	Beef Feedlot	Heifer Feedlot	Poultry (Egg & Fryer)	Swine
No. of Farms	9	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 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 the Spokane, Kalispel and Confederated Tribes of the Colville Indian Reservation live and work in the watershed and have deep-rooted values tied to the watershed. 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 located in the watershed. These sites include such things as Fort Colville, military roads, mining camps, shafts, homestead cabins, cemeteries and logging camps.

Activities carried out in the watershed by Federal agencies, where the agency has control of the outcome, are 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

Colville Watershed
649,270 Total Acres
HUC # 17020003

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



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

Soil
Soil tilth, crusting, water infiltration, organic matter, compaction, and soil contaminants.
Accelerated erosion on non-cropland. Types of erosion considered are sheet and rill, wind, ephemeral, permanent gullies with active head cutting or mass wasting.
Stabilizing streambank areas within cropland or grazing lands to halt excessive bank erosion and sediment loading.
Water
Water quality benefits achieved by applying filter strips, field borders, grassed waterways, hedgerow plantings, grass buffer strips, and riparian forest buffers.
Livestock operations with lands where animal manure is applied and a Comprehensive Nutrient Management Plan will be implemented.
Cropland or pastureland where pest control is needed to reduce adverse effects on ground and/or surface water.
Stabilize small areas of intense livestock use to improve water quality and/or quantity.
Sediment is delivered directly or indirectly to salmonid-bearing streams by forest (private, non-industrial) access roads
Water quality issues such as water temperature above the state standard, sediment delivery to the stream and contamination from livestock waste.
Improving irrigation efficiency on non-surface systems by 10% or more above current conditions.
Plant
Livestock water quantity or availability are limiting factors for achieving proper grazing distribution.
Riparian areas that are not fenced and there is sufficient indication that grazing of domestic animals occur within these areas.
Prescribed grazing is needed to improve or maintain the health & vigor of the desired plant community; maintain or improve water quality and quantity, reduce soil erosion and maintain or improve soil condition; and improve or maintain animal health and productivity.
Improving existing vegetative cover to solve another resource problem related to soil, water, air, or animals or help to comply with laws/regulations.
Native species use in vegetative improvement seedings or plantings.
Forest diseases or pests exist or overstocking of the site is causing a decline in forest health on Non-Industrial Private Forestland (NIPF).
Animal
In-stream structures; including road culverts, on forestland (private, non-industrial), agricultural and range lands; are impairing upstream passage of salmonid fish.
Wildlife habitat for terrestrial species that occupy the proposed contract area.



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 Colville Watershed		
Common Name	Scientific Name	Type
<i>Endangered Species</i>		
None		
<i>Threatened Species</i>		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Bird
Grizzly Bear	<i>Ursus arctos horribilis</i>	Mammal
Canada Lynx	<i>Lynx canadensis</i>	Mammal
Gray Wolf	<i>Canis lupus</i>	Mammal

Farm Bill Programs

Performance Results ²⁰

Colville Watershed
649,270 Total Acres
HUC # 17020003

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 (acres)	231	1,643	NA	512	1,014	3,400
Total Conservation Systems Applied (acres)	169	905	NA	1,044	25	2,143
Conservation Treatments Applied						
Buffers	4	0	0	3	0	7
Erosion Control (acres)	23	9	NA	0	0	32
Erosion Control (tons/year)	50	0	NA	0	0	50
Irrigation Management (acres)	78	0	0	53	0	131
Nutrient Management (acres)	0	0	0	0	0	0
Pest Management (acres)	0	0	0	10	0	10
Prescribed Grazing (acres)	0	0	0	0	0	0
Trees/Shrubs (acres)	193	162	157	67	0	579
Waste Management (no.)	0	0	0	1	0	1
Wetlands (acres)	77	1,001	0	0	0	1,078
Wildlife Habitat (acres)	189	1,107	1	7	0	1,304

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
Farm Bill Program Practice Application in Watershed (acres)						
Conservation Reserve Program (CRP)	0	19	0	98	0	117
Conservation Security Program (CSP)	NA	NA	NA	1,636	-	1,636
Environmental Quality Incentives Program - Ground and Surface Water (EQIP-GSWC)	-	0	0	0	0	0
Environmental Quality Incentives Program (EQIP)	0	804		139	657	1,600
Farmland Protection Program (FPP)	0	0	0	0	0	0
Forestry Incentives Program (FIP)	211	180	0	0	0	391
Grassland Reserve Program (GRP)	-	0	0	0	0	0
Wetlands Reserve Program (WRP)	20	0	0	0	0	20
Wildlife Habitat Incentive Program (WHIP)	0	53	235	0	356	644

There are 1269 farms in Stevens County, the core county of the watershed. An analysis of the data by zip code suggests there are 987 farms in the HUC. The Stevens county average farm size in the 2002 Census of Agriculture was 518 acres. The 2002 average gross farm income was \$22,258 with a net cash farm income of \$5,822. The Stevens county net cash farm income was 17.2% of the statewide average.



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

Economic Characteristics (Stevens County)	Number	%
Employed civilian population 16 years and over	15,568	100
Occupation		
Management, professional, and related occupations	4,652	29.9
Service occupations	2,631	16.9
Sales and office occupations	3,392	21.8
Farming, fishing, and forestry occupations	473	3
Construction, extraction, and maintenance occupations	1,802	11.6
Production, transportation, and material moving occupations	2,618	16.8
Industry		
Agriculture, forestry, fishing and hunting, and mining	1,162	7.5
Construction	1,205	7.7
Manufacturing	2,177	14
Wholesale trade	381	2.4
Retail trade	1,808	11.6
Transportation and warehousing, and utilities	857	5.5
Information	202	1.3
Finance, insurance, real estate, and rental and leasing	565	3.6
Professional, scientific, management, administrative, and waste mgmt services	621	4
Educational, health and social services	3,520	22.6
Arts, entertainment, recreation, accommodation and food services	1,320	8.5
Other services (except public administration)	878	5.6
Public administration	872	5.6

(Colville Watershed Census Data continued on next page.)

Reports

Census Data - Economic Characteristics

Colville Watershed
649,270 Total Acres
HUC # 17020003

Population Ethnicity	Stevens	Washington
White persons	91.5%	85%
Black persons	0.3%	4%
American Indian and Alaska Native	5.4%	2%
Asian persons	0.5%	6%
Native Hawaiian and Other Pacific Islander	0.2%	1%
Persons reporting two or more races	2.1%	3%
Persons of Hispanic or Latino origin	2.0%	9%
White persons, not Hispanic	89.8%	78%

Class of worker	Number	%
Private wage and salary workers	10,445	67.1
Government workers	3,195	20.5
Self-employed workers in own not incorporated business	1,764	11.3
Unpaid family workers	164	1.1
Income in 1999		
Households	15,048	100
Less than \$10,000	1,793	11.9
\$10,000 to \$14,999	1,219	8.1
\$15,000 to \$24,999	2,481	16.5
\$25,000 to \$34,999	2,089	13.9
\$35,000 to \$49,999	2,937	19.5
\$50,000 to \$74,999	2,736	18.2
\$75,000 to \$99,999	1,147	7.6
\$100,000 to \$149,999	433	2.9
\$150,000 to \$199,999	100	0.7
\$200,000 or more	113	0.8
Median household income (dollars)	34,673	(X)

2002 AG CENSUS DATA	Stevens County
Farms (number)	1,269
Land in farms (acres)	528,402
Total cropland (acres)	116,370
Irrigated land (acres)	11,553
Principal operator by primary occupation - Farming (number)	732
Principal operator by place of residence - On farm operated (number)	1,178

Reports

Census Data - Ag Census Data

Colville Watershed
649,270 Total Acres
HUC # 17020003

Farms by Size	Stevens County
1 to 9 acres	51
10 to 49 acres	387
50 to 69 acres	99
70 to 99 acres	109
100 to 139 acres	87
140 to 179 acres	114
180 to 219 acres	53
220 to 259 acres	54
260 to 499 acres	155
500 to 999 acres	94
1,000 to 1,999 acres	42
2,000 acres or more	24
Livestock and Poultry (farms)	
Cattle and calves - Beef cows	442
Cattle and calves - Milk cows	54
Hogs and pigs	47
Sheep and lambs	53
Layers 20 weeks old and older	118
Broilers and other meat-type chickens	31
Selected Crops Harvested (acres)	
Harvested cropland - Irrigated	9,749
Corn for grain	0
Corn for grain - Irrigated	0
Corn for silage or greenchop	0
Corn for silage or greenchop - Irrigated	0
Wheat for grain, all	7,331
Wheat for grain, all - Irrigated	0
Wheat for grain, all - Winter wheat for grain	5,594
Wheat for grain, all - Spring wheat for grain	1,737
Barley for grain	5,256
Barley for grain - Irrigated	0
Oats for grain	1,752
Oats for grain - Irrigated	59
Potatoes	30
Sugarbeets for sugar	0
Forage - land for all hay, haylage, grass silage, and greenchop	55,918
Forage - land for all hay, haylage, grass silage, and greenchop - Irrigated	8,554
Vegetables harvested for sale	33
Land in orchards	214
Land in orchards - Irrigated	162



Many natural resource and socio-economic studies have been conducted in the Colville River watershed. 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, Colville National Forest address resource needs on National Forest lands within the Colville River 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.

Publication Summary	Date
Colville National Forest Temperature and Bacteria Total Maximum Daily Load: Water Quality Implementation Plan	Aug-06
Washington State Toxics Monitoring Program: Toxic Contaminants in Fish Tissue and Surface Water in Freshwater Environments, 2003	May-06
Progress on Watershed Planning and Setting Instream Flows	Dec-05
Colville River Watershed Fecal Coliform Bacteria Total Maximum Daily Load (Water Cleanup Plan): Detailed Implementation Plan	Aug-05
Colville National Forest Temperature, Bacteria, and pH Total Maximum Daily Load (Water Cleanup Plan): Submittal Report	Jul-05
Third Screening Investigation of Water and Sediment Quality of Creeks in Ten Washington Mining Districts, with Emphasis on Metals	Feb-04
Colville River Dissolved Oxygen Total Maximum Daily Load: Submittal Report	Dec-03
Mercury in Edible Fish Tissue and Sediments from Selected Lakes and Rivers of Washington State	Jun-03
Colville River Watershed Bacteria Total Maximum Daily Load: Submittal Report - Amended	May-03
Investigation of Background Inorganic and Organic Arsenic in Four Washington Lakes	May-03

(Reports continued on next page.)



Publication Summary	Date
Quality Assurance Project Plan: Screening Investigation of Water and Sediment Quality in Creeks from Ten Washington Mining Districts	Oct-02
Quality Assurance Project Plan: Screening Survey of Mercury Levels in Edible Fish Tissue from Selected Lakes and Rivers of Washington State	Oct-02
Quality Assurance Project Plan: Investigation of Background Concentrations of Organic and Inorganic Arsenic in Freshwater Fish Tissue in Four Washington Lakes	Sep-02
Colville River Fecal Coliform Total Maximum Daily Load Study	Jul-02
Second Screening Investigation of Water and Sediment Quality of Creeks in Ten Washington Mining Districts, with Emphasis on Metals	Jun-02
Focus Sheet: Water Quality in the Colville River Watershed	Mar-02
River and Stream Ambient Monitoring Report for Water Year 2000	Dec-01
Water Quality Assessments of Selected Lakes within Washington State: 1997	Mar-00
Colville River Water Quality: Pollutant Loading Capacity and Recommendations for Total Daily Maximum Loads	1997
River and Stream Ambient Monitoring Report for Wateryear 1995	1997
Water Quality Assessments of Selected Lakes within Washington State - 1994	1997

Footnotes/Bibliography



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 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 name of region, subregion, accounting units, 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). Tribal reservation boundaries 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 data set 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 at: <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/>

(Footnotes and bibliographies are continued on next page.)

Footnotes/Bibliography



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 mainstream 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 NDMPL) 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 are continued on next page.)

Footnotes/Bibliography



11. Farmland Classifications were derived using Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) tabular and spatial data. The following surveys were used:
 Pend Oreille County Area., WA (WA651) Published 2004 05 28
 Stevens County, WA (WA065) Published 2004 05 28

The aforementioned surveys and tabular databases were downloaded from the NRCS Soil Data Mart at <http://soildatamart.nrcs.usda.gov>. Farmland classification layers were created using these 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/TSQBEHome.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
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.

(Footnotes and bibliographies are continued on next page.)

Footnotes/Bibliography

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_lcc. Similar information can be viewed in the Federal Register publication of the USFWS, 50 CFR Part
19. "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>
20. 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/>
21. 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/> .
22. 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.
23. Population ethnicity data were extracted from the Census 2000 Summary File 3 compiled by the U.S. Census Bureau for Stevens County and Washington State. For more information on census data and definitions visit <http://www.census.gov/Press-Release/www/2002/sumfile3.html>.
24. 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?_lan
24. Washington Department of Ecology website: <http://www.ecy.wa.gov/biblio/wria59.html>.
Publications listed by a Watershed Resource Inventory Area, WRIA 59, Colville

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