Colville River Watershed Bacteria Total Maximum Daily Load

Submittal Report

Amended

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Introduction

Section 303(d) of the federal Clean Water Act mandates that the state establish Total Maximum Daily Loads (TMDLs) for surface waters that do not meet standards after application of technology-based pollution controls. The U.S. Environmental Protection Agency (EPA) has established regulations (40 CFR 130) and developed guidance (EPA, 1991) for setting TMDLs.

Under the Clean Water Act, every state has its own water quality standards designed to protect, restore, and preserve water quality. Water quality standards consist of designated uses, such as cold water biota and drinking water supply, and criteria, usually numeric criteria, to achieve those uses. When a lake, river or stream fails to meet water quality standards after application of required technology-based controls, the Clean Water Act requires the state to place the waterbody on a list of "impaired" water bodies and to prepare an analysis called a **Total Maximum Daily Load (TMDL)**.

The goal of a TMDL is to ensure the impaired water will attain water quality standards. A TMDL includes a written, quantitative assessment of water quality problems and of the pollutant sources that cause them. The TMDL determines the amount of a given pollutant that can be discharged to the waterbody and still meet water quality standards, called the **loading capacity,** and allocates that load among the various sources. If the pollutant comes from a discrete source (referred to as a **point source**) such as an industrial facility's discharge pipe, that facility's share of the loading capacity is called a **wasteload allocation**. If it comes from a diffuse source (referred to as a **nonpoint source**) such as a farm, that facility's share is called a **load allocation**. The TMDL must also consider **seasonal variations** and include a **margin of safety** that takes into account any lack of knowledge about the causes of the water quality problem or its loading capacity. The sum of the individual allocations and the margin of safety must be equal to or less than the loading capacity.

The Washington State Department of Ecology (Ecology) is establishing a Total Maximum Daily Load (TMDL) for bacteria in the Colville River watershed. The TMDL will address impairments of beneficial uses due to excessive levels of fecal coliform bacteria in nine segments of the main stem and 15 tributary segments that are on the 1998 303(d) list of impaired surface waters.

The five components of any TMDL as required by the Clean Water Act are defined as:

Loading Capacity: Loading capacity is the amount of pollutants that a waterbody can receive without violating water quality standards In the case of the Colville River watershed, the loading capacity for fecal coliform criteria is better stated as a set of bacteria population distributions, since the bacteria do not consistently vary with flow.

Wasteload Allocation: Wasteload allocation is the portion of a receiving water's loading capacity that is allocated to one of the existing or future point sources of pollution. There are two permitted municipal wastewater treatment plants (WWTPs) that discharge to the Colville River. The city of Chewelah WWTP discharges to the mainstem at river mile (RM) 38, and the city of Colville discharges to the mainstem at RM 15. Both WWTPs are permitted under the

National Pollution Discharge Elimination System (NPDES) and are managed by Ecology's Eastern Regional Office (ERO) in Spokane, WA. The permitted facilities will be discharging fecal coliform bacteria at or below water quality standards.

Load Allocations: Load allocation is the portion of a receiving waters capacity that is attributed either to one of its existing or potential nonpoint sources of pollution or to natural background sources. This TMDL involves pollution sources that are exclusively nonpoint. Since calculating separate load allocations for each nonpoint source is exceedingly difficult due to the variability of fecal coliform bacteria, this TMDL sets instream water quality-based load allocations at the monitoring sample sites used in the study. The load allocations recommended at the monitoring stations in the Colville River are set as percent reductions needed within the river segment associated with each study monitoring station. The load allocations recommended at the monitoring stations for the tributaries and headwaters are set at percent reductions needed with each sub-basin associated with each study monitoring station. Bacteria reductions from 3% to 89% are needed in the river mainstem and from 4% to 95% are needed in the tributaries and headwaters.

Margin of Safety: Margin of Safety is the means by which the analysis for the uncertainty about the relationship between pollutant loads and the receiving water quality. Margins of safety for the TMDL were attained by applying allocations determined for the most critical time of year to the entire year. The most critical time of year in the Colville River watershed is during the dry summer months of June through September. This included using the most critical two or three month loading period to calculate the target reductions needed. In addition, the calculations did not incorporate a die-off rate for bacteria.

Seasonal Variation: Fecal coliform bacteria data collected in the Colville River watershed show a definite pattern of seasonal variation. June through September is the critical period for fecal coliform levels in the Colville River watershed, corresponding to lower flows and higher temperatures. The critical period is when water quality is at a reasonable "worst case" and the period most likely to exceed fecal coliform water quality standards.

Background

Located in northeastern Washington State, the Colville River watershed shown in Figure 1, lies within the Selkirk Mountains between the Pend Oreille and Columbia rivers. The Colville watershed is about 50 miles long and 25 miles wide, with a north to south orientation. Basin elevations range from 1,290 feet around the river mouth to 6,700 feet near Calispell Peak. Headwater streams start in the area 19 miles north of Spokane, while discharge is about 30 miles from the Canadian border.

The Colville River begins at the confluence of Sheep Creek and Deer Creek in southern Stevens County, and meanders northerly for about 60 river miles. Along its course the river passes through the cities of Chewelah and Colville, eventually discharging near the town of Kettle Falls to Franklin D. Roosevelt Lake, an impoundment of the Columbia River behind Grand Coulee Dam. The Colville River watershed accounts for an entire Water Resource Inventory Area (WRIA 59).

The Colville River drains a 1,016 square mile area, with ninety-nine percent of the basin contained within Stevens County. The small portion outside Stevens County is the headwaters of the Little Pend Oreille River, this is the largest tributary to the river. The Colville River drains 41% of the land area in Stevens County.

The Colville River basin generally has a warm and dry continental climate, due to the Cascade Mountains to the west acting as a barrier for eastward moving marine air. To the north and east of the basin, the Selkirk Mountains shield the area from extreme cold moving south from Canada, but occasionally spilling into the basin for short periods during the winter months. Monthly average temperatures at Colville range from 24.3 ° F in January to 68.4 ° F in July. Precipitation averages 17.2 inches per year at Colville. The range for the period 1917 to 2000 was 8.22 inches to 29.02 inches (WRCC, 2002). About two-thirds of the total annual precipitation in the basin falls between October and March. Aerial distributions of precipitation are affected by topography due to the relationship between precipitation and altitude. Significant differences in precipitation occur between the valley and uplands, from the windward side of the valley (east) to the leeward (west). The average seasonal snow fall is about 48 inches and covers the ground much of the winter.

Colville River discharge is driven by a snow-melt regime. The high-flow period is in the spring due to the combination of melting winter snow pack and spring rainfall. April is the highest month for discharge, while August is the lowest. The majority of the tributaries to the Colville River are small, generally averaging less than 20 cubic feet per second. The three largest tributaries, the Little Pend Oreille River, Mill Creek, and Chewelah Creek account for just over half of the Colville River discharge. The only other tributary accounting for more than 5 percent of the river volume is Sheep Creek, a headwater stream at about 5.9 percent.

The generalized land cover distributions for the Colville River watershed are shown in Table 1. Eighty-two percent of the land cover for the Colville River basin is within forest, shrub land, woody wetlands, and upland grasses. Nearly all of the remainder is divided between agriculture and transitional/barren grounds. Less than 2 percent of the basin is covered by urban, residential, commercial/industrial, transportation areas, and recreational grasses. The urban/residential areas of the watershed are near the population centers of Chewelah, Colville, Kettle Falls, Springdale, and along portions of the highway corridors. The vast majority of the housing is single family residences. The sub-basins are rural/residential areas, with agriculture being the predominant land use along the valley bottoms and on some terraces above the valley bottoms. The uplands a re dominated by evergreen forest, accounting for about 75 percent of the basin.

Table 1. Generalized land cover and percentages for the Colville River watershed.

Land cover	Watershed percent (%)
Forests/Woody Wetlands/Shrub Land/Upland Grasses	82
Agriculture	10
Barren Ground	6
Urban/Residential/Commercial/Industrial/Transportation	1
Open Water/Herbaceous Wetlands	1

Many of Stevens County's first settlers were former employees and relatives of the Hudson Bay Company's fur trading post. Prior to these first settlers the area was a major trade center for numerous Inland Northwest Indian Tribes. Kettle Falls was the second largest salmon fishery along the Columbia River (Bamonte & Bamonte, 1999).

The discovery of gold in the early 1850's in Canada and the northern parts of Washington Territory initiated the first major influx of white settlers. In the 1880's major mineral discoveries, rich agricultural land, and timber led to the establishment of the Spokane Falls and Northern Railroad Company (Bamonte & Bamonte, 1999).

At the turn of the 20th century the principal industries in the Colville Valley were grain, fruit, hay, livestock, mines and marble quarries. A valley to the west along the Columbia River was known to produce the finest orchard products in the west. The area was also known for its abundance of bear, deer and lesser game (Western Historical Pub. Co., 1904).

Government records estimated that there were less than 1000 residents (not including Native Americans) in Stevens County in 1871. At this time the county was much larger than it is today; it included much of Northeast Washington. The 1900 census revealed that the population had grown to 10,543 (Western Historical Pub. Co., 1904). The 1970 census estimated the population at 17,436 residents (Bureau of Economic Analysis). Based on the 2000 Federal Census (OFM, 2002) rural Stevens County has a population of 40,066 residents, ranking 23rd in population of the 39 Washington counties. The major industries include timber, agriculture, mining, recreation and tourism. This forested county provides many opportunities for outdoor recreation including fishing, hunting, camping, swimming and hiking.

The early history shaped much of the Stevens County of today, but some significant changes in the major industries have occurred. Between the 1990 and 2000 census the slowest growing industry was durable goods manufacturing, which increased at an average annual rate of 2.7 percent. During this same period the fastest growing industry was services, with an average annual rate increase of 10.1 percent. In 2000, Stevens County ranked 38 of the 39 Washington State counties for per capita personal income, with an average of 18,281 dollars (Bureau of Economic Analysis). A summary of Stevens County employment changes between 1970 and 2000 is shown below in Table 2.

Table 2. Stevens County employment changes by industry in 1970 and 2000 (Bureau of Economic Analysis).

Industry	Number employed, 1970	Number employed, 2000
Farm	1290	1376
Agriculture, forestry, or fishing services	93	325
Mining	244	94
Construction	131	837
Manufacturing	953	2443
Transportation & public utilities	193	573
Wholesale trade	86	303
Retail trade	877	2459
Finance, insurance, or real estate	246	768
Services	786	4116
Government	1330	2589
Total employment	**6629**	**15883**

Figure 1. Map showing the Colville River watershed, WRIA 59.

Applicable Criteria

Within the state of Washington, water quality standards are published pursuant to Chapter 90.48 of the Revised Code of Washington (RCW). Authority to adopt rules, regulations, and standards to protect the environment is vested with the Department of Ecology. Under the federal Clean Water Act, the EPA Regional Administrator must approve the water quality standards adopted by the state (Section 303(c)(3)). Through adoption of these standards, Washington has designated certain characteristic uses to be protected and established the criteria necessary to protect these uses [Washington Administrative Code (WAC), Chapter 173-201A]. These standards were last adopted in November 1997.

The Colville River watershed has Class A and Class AA waters. The characteristic beneficial uses and water quality criteria for these classifications are listed below. Waters with these classifications support the broadest range of uses, though numeric water quality standards are slightly more stringent for Class AA waters. State law does not establish a ranking or priority among the beneficial uses, but individual waters are expected to support all uses within the classification.

The Colville River and its tributaries are designated as Class A (excellent) waters. When tributary headwaters are on Colville National Forest land or Little Pend Oreille National Wildlife Refuge land, they are designated as Class AA (extraordinary) waters. All surface waters lying within specific dedicated lands (e.g., national parks, national forests, and/or wilderness areas) are Class AA or Lake Class waters.

This TMDL is designed to address impairments of characteristic uses in the Colville River watershed due to high fecal coliform bacteria levels. The characteristic uses designated for protection in the Colville River watershed streams are as follows:

> *"Characteristic uses. Characteristic uses shall include, but not be limited to, the following:*
> *(i) Water supply (domestic, industrial, agricultural).*
> *(ii) Stock watering.*
> *(iii) Fish and shellfish:*
> *Salmonid migration, rearing, spawning, and harvesting.*
> *Other fish migration, rearing, spawning, and harvesting.*
> *Clam and mussel rearing, spawning, and harvesting.*
> *Crayfish rearing, spawning, and harvesting.*
> *(iv) Wildlife habitat.*
> *(v) Recreation (primary contact recreation, sport fishing, boating, and aesthetic enjoyment).*
> *(vi) Commerce and navigation."*

[WAC 173-201A-030(1)(b)] and [WAC 173-201A-030(2)(b)]

Class AA waters have assigned fecal coliform criteria to protect the characteristic uses:

> *"fecal coliform organism levels shall both not exceed a*

geometric mean value of 50 colonies/100 mL, and not have more than 10 percent of all samples obtained for calculating the geometric mean value exceeding 100 colonies/100 mL."

[WAC 173-201A-030(1)(c)(i)(A)]

Class A waters have assigned fecal coliform criteria to protect the characteristic uses:

"fecal coliform organism levels shall both not exceed a geometric mean value of 100 colonies/100 mL, and not have more than 10 percent of all samples obtained for calculating the geometric mean value exceeding 200 colonies/100 mL."

[WAC 173-201A-030(2)(c)(i)(A)]

The water quality standards describe the averaging periods in the calculation of the geometric mean for the fecal coliform criteria:

"In determining compliance with the fecal coliform criteria in WAC 173-201A-030, averaging of data collected beyond a thirty-day period,… shall not be permitted when such averaging would skew the data set as to mask noncompliance periods."

[WAC 173-201A-060(3)]

In cases where natural background conditions exceed a standard, the water quality standards state the following:

"Whenever the natural conditions of said waters are of a lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria."

[WAC 173-201A-070(2)]

Water Quality and Resource Impairments

Under section 303(d) of the 1972 federal Clean Water Act, states are required to submit a list to the U.S. Environmental Protection Agency (EPA) every two years for impaired waters that do not, or are not expected to, support beneficial uses. For those 303(d) waters, Ecology or the EPA are required to develop TMDLs to establish water quality-based controls. High fecal coliform bacteria levels in the Colville River and tributaries are not supportive of primary contact recreational uses such as swimming and secondary contact recreational uses such as fishing. Ecology's Ambient Monitoring Section has collected data at long-term stations on the Colville River near the communities of Kettle Falls and Bluecreek for a number of years, and the bacteria levels have exceeded water quality standards often during the dry, low flow season.

Ecology conducted a technical study, *Colville River Water Quality: Pollutant Loading Capacity and Recommendations for Total Maximum Daily Loads* (Pelletier, 1997), to determine the capacity of the Colville River to assimilate pollutant loads from point and nonpoint sources and recommend point source wasteload allocations for dissolved oxygen and ammonia. The Colville River and tributary fecal coliform loading was also investigated during this study. Water quality monitoring showed that fecal coliform concentrations throughout the watershed frequently exceed water quality standards. The study determined that nonpoint sources of fecal coliform, directly to the mainstem, were far greater than tributary contributions. The study concluded that further investigations, including a TMDL evaluation to determine the areas where fecal coliform loading is the greatest, are warranted.

A TMDL evaluation, the *Colville River Fecal Coliform Total Maximum Daily Load Study*, (Coots, 2002), was conducted from March 2000 through March 2001. A total of 10 mainstem and 15 tributary and headwater sites were sampled every two weeks. Study results showed fecal coliform bacteria exceeding water quality standards the entire length of the Colville River and all tributaries throughout the dry season of June through September.

The Colville River and six tributaries were placed on the 1996 303(d) list for not supporting their beneficial uses due to fecal coliform bacteria violations (Ecology, 1996). The 1998 303(d) list is more specific as to the location of problem areas, by listing river segments roughly one mile upstream in length of where the samples were collected. The 1998 303(d) list has nine Colville River segments and 15 tributary segments due to excessive levels of fecal coliform bacteria (Ecology, 2000). The study found an additional three mainstem segments and two tributary segments not listed but impaired.

The Colville River and tributary impaired segments, on the 1996 and 1998 303(d) lists for fecal coliform bacteria, are shown in Table 3. The 1996 waterbody ID segments, the 1998 waterbody ID segments, and the stream names are shown. Waterbody segments impaired but not listed are also shown. A Colville River watershed map with the 1998 303(d) fecal coliform bacteria listed stream segments is shown in Figure 2.

Table 3. Colville River watershed stream segments on the 1996 and 1998 303(d) list for fecal coliform bacteria.

Stream Name	Old WBID	New WBID	1996 List	1998 List
Colville River	WA-59-1010	DH01PX6.850	Yes	Yes
Colville River	WA-59-1010	DH01PX16.882	Yes	Yes
Colville River	WA-59-1010	DH01PX22.274	No	Yes
Colville River	WA-59-1010	DH01PX25.804	Yes	Yes
Colville River	WA-59-1010	DH01PX54.306	No	Yes
Colville River	WA-59-1010	DH01PX56.721	Yes	Yes
Colville River	WA-59-1010	DH01PX65.104	No	Yes
Colville River	WA-59-1010	DH01PX81.689	No	Yes
Colville River	WA-59-1010	DH01PX83.354	Yes	Yes
Mill Creek	WA-59-2000	NO98KK0.000	No	Yes
Jumpoff Joe Creek	WA-59-2810	KR71AJ0.000	No	Yes
Haller Creek	WA-59-2950	GQ24CK0.000	No	Yes
Little Pend Oreille River	WA-59-3000	YA89GE0.000	No	Yes
Stranger Creek	WA-59-3900	XA81YE0.476	No	Yes
Stensgar Creek	WA-59-4000	QE64YM0.000	Yes	Yes
Blue Creek	WA-59-5000	UR95XB0.000	Yes	Yes
Chewelah Creek	WA-59-6000	QM52AR0.000	No	Yes
Sherwood Creek	WA-59-6090	KH80UT0.000	No	Yes
Cottonwood Creek	WA-59-6100	GT96PS0.000	No	Yes
Sheep Creek	WA-59-7000	UD18TQ0.000	Yes	Yes
Sheep Creek	WA-59-7000	UD18TQ1.583	No	Yes
Huckleberry Creek	None	GC63AN0.000	No	Yes
Colville River	WA-59-1010	DH01PX18.225	No	*
Colville River	WA-59-1010	DH01PX34.258	No	*
Colville River	WA-59-1010	DH01PX43.733	No	*
Waitts Lake Creek	None	XH00FW0.000	No	*
Deer Creek	None	DZ53HH0.000	No	*

*Waterbody ID segments impaired but not listed.

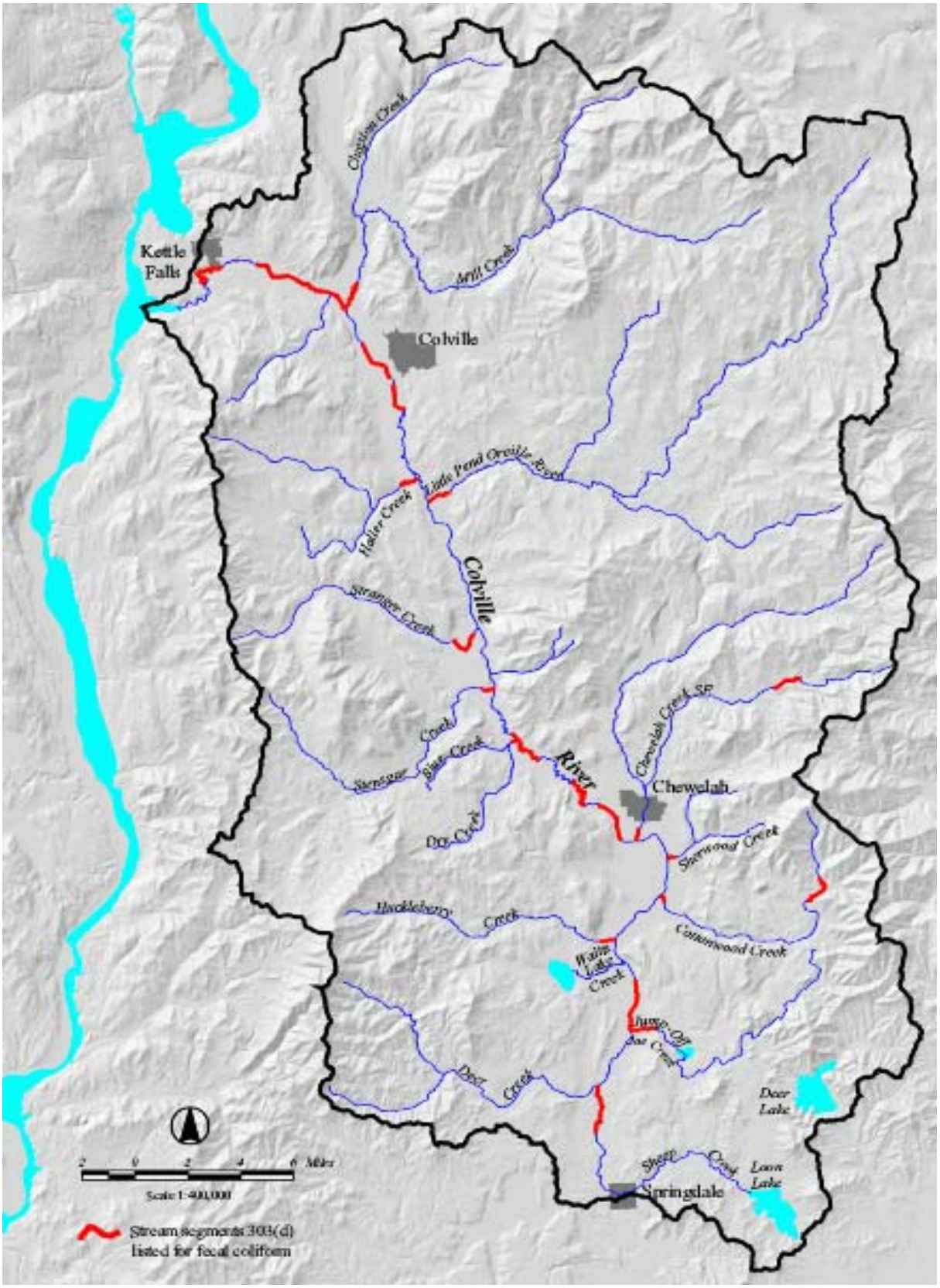

Figure 2. Map showing the Colville River and tributary segments 303(d) listed for fecal coliform bacteria.

Technical Analysis

The TMDL was developed through a combination of water quality and discharge data collection, and the analysis of loading scenarios and resulting water quality. The monitoring was designed to evaluate spatial and temporal patterns in loads from near-shore areas along the Colville River and tributaries.

Fecal coliform bacteria sample surveys were conducted every two weeks from March 2000 through March 2001. The monitoring network for the bacteria surveys, shown in Figure 3, was made up of 10 mainstem sites and 15 tributary sites. Sampling locations were the same as those used in studies by Pelletier (1997) and the Stevens County Conservation District (1993). In July and September 2000, Ecology also conducted two synoptic surveys for a suite of conventional and biological parameters. Additional water quality parameters were included in the synoptic surveys to compare to results from earlier studies.

Point sources of bacteria pollution from the Wastewater Treatment Plants (WWTPs), for the cities of Chewelah and Colville, were evaluated in Ecology's *Colville River Water Quality*: *Pollutant Loading Capacity and Recommendations for Total Maximum Daily Loads*, 96-349 (Pelletier, 1997) study that determined the capacity of the Colville River to assimilate pollution loads. Effluent limits from the WWTPs are required as flow-based limits to provide protection to the river during the low flow season when protection is needed. The Chewelah WWTP has been upgraded and the Colville WWTP is being upgraded. The discharge permits have been modified and were reissued in August 2001 and December 2000, respectively. The fecal coliform bacteria flow-based limits protect the river by not allowing the WWTPs to discharge bacteria levels that could increase the river to above the water quality standards.

To meet water quality standards in the Colville River, target load reductions for study sites were calculated. The second part of the bacteria standard requires less than 10% of all samples obtained for calculating the geometric mean value be below 200 colonies/100 mL. As an equivalent expression for the second part of the water quality standard, 90^{th} percentiles were calculated for averaging periods. The percentage reduction of fecal coliform densities was calculated using the statistical rollback method described in Ott (1995). The percent reduction of the bacteria load needed at each site to meet water quality standards was calculated from the geometric mean and the 90^{th} percentiles. One, two, and three month rolling geometric means and 90^{th} percentiles were calculated for each sample site. The most conservative estimate of load reduction (highest percentage) was used from the two and three month rolling geometric mean and 90^{th} percentile calculations.

Loading Capacity

Identification of the loading capacity is an important step in developing TMDLs. The loading capacity is the amount of pollutant a waterbody can receive and still meet water quality standards. By definition, a TMDL is the sum of the allocations. An allocation is defined as the portion of a receiving water's loading capacity that is assigned to a particular source. EPA defines the loading capacity as "the greatest amount of loading that a water can receive without violating water quality standards."

Bacterial loads are expressed as the product of bacterial counts and stream discharge. The result is the total number of bacteria over a period of time, usually expressed per day. The loading capacity is not a single value since loads vary with flow. The TMDL study found the watershed bacteria loads lower than those from the 1994 study, however all mainstem segment loads were greater than tributary loads, even after removing tributary contributions.

For the TMDL, the bacteria loads for each sample site calculated for the highest geometric mean three-month period were used to develop the existing fecal coliform loads per day. The statistical roll-back was used to calculate the reductions needed to meet water quality standards for the mainstem and each of the tributaries – the loading capacities for these sites. The loading capacity based on sampling in the 2000-2001 TMDL study is given in Table 4 as capacity per day.

Table 4. Bacteria loading capacities for the Colville River watershed TMDL study sample sites.

Waterbody	Site ID	Existing Load (cfu/day)	TMDL percent Reduction (%)	Loading capacity (cfu/day)
Colville River	CR4	2.73E+11	89	3.00E+10
Colville River	CR6	2.50E+11	84	4.00E+10
Colville River	CR11	2.40E+11	55	1.08E+11
Colville River	CR12	3.96E+11	57	1.70E+11
Colville River	CR16	3.34E+11	54	1.54E+11
Colville River	CR18	4.80E+11	56	2.11E+11
Colville River	CR20	2.96E+11	54	1.36E+11
Colville River	CR21	5.23E+11	58	2.20E+11
Colville River	CR23	6.39E+11	70	1.91E+11
Colville River	CR24	3.34E+11	3	3.24E+11
Mill Creek	MILL22	1.35E+11	25	1.01E+11
Jumpoff Joe Creek	JOJ5	1.09E+10	55	4.90E+09
Haller Creek	HAL19	2.29E+11	95	1.14E+10
Little Pend Oreille R	LPOR17	9.23E+10	25	6.94E+10
Stranger Creek	STRN15	7.13E+10	92	5.70E+09
Stensgar Creek	STEN14	2.85E+10	80	5.70E+09
Blue Creek	BLU13	7.18E+10	94	4.30E+09
Chewelah Creek	CHEW10	1.18E+11	41	6.96E+10
Sherwood Creek	SHER9	1.02E+10	95	5.10E+08
Cottonwood Creek	COT8	2.36E+10	45	1.29E+10
Sheep Creek	SCH1	1.86E+10	4	1.78E+10
Sheep Creek	SCH2	1.05E+11	85	1.57E+10
Huckleberry Creek	HUC7	2.26E+10	60	9.04E+09
Waitts Lake Creek	WLC6A	1.56E+10	83	2.65E+09
Deer Creek	DEC3	3.01E+10	75	7.35E+09

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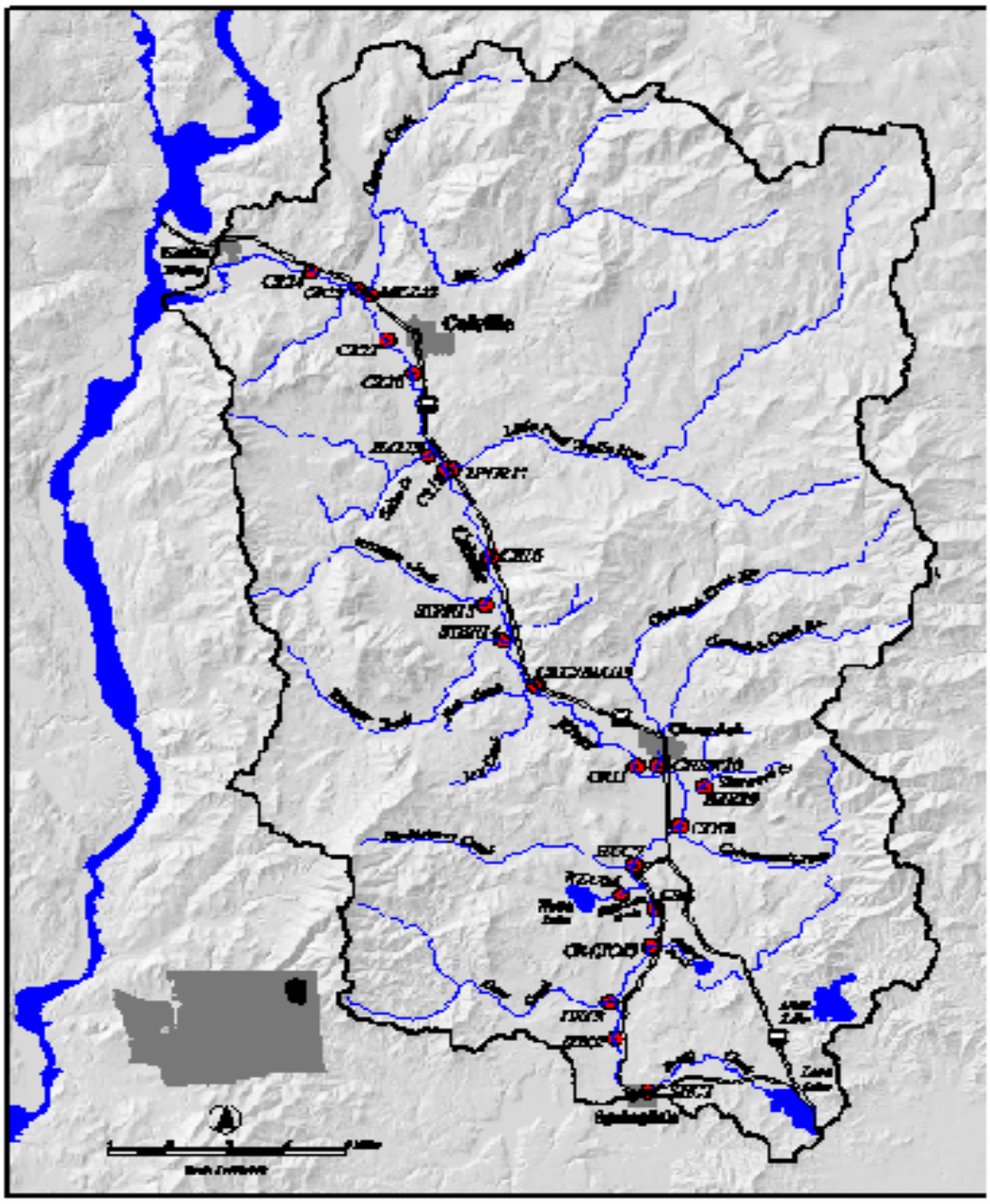

Figure 3. Map showing the Colville River watershed TMDL study sample sites.

Wasteload Allocations

There are two permitted municipal wastewater treatment plants (WWTPs) that discharge to the Colville River. The City of Chewelah WWTP discharges to the mainstream at river mile (RM) 38, and the City of Colville discharges to the mainstream at RM 15. The Chewelah WWTP has been upgraded and in operation since January 2002. The Colville WWTP is in the process of being upgraded and is scheduled to be operational no later than November 1, 2006. The Colville WWTP fecal coliform discharge is subject to some reduction from their current level of fecal coliform contribution, which will be achieved with the WWTP upgrade.

The Chewelah WWTP does meet the required fecal coliform water quality standards at the end of their pipe discharge while the Colville WWTP will meet the standards no later than November 1, 2006. For the upgraded WWTPs, seasonal permit periods were chosen to allow dischargers to efficiently use the assimilative capacity of the river. Separate WLAs are used for each season. The seasons were chosen to maximize the available river flow during the high flow season and to minimize the length of the most restrictive period.

Wasteload allocations for the two point sources are set as effluent limits for fecal coliform.

Table 5 shows the existing load, allocated load, and percent reduction required.

Facility Name	Existing Flow (cfs)	Existing Load (cfu/day)	Allocated Flow (cfs)	Allocated Load (cfu/day)	Percent Reduction
Chewelah WWTP	1.64	4.03E+9	1.64	4.03E+9	0
	1.00	2.46E+9	1.00	2.46E+9	0
	0.73	1.79E+9	0.73	1.79E+9	0
	0.43	1.06E+9	0.43	1.06E+9	0
Colville WWTP	1.86	9.15E+9	1.86	4.58E+9	50

The Discharge Monitoring Reports (DMRs) submitted from the cities of Chewelah and Colville show the effluents have been well below the fecal coliform permit limits during the year 2002 low flow period.

Mainstem Load Allocations

To bring the Colville River mainstem listed segments within acceptable levels of bacteria, the statistical rollback method (Ott, 1995) was used to determine percent load reductions needed to meet water quality standards. The rollback method has been successfully used by Ecology in other fecal coliform TMDL evaluations (Seiders *et al*., 2001; Joy, 2000; Pelletier and Seiders, 2000; Cusimano and Giglio, 1995).

Load allocations were developed as percent reductions within each segment of the river and the most restrictive criterion was used to set the recommended load allocations. The load allocation targets are closely related to the loading capacity for each sample site which is shown in Table 4. Nine of the ten mainstem sample sites require greater than a 50% fecal coliform load reduction to meet Class A water quality standards. The fecal coliform bacteria reduction percentages needed per mainstem segment, and the target geometric mean to meet the 10% criterion of the standard, are shown in Table 6.

Table 6. Fecal coliform TMDL load allocations for the 1998 listed segments of the Colville River. (303d listings in bold)

Waterbody	Sample site	Target geometric mean (cfu/100mL)	Target fecal coliform load allocation (cfu/day)	TMDL reduction required
Colville River	CR4	81	3.00E+10	89%
Colville River	CR6	78	4.00E+10	84%
Colville River	CR23	46	1.91E+11	70%
Colville River	CR21	59	2.20E+11	58%
Colville River	CR12	86	1.70E+11	57%
Colville River*	CR18	64	2.11E+11	56%
Colville River	CR11	98	1.08E+11	55%
Colville River	CR16	80	1.54E+11	54%
Colville River	CR20	98	1.36E+11	54%
Colville River*	CR24	90	3.24E+11	3%

*impaired segments but not listed

Tributary Load Allocations

All sampled river watershed tributaries and headwater streams require load reductions to meet Class A water quality standards for fecal coliform. The statistical rollback method was applied to each sample site to determine the percent fecal coliform load reductions needed to meet water quality standards. It is recommended that TMDL target load reductions from 4% to 95% are required in the tributaries and headwaters to meet water quality standards. The fecal coliform bacteria reduction percentages needed per tributary and headwater segment to meet Class A water quality standards and the target geometric mean to meet the 10% criterion of the water quality standards are shown in Table 7.

Table 7. Fecal coliform load allocations for the 1998 listed tributaries and headwaters in the Colville River watershed. (303d listings in bold)

Waterbody	Sample site	Target geometric mean (cfu/100mL)	Target fecal coliform load allocation (cfu/day)	TMDL reduction required
Haller Creek	HAL19	19	1.14E+10	95%
Sherwood Creek	SHER9	6	5.10E+08	95%
Blue Creek	BLU13	25	4.30E+09	94%
Stranger Creek	STRN15	100	5.70E+09	92%
Sheep Creek	SHC2	57	1.57E+10	85%
Waitts Lake Creek*	WLC6A	49	2.65E+09	83%
Stensgar Creek	STEN14	70	5.70E+09	80%
Deer Creek*	DEC3	33	7.35E+09	75%
Huckleberry Creek	HUC7	83	9.04E+09	60%
Jumpoff Joe Creek	JOJ5	99	4.90E+09	55%
Cottonwood Creek	COT8	81	1.29E+10	45%
Chewelah Creek	CHEW10	91	6.96E+10	41%
Mill Creek	MILL22	99	1.01E+11	25%
Little Pend Oreille River	LPOR17	80	6.94E+10	25%
Sheep Creek	SHC1	81	1.78E+10	4%

*impaired but not listed

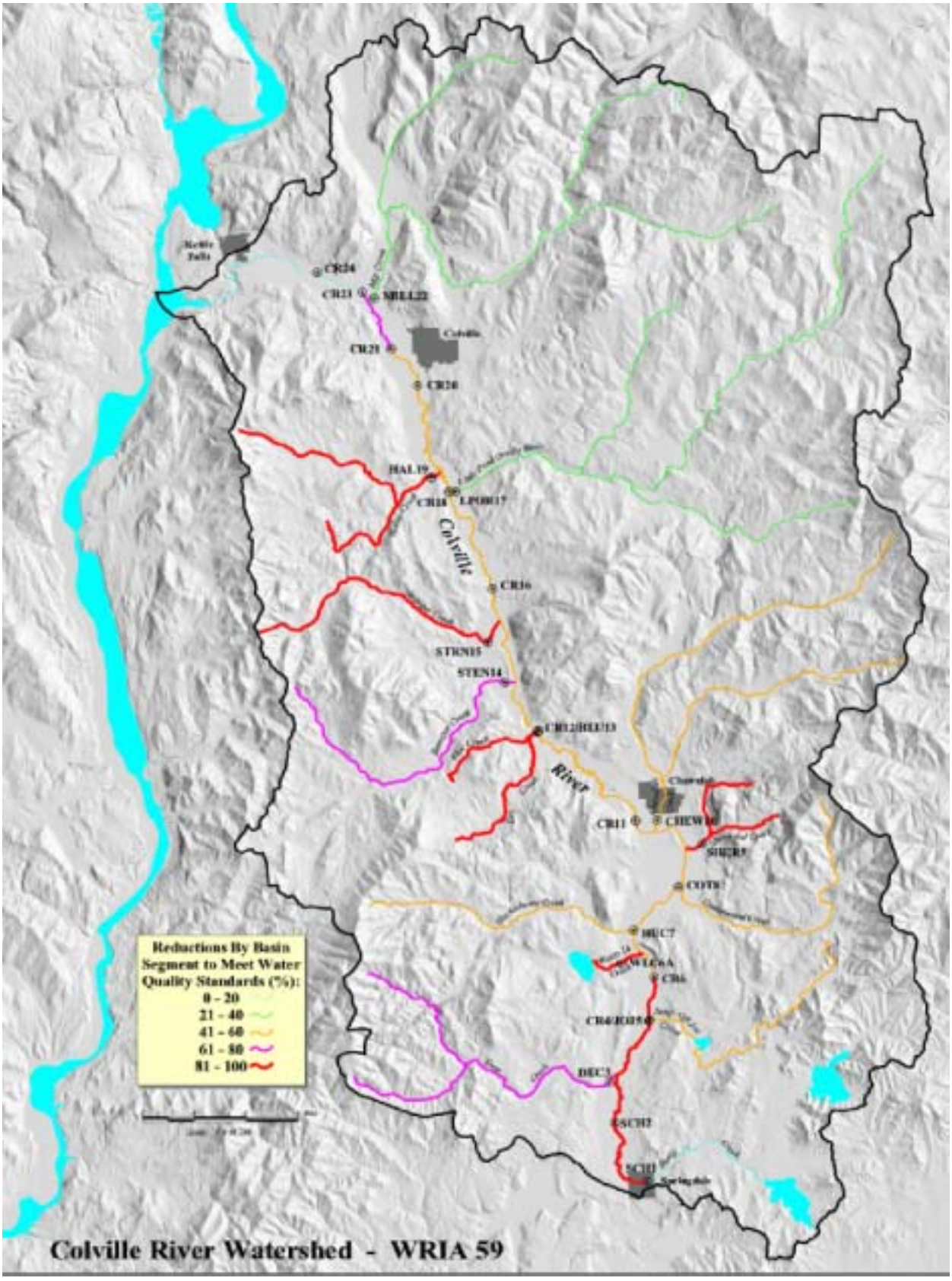

Figure 4. Map showing the Colville River watershed load allocations expressed as percent reduction by basin segment.

Seasonal Variation

Seasonal variations involve changes in stream flow as a result of hydrologic and climatological patterns. In the Colville River watershed, seasonally high flows occur during the warmer period of late winter and in early spring from snow melt and spring rain, while seasonally low flows typically occur during the warmer summer and early fall dry periods.

The precipitation range for the period 1917 to 2000 was 8.22 inches to 29.02 inches (WRCC, 2002). Precipitation averages 17.2 inches per year at Colville. About two-thirds of the total annual precipitation in the basin falls between October and March. The June through September critical condition period average precipitation is approximately 3.89 inches or approximately 20% of the total annual precipitation.

Fecal coliform bacteria data collected from the Colville River watershed show a definite pattern of seasonal variation with summertime excursions of the bacteria standards. The critical period for fecal coliform in the Colville River watershed is June through September, corresponding to lower flows and higher temperatures. The fecal coliform load allocations are based on the critical period.

Margin of Safety

The Clean Water Act requires that a margin of safety be identified to account for uncertainty when establishing a TMDL. The margin of safety can be explicit in the form of an allocation or implicit in the use of conservative assumptions in the analysis. Conservative assumptions inherent in the Colville River watershed TMDL are as follows:

- In the analysis for determining the reduction needed in bacteria loads to meet water quality standards, the most critical two or three month loading period was used. Any management activities implemented to abate fecal coliform loads would be protective throughout the year.

- Conservative assumptions such as using the 2nd level of the criteria can account for the unknown in allocation calculations.

- With the statistical rollback method, a 90th percentile is calculated that is more conservative than the Class A water quality criteria. The method uses the variability of the fecal coliform distribution at each site to generate the 90th percentiles.

- Target loads and loading calculations did not incorporate a die-off rate for bacteria.

- Discharge was 27% greater than the average period of record for the Kettle Falls gauging station. This may have generated higher than normal fecal coliform loads.

- In the event that target allocations are not met, adjusting existing control measures or implementing new controls in any given segment will adaptively manage TMDL implementation.

- The water quality-based NPDES permit limits will be more restrictive than current limits.

Summary Implementation Strategy

Introduction

In accordance with the Memorandum of Agreement (MOA) between the Washington Department of Ecology (Ecology) and the Environmental Protection Agency (EPA), a Summary Implementation Strategy (SIS) must be included in the Total Maximum Daily Load (TMDL) submittal report to the EPA for approval of the TMDL. The SIS is a general outline of the activities required to implement the TMDL and achieve water quality standards. Within one year of EPA's approval of the SIS, Ecology is required to develop a Detailed Implementation Plan (DIP). The DIP describes responsible parties, initiates and schedules specific cleanup activities, and Best Management Practices (BMPs) that will meet the TMDL targets and allow the waterbody to achieve water quality standards.

Overview

Nonpoint sources of fecal coliform bacteria in a rural setting such as the Colville River watershed may include livestock excrement from barnyards and rangelands and leaking septic systems. In addition, because of the general nature of coliform as an indicator of the presence of pathogens, wildlife and waterfowl may represent a significant source of coliform bacteria. Another potential nonpoint source of fecal coliform is the re-suspension of bacteria indicators and pathogens in sediment (EPA, 2001).

Fecal coliform bacteria levels above the water quality standards can be found along the entire length of the Colville River (Stevens County Conservation District, 1993). Increases in bacteria loading occurs during the summer months of June through September when the river flow is at its lowest and the water temperature is at its highest. These water quality impairments were documented 10 years ago by the conservation district; and Ecology's Ambient Monitoring Section has collected data at long-term stations on the Colville River near the communities of Kettle Falls and Blue Creek for a number of years. This monitoring has shown bacteria levels have exceeded water quality standards often during the dry season.

The Colville River and many of its tributaries are on the federal Clean Water Act's (CWA) Section 303(d) list of impaired waters for not supporting the recreational beneficial uses such as primary contact (swimming) and secondary contact (fishing). This is due to frequent violations of the fecal coliform criteria of the Washington State Surface Water Quality Standards (WAC 173-201A). The state is required by the CWA and the EPA's implementing regulations (40 CFR 130.7) to identify impaired waters not meeting state standards and submit this list for placement on the 303(d) list. In Washington, this list is prepared by Ecology.

Section 303(d) requires the state to develop TMDLs for surface waters on this list and establish water-quality based controls. The Colville River Watershed Bacteria Total Maximum Daily Load is a process to reduce the nonpoint sources of fecal coliform bacteria levels and achieve water quality standards in the Colville River watershed.

The Colville River and six tributaries were placed on the 1996 303(d) list for not supporting beneficial uses due to bacteria violations (Ecology, 1996). The 1998 303(d) list has nine Colville River segments and 15 tributary segments listed for bacteria violations (Ecology, 2000).

The study found an additional three Colville River and two tributary segments impaired but not listed.

A TMDL study, *Colville River Water Quality: Pollutant Loading Capacity and Recommendations for Total Maximum Daily Loads, 96-349* (Pelletier, 1997) was conducted to determine the capacity of the Colville River to assimilate pollutant loads and to recommend wasteload allocations for the Chewelah and Colville WWTPs. This study is bound separately as Ecology Publication Number 96-349. The web site link to this publication can be found in Appendix C, Technical Reports.

The Colville River bacteria TMDL study was conducted in 2000-2001, to define the bacteria densities and loads in the Colville River and its tributaries. The *Colville River Fecal Coliform Total Maximum Daily Load Study* 02-03-036 (Coots, 2002*)* can be obtained at the Washington Department of Ecology's (Ecology) Eastern Regional Office in Spokane, WA and is available for review at the Stevens County Conservation District office in Colville, WA. This study is bound separately as Ecology Publication Number 02-03-036. The web site link to this publication can be found in Appendix C, Technical Reports.

The TMDL study uses the theory of statistical rollback to set target geometric means that will be protective of the 90th percentile criterion. The 90th percentile criterion describes the 2nd level of the fecal coliform standard of, *not more than 10% of the samples used to calculate the geometric mean to exceed 200 cfu/100 mL*, for Class A waters. The study recommends fecal coliform load reductions of 3% to 89% in the Colville River mainstem, shown in Table 5, and load reductions of 4% to 95% in the tributaries, shown in Table 6. Figure 3 shows a map of the Colville River watershed with stream fecal coliform load reductions indicated.

The strategy to implement the Colville River Bacteria TMDL is based upon many existing efforts underway to protect the water quality criteria by reducing and/or eliminating fecal coliform in the Colville River. The implementation plan will comply with the federal mandate of the Clean Water Act (CWA), state laws to control point and non-point source pollution, and the 1997 MOA between the EPA and Ecology.

The TMDL objective is to attain the mainstem Colville River and tributary 60% TMDL target fecal coliform load reductions in five years or less. Attainment of the 60% TMDL target load reductions will allow seven of the 10 water impaired mainstem segments and seven of the 15 water impaired tributary segments to meet water quality standards. The ultimate objective is to attain the entire TMDL target bacteria load reductions and meet water quality standards in no more than ten years or by 2012.

Implementation Plan Development and Activities

The pollution reduction requirements for point source pollution is managed and enforced by Ecology under the permitting process through the CWAs National Pollution Discharge Elimination System (NPDES). Point source wasteload allocations (WLAs) will be addressed through revision or modification of the NPDES permit. The pollution reduction requirements for nonpoint source pollution will be achieved by Ecology working with other agencies, local governments, landowners, and citizens in the watershed. Nonpoint source load allocations (LAs) will be addressed through implementation and management of Best Management Practices (BMPs). BMPs are the most effective and practicable method of controlling nonpoint source pollution at levels within the water quality standards. Effectiveness monitoring is essential for determining if the control measures are successful with improving water quality and progressing towards meeting the TMDL targets. If needed, this monitoring could also guide future control measures and TMDL revisions.

The following lists key milestones in the overall Colville River Bacteria TMDL and implementation effort:

September 1993: The Stevens County Conservation District completed the *Water Quality Summary for Colville River Watershed Ranking and Planning,* (SCCD, 1993).
June 1994: The Colville River was proposed as a high priority for TMDL evaluation by Ecology's Eastern Regional Office in the *Watershed Approach to Water Quality Management, Needs Assessment for the Upper Columbia Watershed,* WQP-94-98A (Cornett, 1994).
May 1996: The Colville River and six tributaries were placed on the 1996 303(d) list of impaired waters for not supporting beneficial uses due to fecal coliform bacteria violations which is presented in the *1996 List of Waters Requiring Establishment of Total Maximum Daily Loads (TMDLs),* (Ecology 1996).
January 1997: In response to the *Needs Assessment for the Upper Columbia Watershed,* (Cornett, 1994) Ecology conducted a study to determine the capacity of the Colville River to assimilate pollutant loads and recommend wasteload allocations and TMDL evaluations in the *Colville River Water Quality: Pollutant Loading Capacity and Recommendations for Total Daily Maximum Loads,* 96-349 (Pelletier, 1997).
July 1997: In the *Watershed Approach to Water Quality Management, Water Quality Plan of Action for the Upper Columbia Watershed,* WQ-97-19 (Knight and Parodi, 1997), Ecology's Eastern Regional Office ranked the Colville River as the highest priority for a TMDL evaluation for the entire Upper Columbia Water Quality Management Area.
January 2000: Nine segments of the Colville River and 15 tributary segments were placed on the 1998 303(d) list of impaired waters for bacteria violations, *1998 List of Waters Requiring Establishment of Total Maximum Daily Loads (TMDLs),* (Ecology, 2000).
March 2000--March 2001: Fecal coliform bacteria surveys were conducted every two weeks during a year long Colville River bacteria study. The monitoring network for the bacteria surveys was made up of 10 river mainstem sites and 15 tributary sites. Sampling locations were the same as those used in studies by the conservation district (1992) and Pelletier (1997).

July and September 2000: During the bacteria study other conventional and biological water parameters were included in Ecology's water quality monitoring synoptic surveys. The results from the two surveys were compared with earlier studies for possible future expansion of the study project.

January 2002: The upgraded Chewelah WWTP's operation.

March--June 2002: Public meetings were held with numerous watershed groups; press releases issued, presentations made, and media interviews given. A TMDL Citizen Advisory Group (advisory group) was established with several interested parties including: landowners, Stevens County Cattleman's Association, Spokane Tribe, Northeast Tri-County Health, U. S. Forest Service, U. S. Fish & Wildlife, Public Utility District #1 of Stevens County, and others.
July 2002: Ecology published the *Colville River Fecal Coliform Total Maximum Daily Load Study*, 02-03-036, (Coots 2002). This study established bacteria load reductions from nonpoint sources to support a TMDL as required under Section 303(d) of the CWA.
This study also found three additional Colville River segments and two tributary segments not meeting bacteria water quality standards.
July--September 2002: Four advisory group meetings were held to develop the Summary Implementation Strategy for the Colville River Bacteria TMDL submittal report to EPA.
November and December 2002: A November 21, 2002 public meeting was held to begin the 45-day public comment period on the TMDL draft submittal report; press releases issued, presentations made, media interviews given, and display ads published. At the November 21, 2002 meeting Ecology stated they would accept and record public comments that would receive responses. Since the meeting attendees asked if Ecology would hold another meeting to accept and record additional public comments, a December 19, 2002 public meeting was held. The public was informed that all of the recorded comments would be responded to and placed in the TMDL submittal report as an appendix.
March 2003: Final TMDL report, *Colville River Watershed Bacteria Total Maximum Daily Load*, (Murray and Coots, 2003) submitted to the EPA.
April 2003: EPA initiates review of the TMDL submittal report.

The Wastewater Treatment Plants (WWTPs) for the cities of Chewelah and Colville were not evaluated in the bacteria TMDL study (Coots, 2002). They were evaluated however, in Ecology's *Colville River Water Quality*: *Pollutant Loading Capacity and Recommendations for Total Maximum Daily Loads*, 96-349 (Pelletier, 1997) study that determined the capacity of the Colville River to assimilate pollutant loads and recommended dissolved oxygen and ammonia wasteload allocations (WLAs) for the two WWTPs. The study recommended water quality-based fecal coliform discharge limits to protect the river water quality. The study also recommended a watershed fecal coliform TMDL evaluation be done.

The city of Chewelah WWTP upgrade is completed and began operation in January 2002. And upon the Chewelah treatment plant upgrade, the discharge permit limits were modified to provide protection to the river that the WWTP upgrade allows. The water quality-based effluent fecal coliform limitation during the summer must meet the 90^{th} percentile, or the 2^{nd} level of fecal coliform criterion for Class A waters at the discharge (*geometric mean of 100 cfu/100 mL and not have more than 10% of all samples obtained for calculating the geometric mean value exceeding 200 cfu/100 mL*). Focusing protection on the 2^{nd} level of the fecal coliform criteria is important because this is the standard most often violated. Furthermore, conservative assumptions such as using the 2^{nd} level of the criteria can account for the unknown in allocation calculations. During the winter, the technology-based effluent limitation for fecal coliform is used (*geometric mean of 200 cfu/100 mL and not have more than 10% of all samples obtained for calculating the geometric mean value exceeding 400 cfu/100mL*). The June through October effluent limitations state the average monthly fecal coliform shall not exceed 100 cfu/100 mL, and the average weekly fecal coliform shall not exceed 200 cfu/100 mL. The monitoring

requirements set forth a minimum sampling frequency for fecal coliform at 3/week and sampling shall not be performed on consecutive days. The monitoring results are submitted to Ecology on a monthly basis and will be reviewed annually to assure compliance with the revised permit final effluent limitations.

The city of Colville is currently in the process of upgrading its WWTP, which is scheduled to be complete and operational no later than October 2006. Upon the Colville treatment plant upgrade, the NPDES permit will be revised with new final effluent limitations that implement the WLAs recommended in the 1997 Pelletier study. The revised Colville treatment plant NPDES permit will incorporate water-quality based effluent limitations for fecal coliform that are more restrictive during the June through October period due to the decreased assimilative capacity of the river. Presently, the existing lagoon system is not capable of meeting the revised effluent limitations. In the interim, the permit effluent limitations for fecal coliform are: *200 cfu/100 mL monthly average and 400 cfu/100 mL weekly average*, which is below the technology-based limits.

In reducing fecal coliform nonpoint source pollution in the watershed, Ecology will use education, technical and financial assistance, and water quality monitoring to improve the Class A waters in the watershed. Ecology will work cooperatively with the public land managing agencies to improve the quality of the watershed headwaters which are Class AA waters.

The following is a description of the key agencies and other groups that have influence, regulatory authority, information, resources, or other involvement that will be included in the coordinated effort to meet the TMDL targets of reducing nonpoint source fecal coliform loading to the Colville River.

Ecology

Ecology has been given authority under the federal CWA by the EPA to establish water quality standards, administer the NPDES wastewater permitting program, and enforce water quality regulations. Ecology has broad authority to enforce to protect water quality under the Water Pollution Control Act, Chapter 90.48 Revised Code of Washington (RCW). Ecology responds to complaints, conducts inspections, and issues NPDES permits in the Colville River watershed as part of its responsibilities under state and federal laws and regulations.

Ecology administers an annual grant and loan program specifically aimed at improving the water quality in Washington State. The fiscal year 2003, estimates of $120 million in loan money, and nearly $15 million in grant funds will be available to local governments and other entities.

The legislature passed the Dairy Nutrient Management Act in 1998. The act requires all dairy farms to have an approved and certified Dairy Nutrient Management Plan (DNMP).

The DNMP addresses the production, collection, storage, and application of manure to prevent the contamination of surface and groundwater. Ecology is responsible for full compliance of the Dairy Nutrient Management Act by December 2003.

Stevens County Conservation District

The Stevens County Conservation District (District) has been involved in the Colville River watershed assessment and planning since 1991. These efforts are directed toward assisting landowners on a voluntary basis with their use of natural resources. The District's efforts are grant funded and are site specific. Several of the currently funded projects will have direct influence on reducing fecal coliform loading to the Colville River and its tributaries. The District is able to support Ecology's Colville River Bacteria TMDL with the current grant funding available to them through 2005. After 2005, the District's ability will be limited without grant funding available to them.

The legislature passed the Dairy Nutrient Management Act in 1998. The act requires all dairy farms to have an approved and certified Dairy Nutrient Management Plan (DNMP). The DNMP addresses the production, collection, storage, and application of manure to prevent the contamination of surface and groundwater. The District approved all DNMPs in the Colville River watershed prior to the July 1, 2002 deadline. The District is currently accompanying Ecology's Dairy Inspector on a series of "friendly" inspections to ensure the DNMPs are and/or will be fully implemented. This will enable the District to certify the Plans prior to the December 31, 2003 time limit. The District's technical assistance to dairy producers was made possible by grant funding from the Washington State Conservation Commission which expires in 2003.

A current Ecology funded project, *Restoring Colville River Watershed Health*, will focus on watershed areas most in need of restoration to improve water quality by reducing fecal coliform bacteria loading to the Colville River. Restoration work may include the planting of woody vegetation, stabilization of river banks using bioengineering and other techniques acceptable by Ecology, and the restriction of livestock access to riparian areas until plantings are well established. The District has approached farm owners and operators that are eligible for assistance with farm planning and BMP implementations. The District will provide 75% of the eligible cost for a project, while the landowner will be responsible for the remaining 25% cost of the project. The main focus for these projects will be the Colville River mainstem. Voluntary source control through education and technical assistance is the preferred method for pollution reduction. All projects under this grant must be completed by December 2003.

The District plans to support Ecology's Colville River Bacteria TMDL by giving the highest cost sharing priority to projects that will reduce bacteria loading to the river from the adjacent land uses. These projects include riparian vegetation, fencing, and livestock off-stream watering.

The District also has an Ecology funded grant exclusively for the Mill Creek watershed. Mill Creek is the second largest tributary to the Colville River and contributes approximately 20% of the total flow. The project provides for water quality monitoring as well as technical assistance and cost-sharing opportunities for watershed landowners on a voluntary basis. Proposed projects must demonstrate water quality improvements by preventing or controlling nonpoint sources of pollution, including bacteria. All projects under this grant must be completed by May 2005.

Colville River Watershed Planning Unit

The Colville River Watershed, Water Resource Inventory Area (WRIA) 59, Planning Unit team was established under Chapter 90.82 RCW and is in its third year of the planning process. In addition to the required water quantity element, of the watershed planning process, the team chose to address the water quality and instream flow elements. The planning unit is developing a long-range sustainable watershed management plan to protect and improve the watershed's natural resources. The water quality element includes an assessment of historical water quality monitoring and improvement projects in the watershed. The planning unit also will be reviewing Ecology's developing bacteria TMDL process and continue to provide representation on the TMDL citizen advisory group. Planning Unit members represent various governments and interest groups in the community that can directly influence and participate in watershed improving implementation activities. The watershed planning grant will expire October 2004; therefore all projects under this grant must be completed prior to this date.

Northeast Tri-County Health District

The Northeast Tri-County Health District (NETCHD), while complying with the Washington State Department of Health (DOH) regulations, currently distributes educational materials with every on-site septic system (OSS) permit. The NETCHD will take appropriate action to ensure proper treatment and disposal of wastewater generated from those domestic sources when human contributions from a failing OSS are identified. Inspections of OSS operation and maintenance to ensure proper function will be completed by the Health District as necessary.

Natural Resources Conservation Service

The Natural Resource Conservation Service (NRCS), a federal service agency within the U.S. Department of Agriculture, has developed design standards and specifications used in the development of farm plans. The NRCS has a long history of developing and revising BMPs for the protection of surface and ground waters from activities related to agricultural practices. The Environmental Quality Incentives Program (EQIP) through the NRCS offers financial, educational, and technical assistance for the implementation of water quality BMPs. The NRCS administers cost share programs such as EQIP, to provide funding for farm improvements and farm plan implementation. In order for the proposed improvements to be eligible for cost-share funding, they must meet or exceed the standards and specifications developed by the NRCS.

Spokane Indian Tribe

The Spokane Tribe will conduct water quality monitoring of about ½ mile of the Colville River, which is upstream and downstream of their property near the river. The Tribe will also conduct water quality monitoring of Franswa Creek, an intermittent tributary to the river which flows through Tribal property. The initial monitoring will be concluded by December 2004, and BMPs will be implemented if monitoring results show the need to reduce bacteria loading from Tribal land to the Colville River.

U.S. Fish & Wildlife

The Little Pend Oreille National Wildlife Refuge (Refuge) was established in 1939 as a refuge and breeding ground for migratory birds and other wildlife (USFW, 2002). The Little Pend Oreille NWR is approximately 63 square miles in area, or 6.2% of the total Colville River watershed. The Little Pend Oreille River flows through the northern portion of the Refuge, the entire Bear Creek sub-watershed, and most of Olson and Cedar Creek sub-watersheds, are within the Refuge boundary.

Quantitative information is lacking for most wildlife communities, however there have been 196 bird species recorded at the Refuge. Some larger mammals inhabiting the Refuge include white-tailed deer, mule deer, elk, moose, black bear, cougar, coyote, and bobcat. Lakes and marshes provide spring stopover areas for migratory waterfowl and breeding populations of Canada goose, mallard, wood duck, Barrow's and common goldeneye, and common and hooded merganser (USFW, 2002).
The Little Pend Oreille River is the largest tributary to the Colville River and contributes approximately 22% of the total flow. The U.S. Fish & Wildlife (USFW) will conduct water quality monitoring of the Little Pend Oreille River and the creeks to determine the bacteria loading from the Refuge land. The initial water quality monitoring will be concluded by December 2004, and BMPs will be implemented if results show the need to reduce bacteria loading to the Colville River.

Colville National Forest (USFS)

The Colville National Forest is approximately 170 square miles in area or 17% of the total Colville River watershed. Several of the Colville River tributary head waters are located on Forest Service land. The Forest Service has been monitoring tributaries of the Colville River on Forest land since 1976 to determine water quality compliance. When water quality impairments are recognized, appropriate BMPs are implemented and monitoring for their effectiveness is conducted.

A Memorandum of Agreement (MOA) between Ecology and Forest Service Region 6 for meeting responsibilities under federal and state water quality laws was enacted in 2001. The MOA recognizes the Forest Service as the Designated Management Agency for meeting Clean Water Act (CWA) requirements on National Forest System (NFS) lands. The Forest Service will ensure that all waters on NFS lands meet or exceed water quality laws and regulations, and that activities on those lands are consistent with the level of protection of the Washington Administrative Code (WAC) relevant to state and federal water quality requirements.

Timely implementation of BMPs will prevent duplication of effort, and provide coordination to meet CWA requirements and the goals of both agencies. BMPs are recognized as the primary mechanism to control nonpoint source pollution on NFS lands, and are prepared by the Forest Service as part of Forest Land Management Plans (LMPs) and project level plans. BMPs are also recognized as the primary mechanism to control nonpoint source pollution from activities such as recreation, mining, fishing, wildlife and watershed restoration, livestock grazing, fire suppression, and other land management activities.

Forest Service and Ecology will seek opportunities to coordinate and collaborate on management activities involving monitoring, water quality planning, and restoration with recognition that other agencies and tribes have a high level of interest and involvement in these efforts. The agencies will conduct joint reviews of project implementation areas with field staff to determine if BMPS are being implemented and if management efforts [e.g., Water Quality Restoration Plans (WQRPs), BMPs, etc.] are effective in protecting water quality. Ecology will take into consideration the objectives of other agencies and groups with whom the Forest Service must coordinate its efforts.

The Forest Service will continue water quality monitoring to determine bacteria loading from NFS lands within the Colville River watershed. BMPs will be implemented if monitoring results show the need to reduce bacteria loading to the various tributaries. For example, at certain locations the Forest Service has implemented BMPs such as riparian fencing and stabilized stream crossings in response to elevated bacteria levels at the Forest boundary. Ecology and the Forest Service will continually evaluate the effectiveness of their efforts and will share information from studies about forest practices so as to refine and adapt BMPs to obtain the best results for water quality and beneficial uses.

The Forest Service and Ecology recognize that financial appropriations over which the agencies do not have total control are necessary to support these management commitments. However, nothing in this MOA shall be construed as an agreement by either agency, that lack of appropriations or funding, excuses the other agency from compliance with any requirements of state or federal law.

Public Utility District #1 of Stevens County

The Public Utility District #1 of Stevens County (PUD) has constructed six wastewater collection and treatment systems throughout the Colville River watershed over the last fifteen years. These systems serve most of the unincorporated communities, which are older communities that have minimal and antiquated on-site septic systems (OSSs). An open pipe discharging sewage directly into the Colville River, from approximately four homes, was eliminated when the Valley system was installed. The water quality of Deer Lake and Waitts Lake has increased significantly since their public sewer systems were installed. These systems have replaced approximately 1,200 OSSs, many of which were failing, thus decreasing the human fecal coliform contributions and other contaminants to the surface waters.

Ecology's fecal coliform TMDL study showed that Blue Creek, a tributary to the Colville River, had the highest fecal coliform density in the watershed. Water quality monitoring, upstream and downstream of the town of Blue Creek, indicated that leaking OSSs as the major source of fecal coliform loading in the creek. PUD connected Blue Creek to the Addy wastewater system in the summer of 2002. It is anticipated that effectiveness monitoring will show a significant decrease in fecal coliform loading to the Colville River, since the possibility of leaking on-site septic systems should no longer be the case.

Approaches to Meet Load Allocations

The nonpoint source bacteria TMDL implementations are to occur in stages, with the first stage being additional water quality monitoring, to determine where the bacteria source(s) are originating. This will fill the existing fecal coliform data gaps, where the greatest reductions are needed to meet water quality standards, and decrease the geographical areas of the bacteria contributions. The benefits of staged implementation are: 1) as stream monitoring continues to occur, it allows for identification of the source(s); 2) it provides a mechanism for developing public support; 3) it helps to ensure the most cost-effective practices are implemented at the site-specific contributing areas; 4) it allows for the evaluation of the capability in achieving water quality standards, and 5) it allows locally-driven non-regulatory programs and projects a chance to be successful.

Since thirteen of the fifteen listed tributary impaired segments are directly above their confluence with the Colville River, additional evaluation and monitoring of these sub-watersheds will be required. It will be important to identify the bacteria sources to develop cost-effective and perhaps site-specific bacteria reducing control measures. The headwaters of many of the tributaries are on Colville National Forest and Little Pend Oreille NWR land. All surface waters lying within public lands (e.g., national parks, national forests, wilderness areas) are classified as Class AA (extraordinary). These public lands, where a multitude of wildlife and waterfowl exist, comprise nearly 25% of the total Colville River watershed land area. During the dry, low flow, warm water temperature conditions when water quality is at its poorest, only wastes directly deposited into the streams are contributing pollution to the streams, of which wildlife as well as livestock and leaking septic systems are contributors.

In the Colville River watershed, the headwater streams and the first four miles of the mainstem have three to five mile data gaps where very high levels of fecal coliform bacteria occur. All of the watershed water quality study results the past ten years show that the bacteria levels are greatest in the river upper basin, and the levels continually decrease as it flows downstream. These data gaps allow the bacteria pollution source(s) to remain unknown. The main objective of filling these data gaps is to decrease the geographical areas where high bacteria levels occur, thus leading to the identification of the actual bacteria source(s). Due to the high levels of bacteria pollution in the upper basin and the fact that the bacteria levels continually decrease as the river flows downstream, it is imperative the bacteria source(s) be identified. It will not be possible or economically feasible to implement bacteria reducing control measures without identifying the bacteria source(s). This monitoring is a vital first step in the success of this developing TMDL

Bacterial Source Tracking (BST) methods may be required to determine the actual bacteria sources and to facilitate implementing the appropriate BMPs. However, fecal coliform water quality monitoring will be much more economical, and it is believed that with the local landowners, Ecology, and the Forest Service working together, most and perhaps all of the bacteria sources will be located and BMPs implemented accordingly.

Summary of Public Involvement

Public involvement is vital in any TMDL, and even of more importance in the Colville River watershed bacteria TMDL, since it is the first nonpoint TMDL to be developed in Ecology's eastern region. Nonpoint TMDLs are successful only when the watershed landowners and other residents are involved, since they are the closest to and most knowledgeable of the watershed resources.

Public involvement has taken place throughout the developing TMDL process. On March 7, 2002, the TMDL lead met with the WRIA 59 Watershed Planning Unit team to briefly discuss the developing bacteria TMDL, announce the desire to have a public meeting later in the month, and to invite all planning unit members. The members of the planning unit decided a meeting date of March 28, 2002. The watershed residents were asked and encouraged to be involved in the TMDL, since their involvement was essential for any watershed water quality improvements. The team was informed that a TMDL advisory group would be formed to assist Ecology's TMDL lead in developing a bacteria reducing implementation strategy.

The TMDL project lead scheduled and presented TMDL information at numerous meetings to interested parties including: Stevens County Cattleman's Association, US Forest Service, US Fish & Wildlife, Spokane Tribe, Northeast Tri-County Health District, and Stevens County Conservation District board of supervisors. The topics of discussion were the developing Colville River Watershed Bacteria TMDL, the Fecal Coliform Total Maximum Daily Load Study, the Summary Implementation Strategy (SIS) development, and how the TMDL Citizen Advisory Group would assist Ecology with the development and review of the SIS. Public participation materials are presented in Appendix A.

In preparation for the completion of the technical study and beginning the development of the SIS, a public meeting was held on March 28, 2002. This meeting was publicized with a press release on March 15, 2002 and an interview on the Colville, WA radio station KCVL. Twenty-two people signed in at the meeting, however several others were present. The participants received Ecology Focus Sheets: *Fecal Coliform Bacteria and Washington's water quality standards*, Publication *# 02-10-010* and *Water Quality in the Colville River Watershed*, Publication # 02-10-013. A TMDL introduction presentation was shown to assist the audience in understanding what TMDLs are and why they are done.

A Colville River Watershed Water Cleanup Plan website was introduced in early June 2002. The website includes information concerning the nonpoint source fecal coliform TMDL and the point source dissolved oxygen TMDL. Focus sheets and technical reports related to both TMDLs are linked to the website.

Two meetings were held June 26 and 27, 2002 in Colville and Chewelah, WA to present and review the Colville River Fecal Coliform TMDL Study. These meetings were publicized with a press release on June 13, 2002. The audience viewed a presentation concerning the technical study. At these meetings, the public was asked to list the interest groups they felt should be represented on an advisory group to develop a strategy for reducing fecal coliform bacteria entering the Colville River.

As the interest groups suggested at the June meetings, other interested parties contacted during early outreach were invited to be members of Colville River TMDL citizen advisory group. Four advisory group meetings were held in July, August, and September. There were between 10-18 people in attendance to assist in developing the implementation strategies to be included in the SIS. Please see Appendix A, Public Participation Materials, for more information concerning public involvement associated with this TMDL.

The public comment period for both the Colville River TMDL submittal reports was from November 21, 2002 through January 4, 2003. A public comment period Kick-off meeting was held on November 21, 2002. At this meeting, the attendees requested Ecology to hold a second meeting, which was held December 19, 2002. Ecology responded to all comments recorded at these public meetings, and to all written public comments received during the 45-day comment period. Comments regarding factual inaccuracies, improved wording, or that clarify policy positions by other government agencies have been directly incorporated into the text of the submittal report. All other comments are addressed in the Responses to Comments, included as Appendix B of this submittal. In order to avoid redundant and/or repeated responses to similar or related comments, some comments may refer back to a previous response.

Reasonable Assurance

Improved water quality will be achieved through the combined efforts of all interested parties in the watershed. In support of this TMDL, Ecology will work cooperatively with all interested parties in the watershed to determine the bacteria source(s), promote the implementation activities needed to reduce the bacteria levels, and meet the TMDL targets. In addition, Ecology will utilize its existing resources and authorities under RCW 90.48, which prohibits all discharges to water and openly declares that it is the policy of the state to require the use of all known, available, and reasonable means to prevent and control water pollution. For the WWTPs, Ecology's permit manager will monitor the effluent through the required monthly submittal of the Discharge Monitoring Reports (DMRs). In accordance with the MOA between Ecology and EPA, Ecology is obligated to implement the approved TMDL

Ecology and the Forest Service will be working together in 2003 to increase fecal coliform monitoring in the river and tributary headwaters on forest land, and the river headwaters on public land. This will be the first step in identifying where the fecal coliform bacteria is originating. This will be essential in determining what initial BMPs will be implemented.

All Dairy Nutrient Management Plans (DNMPs) in the watershed have been approved, thus indicating that dairies should not be contributing fecal coliform to surface waters in the watershed. Prior to December 31, 2003, all of the implemented DNMPs should be certified.

Public Utility District #1 of Stevens County has constructed six wastewater collection and treatment systems in the watershed. These systems have replaced approximately 1,200 OSSs, many of which were failing, thus considerably decreasing the human fecal coliform contributions to the surface waters. In 2002, PUD's Addy/Blue Creek wastewater collection and treatment system became operational, and it is believed bacteria loading to the Colville River from the Blue Creek tributary, the highest bacteria density waterbody in the watershed, will be significantly decreased.

Adaptive Management

An adaptive management strategy will be utilized in the TMDL after water quality monitoring identifies where the bacteria source(s) originate. This will provide vital information for site - specific bacteria-reducing implementations and meet bacteria water quality standards. As previously discussed, bacteria water quality monitoring will be necessary in many of the sub-watersheds, since the tributaries are known only to be impaired directly above their confluence with the Colville River.

Where previously unidentified fecal coliform sources are discovered, they will be corrected through the appropriate control measures. Where planned implementation activities are not producing expected or required results, the source of the problem will be identified. If the problem has an apparent cause, it will be remedied through the appropriate bacteria reducing BMP implementations.

If the problem does not have an apparent cause (e.g., everyone is implementing required BMPs) and all potential human caused sources have been addressed, then perhaps Bacterial Source Tracking (BST) methods will be used or bacteria water quality criteria modifications may be required.

Monitoring Strategy

EPA (1991) calls for a monitoring plan for TMDLs where implementation will be phased over time. The monitoring is conducted to provide assurance that the control measures will meet the TMDL targets and achieve water quality standards. Long-term monitoring will be important to ensure fulfillment of the Colville River Bacteria TMDL.

Ecology is the lead for monitoring the implementation activities and will coordinate with the appropriate watershed entities to accomplish these efforts.

A long-term monitoring program is needed for follow-up evaluations using the established monitoring stations developed and sampled historically and for the TMDL study by the Stevens County Conservation District (District) and Ecology. Because of the land ownership along the river, sampling access points are limited. The monitoring program should focus sampling efforts during the dry season, from May through October. In the Colville River watershed, the dry season is the period most likely to exceed water quality standards. Due to the frozen conditions that last much of the winter, only limited wet weather sampling should be conducted, in order to save resources for dry season sampling. The District should be supported with grants to continue the monitoring program on a weekly to every-other-week schedule. Particular attention should be given to areas of known agricultural or residential land, such as the mainstem river corridor, where the land use practices are believed to be contributing bacteria loading to the river.

When ambient water quality monitoring shows that adequate progress toward the bacteria targets is not occurring, compliance water quality monitoring will occur. Compliance water quality monitoring will be coordinated to identify the specific source(s) of fecal coliform loading. Sampling over time will be adjusted to locate the source by narrowing the geographic area where contamination is occurring

Potential Funding Sources

Ecology provides potential funding for TMDL implementation projects through the Centennial Clean Water Fund, State Revolving Loan Fund Program, and the Federal Section 319 Grant program. All three of these programs have the same annual application cycle that usually occurs in January and February. Non-government organizations can apply to be funded by a 319 grant to provide additional assistance. Ecology will work with public entities to prepare appropriate scopes of work, to implement this TMDL, and to assist with applying for grant opportunities as they arise.

The Environmental Quality Incentives Program (EQIP) is a federal cost-share program through the NRCS that is available to all farmers and ranchers for BMP implementations that help minimize nonpoint source water pollution. The NRCS administers cost-share programs to provide funding for farm improvements and farm plan implementation.

The state has provided additional cost-share assistance through the Washington Conservation Commission for commercial dairies that are required by the Dairy Nutrient Management Act to develop and implement dairy farm plans.

TMDL related monitoring and assessment projects can be funded through Ecology's Environmental Assessment Program (EAP). Ecology personnel at the regional offices develop the annual TMDL project proposals, which are evaluated in February.

Currently, two Centennial Clean Water Fund grants to the Stevens County Conservation District are oriented towards addressing fecal coliform water pollution issues by helping fund farm plans and stream riparian restoration projects. In addition, local sources of funding will be investigated and encouraged.

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Appendix A

Public Participation Materials

Meeting Notice

More comments sought on Colville River cleanup plans

December 4, 2002

02-014

SPOKANE--In response to a request received at the Nov. 21, 2002, public meeting on the Colville River water-cleanup plans (sometimes called total maximum daily loads, or TMDLs), the Department of Ecology (Ecology) will hold another meeting on **Dec. 19** to take additional comments.

The meeting will take place from 6:30 to 8:30 p.m. on Thursday, Dec. 19, at the Colville Community College, 985 S. Elm St., Colville, in the Dominion Room. Please park in the east parking lot and use the east entrance.

Participants will be able to submit comments and questions on the water cleanup plans for fecal coliform bacteria and dissolved oxygen in the Colville River. The comments received at the meeting will be addressed and included in the final "submittal reports" that will go to the U.S. Environmental Protection Agency in January 2003.

Ecology will respond to questions and comments in writing to those who have signed in at the public meetings.

For more information on the Colville River TMDLs please contact Dennis Murray at 509-329-3493 or via e-mail at demu461@ecy.wa.gov

For copies of the water cleanup plan reports or more information on the meeting, please contact Dennis Murray.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

News Release

FOR IMMEDIATE RELEASE – Nov. 6, 2002 **02-203**

Colville River water cleanup report ready for public review

SPOKANE -- The state Department of Ecology (Ecology) is getting ready to submit a report to the U.S. Environmental Protection Agency (EPA) that describes the pollution problems in the Colville River watershed and identifies what people can do about them.

Ecology will discuss the report with residents at a public meeting from 7 to 9 p.m. on Thursday, Nov. 21, at the Stevens County Conservation District, 232 Williams Lake Rd., in Colville.

The Nov. 21 meeting kicks off a 45-day public-comment period on the report before it goes to EPA. Comments with Ecology's responses will be included in the final report.

At the meeting, water quality experts will explain the technical portion of the report that evaluates the bacteria levels in the Colville River watershed. They also will review the summary implementation strategies, which describes the actions that people in the watershed will need to take to reduce the amount of fecal coliform bacteria entering the Colville River and its tributaries.

The technical report and the implementation strategies are part of a larger water-quality cleanup plan, known as a "total maximum daily load" (TMDL) in the federal Clean Water Act. They will be submitted to the EPA in January after the public comment period.

Sources of fecal coliform pollution in the Colville River watershed include humans (leaking septic systems), domestic animals (cattle, horses, and pets), birds and wild animals. Stormwater runoff in towns and cities may also contain high amounts of fecal coliform bacteria.

Fecal coliform bacteria are microscopic organisms that live in the intestines and waste material of warm-blooded animals. Although not necessarily agents of disease, fecal coliform bacteria can be an indicator of disease-carrying organisms.

Another cleanup plan is being submitted to address ammonia, chlorine and dissolved-oxygen problems in the river. The sources of these pollutants are primarily wastewater treatments plants, and work is already under way to resolve the problems.

All comments must be submitted in writing by Jan. 4, 2003, to be included. Comments can be addressed to Dennis Murray, 4601 N. Monroe St., Spokane, Wash., 99205, or via e-mail at demu461@ecy.wa.gov.

Department of Ecology seeks comments on

Two Draft Water Cleanup Plans for the Colville River Watershed

The state Department of Ecology has drafted two water cleanup plans for the Colville River Watershed. One plan recommends actions to reduce fecal coliform entering the Colville River and its tributaries to meet state water quality standards and protect the streams for recreation. The second cleanup plan addresses ammonia, chlorine and dissolved-oxygen problems in the river. The sources of these pollutants are primarily wastewater treatments plants, and work is already under way to resolve the problems.

The water clean up plans will be submitted to the Environmental Protection Agency (EPA) in January 2003 for their approval.

We welcome your comments and participation at our meeting on November 21st, and appreciate your interest in improving water quality in the Colville River watershed.

Public comment period Nov 21, 2002 to January 4, 2003

Public meeting

November 21, 2002 from 7-9 p.m. at Stevens County Conservation District, 232 Williams Lake Road, Colville, WA

You can review the Water Cleanup Plans at:

- **http://www.ecy.wa.gov/programs/wq/tmdl/ watershed/colville/index.html**
- **Stevens County Conservation District (see address above)**
- **Call 509-456-5011 for a copy**

Please send comments by January 4, 2002, to Dennis Murray, Dept. of Ecology, 4601 N. Monroe St, Spokane, WA 99205 or email demu461@ecy.wa.gov

All comments must be submitted in writing to be documented in the submittal report to EPA and answered in the Response to Comments.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

News Release

FOR IMMEDIATE RELEASE – June 13, 2002 **02-108**

Colville River citizens' advisory group to form

SPOKANE—Residents of the Colville River watershed have two opportunities in late June to learn about a study of the Colville River's fecal-coliform bacteria problem and become involved in the solution.

The state Department of Ecology is hosting a public meeting from 7 to 9 p.m. on Wednesday, June 26, at the Stevens County Conservation District, 232 Williams Lake Rd., in Colville. A second meeting, for residents south of Colville, is planned for 7 to 9 p.m. on Thursday, June 27, at the Chewelah Municipal Center, 301 E. Clay, in Chewelah.

One purpose of the meetings is to review the findings of a new technical report that outlines the sources of fecal coliform in the river and what would need to happen to bring the river into compliance with water-quality standards.

Sources of fecal coliform bacteria pollution in the Colville River watershed include human (leaking septic systems), domestic animals (cattle, horses, and pets), birds, and wild animals. Storm-water runoff in towns and cities also contains high amounts of fecal coliform bacteria.

The technical report is part of a larger water-quality cleanup plan, known as a "total maximum daily load" (TMDL) in the federal Clean Water Act.

Another purpose of the meetings is to form a citizens' advisory group that will help develop strategies to reduce fecal coliform pollution. The committee will meet three to five times this summer and fall.

Fecal coliform bacteria are microscopic organisms that live in the intestines and waste material of warm-blooded animals. Although not necessarily agents of disease, fecal coliform bacteria can be an indicator of disease-carrying organisms.

For more information, please contact Dennis Murray at 509-456-4461 or via e-mail at demu461@ecy.wa.gov

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Contact: Jani Gilbert, public information manager, 509-456-4464; pager, 509-622-1289

For more information on the Colville River TMDL:
http://www.ecy.wa.gov/programs/wq/tmdl/watershed/colville/index.html
Ecology's Web site: http://www.ecy.wa.gov

Colville River Watershed Bacteria Water Cleanup Plan Update

- **Public meetings** will be held **June 26 & 27, 2002**

- **June 26, 2002** meeting will be at the **Stevens County Conservation District office 7:00 pm – 9:00 pm**

- **June 27, 2002** meeting will be at the **Chewelah Municipal Center city council chambers 7:00 pm – 9:00 pm**

- **Topics: 1) Colville River TMDL overview**
  2) Colville River Fecal Coliform TMDL Study Technical Report Review
  3) Citizen Advisory Group update

- **Citizen Advisory Group meeting July 9, 2002 at the Stevens County Conservation District office 7:00 – 8:30 pm**

- **The Colville River Watershed Water Cleanup Web Site:**

www.ecy.wa.gov/programs/wq/tmdl/watershed/colville/index.html

Colville River citizen's advisory group will form

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One purpose of the meetings is to review the findings of a new technical report that outlines the sources of fecal coliform in the river and what would need to happen to bring the river into compliance with water-quality standards.

Sources of fecal coliform bacteria pollution in the Colville River watershed include human (leaking septic systems), domestic animals (cattle, horses, and pets), birds, and wild animals. Storm-water runoff in towns and cities also contains high amounts of fecal coliform bacteria.

The technical report is part of a larger water-quality cleanup plan, known as a "total maximum daily load" (TMDL) in the federal Clean Water Act.

Another purpose of the meetings is to form a citizens advisory group that will help develop strategies to reduce fecal coliform pollution. The committee will meet three to five times this summer and fall.

Fecal coliform bacteria are microscopic organisms that live in the intestines and waste material of warm-blooded animals. Although not necessarily agents of diseases, fecal coliform bacteria can be an indicator of disease-carrying organisms.

Caregivers night at Multiple Sclerosis meeting

On June 19 from 6 to 7:30 p.m. at The Pizza Factory in Colville, Zo Woods, a sales consultant for Teva

WASHINGTON STATE DEPARTMENT OF ECOLOGY

News Release

FOR IMMEDIATE RELEASE – March 15, 2002

02-029

Public to be updated on Colville River cleanup plan

SPOKANE--The Department of Ecology (Ecology) will present information on the water quality of the Colville River watershed on Thursday, March 28, at the Stevens County Conservation District office, 232 Williams Lake Road, in Colville from 7-8:30 pm.

The Colville River and some of its tributaries are impaired due to fecal coliform bacteria. These bacteria live in the intestinal tract of warm-blooded animals. When found in streams it can signal the presence of disease-carrying organisms.

Ecology is currently developing a Total Maximum Daily Load (TMDL) or water clean up plan to reduce the fecal coliform levels in the watershed. A water cleanup plan includes an assessment of the water-quality problem and a technical analysis to determine how much pollution must be reduced to meet state water quality standards. A cleanup plan also includes a strategy to control the sources of the bacteria.

This meeting will include a brief overview of the TMDL process, an introduction to the Colville River TMDL, and discussion about forming a citizen advisory group to review the implementation strategy.

For more information contact: Dennis Murray, 509-456-4461, demu461@ecy.wa.gov.

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Contact: Jani Gilbert, public information manager, 509-456-4464; pager, 509-622-1289

For more information on the Colville River TMDL:
http://www.ecy.wa.gov/programs/wq/tmdl/watershed/colville/index.html

Ecology's Web site: http://www.ecy.wa.gov

Colville River Watershed Water Quality
&
Water Cleanup Plans or TMDL's
Meeting Agenda
March 28, 2002; 7:00 pm – 8:30 pm

Steven's County Conservation District
232 Williams Lake Road, Colville, WA

7:00 Introductions & Purpose of Meeting

7:15 What is a TMDL ? Why and How are they done?

7:45 Colville River Watershed Water Quality

- Colville River Bacteria Water Cleanup Plan (TMDL)
- Colville River Dissolved Oxygen, Ammonia and chlorine TMDL's
- Citizen Advisory Group (opportunity for citizen's to give input & be heard)

8:20 Comment Period and Q/A's

8:30 Adjourn

April 12, 2002

Dear :

I would like to thank you for attending our initial Colville River Water Cleanup Plans meeting on March 28, 2002 at Stevens County Conservation District. The knowledge you have of the Colville River watershed and the interest you show in assisting the Department of Ecology with the strategy development for water quality improvements is vital to the success of our water cleanup plans.

The Colville River Fecal Coliform Bacteria study technical report section of the water cleanup plan will be available this June. Public meetings will be held to present this report for review. Citizen Advisory Group participation in the development of control strategies to reduce fecal coliform levels in the Colville River will also be presented.

I look forward to the opportunity of working with you on this project. If you've any questions or know of someone else who should be added to the mailing list, please contact Dennis Murray at 509-456-4461 or via e-mail at demu461@ecy.wa.gov.

Sincerely,

Dennis Murray
TMDL Lead
Dept. of Ecology/Water Quality Program
N. 4601 Monroe Street
Spokane, WA 99205
509-456-4461
demu461@ecy.wa.gov

Stevens County Conservation District and USGS Sign Joint Agreement

On May 31, 2001 the Colville River Watershed Planning Team held a special public meeting at the NW Alloys Training Center near Addy, Washington, in celebration of awarding the Colville Rivers Watershed assessment work to the US Geological Survey (USGS). At this meeting, a Joint Funding Agreement was signed between Stevens County Conservation District (SCCD), the lead agency for the Colville River Watershed Planning Grant, and USGS. Tom McKern, Chairman of the Board of Supervisors for SCCD, and Cynthia Barton, District Chief for USGS, signed the agreement. Marijke van Heeswijk, hydrologist from USGS, gave a presentation of their proposed technical assessment work, which had been reviewed and approved by the Planning Team.

Continued on page 6

NRCS Staff Recognized for Their Service

Two NRCS employees at the Colville field office have been recognized for their service. Mick Lewis, NRCS Forester, received a plaque and pin for 25 years of service as a federal employee. Mick provides high quality forestry assistance to landowners in Stevens, Pend Oreille and Ferry counties. In making the presentation, Lewis's supervisor stated, "Mick is recognized by landowners, educators and agency staff as a leader in private forestland issues. His professional demeanor and dedication to public service are an inspiration to all of us."

Doug Rochester, NRCS Civil Engineering Technician, was given special recognition for his work with dairy farmers in Stevens County. Doug has assisted dairy farmers to comply with new state laws through designing animal waste systems and nutrient management plans. Doug has provided timely assistance to help dairy farmers meet deadlines imposed by the state law. Rochester's supervisor noted that "Doug provides one-on-one service to dairymen in a time when they need it most. He goes the extra mile to be there during the planning, design and installation of these waste management systems. The farmers trust him and rely on his recommendations and opinions."

The Natural Resources Conservation Service works hand-in-hand with the American people to conserve natural resources on private lands. The NRCS is an equal opportunity provider and employer.

Colville River Bacteria Monitoring Completed

Tom Ledgerwood, Stevens County Conservation District Water Quality Technician, conducted fecal coliform bacteria monitoring in the Colville River Watershed every other week from March 2000 to March 2001. The monitoring was conducted in conjunction with the Washington Department of Ecology's efforts to develop a fecal coliform bacteria total daily maximum load (TMDL) for the watershed. Ecology will analyze the data and will develop a plan for keeping bacteria levels below the current state water quality standard in the surface water within the watershed. This water cleanup plan will be developed with public involvement and should be completed in 2002. The District encourages watershed residents to become involved in the plan development and will continue to keep watershed residents informed of plan progress. For more information on the Colville River TMDL process, please contact Charlie Kessler at (509) 685-0937 ext. 3.

Every two weeks

Colville TMDL Advisory Group Meeting
Stevens County Conservation District Conference Room
July 9, 2002
Meeting Notes

Attendees:

Brian Crossley – Spokane Tribe
Tony Delgado – County Commissioner
Gary Fetter – Ag/Farming
Lloyd Henry – PUD
Victor Kollock – Stevens Co CD
Ron McBride – Dept of Ecology
Len McIrvin – Landowner/Cattleman
Dennis Murray – Dept of Ecology
Ron Rose – Landowner/Cattleman
Matt Schanz – NE Tri Co Health
Elaine Snouwaert – Dept of Ecology
Bert Wasson – US Forest Service
Tom Wilson – Landowner
Ted Wishon – Landowner/Cattleman

The meeting was opened with round table introductions. It was explained that the objective of this advisory group was to assist in developing control measure strategies to reduce the amount of fecal coliform bacteria entering the Colville River and its tributaries. These strategies would become part of a Summary Implementation Strategy (SIS) which would be packaged with the technical report and submitted to EPA for approval of the water clean up plan or TMDL. The SIS is an overview of what types of activities and practices will be used to reduce the bacteria pollution. After EPA approves the TMDL, the Department of Ecology (Ecology) and the Citizen Advisory Group has one year to develop a Detailed Implementation Plan (DIP) which describes the specific activities that will be implemented.

The Colville River watershed was considered a high priority area for a water clean up plan for two reasons: 1) the health concern for people recreating in and on the water; 2) the high amount of local interest within the watershed.

Dennis suggested that our approach should be to decide on our priority areas and then develop strategies to address the bacteria pollution in each of those areas. Several attendees suggested that our priority focus should be on areas that need the highest percent reduction (the main stem near the headwaters) and the main tributaries contributing the largest flows. We should try to "get the biggest bang for our buck."

There was discussion that the group needed to identify which sources were natural (wildlife) and which were human caused (septic systems and livestock). If the problem was solely natural in some areas very little could be done to reduce the pollution. It was pointed out the pollution in upper Cottonwood Creek very well may be from wildlife since there are neither cattle allotments nor households in this area. Fish and Wildlife may be able to provide an idea of how many deer there are in the watershed and Dennis will check into this.

There was discussion that the streams may be providing a favorable habitat for the bacteria to grow and multiply. Several areas have warm, stagnant water which many thought may increase the amount of bacteria in the streams. If this was the case the water samples would reflect what multiplied over time and not how much is entering the stream from other sources. Compared to

many streams the Colville River watershed has fairly cool water temperatures. It seems unlikely that the temperature of the water is really amplifying the problem.

It was suggested that there is very little development or livestock operations along Haller Creek so there may only be one source there.

There was discussion about the presentation given by Randy Coots (Ecology) at the last public meetings. Many of the people present had not seen the presentation. It was felt that it would be very beneficial if the group had the technical report instead of trying to work off the reduction map. That map does not give the whole picture of what we are trying to accomplish. Dennis and Elaine will send out draft copies of the technical report to those present at this meeting.

There was a suggestion to put in structures at the head waters to capture water during the wet season to release during low flows. It was mentioned that water storage can be very expensive and there are advantages and disadvantages. It creates recreation areas but it also attracts more wildlife, especially birds, which could add to the bacteria pollution.

There was concern that different agencies and different branches of Ecology may have conflicting interests within the watershed. Some are encouraging the creation of wetlands and slow meandering streams. They are managing for wildlife.

The question was asked if the Health District could do dye testing to see how much of the problem was coming from leaking septic systems. Matt Schanz suggested that education for septic system owners should be the first priority. Under normal circumstances they can not force people to have a dye test done because they live close to a stream. If the group felt strongly that there was an area where the major problem was leaking septic systems then he could take the issue to the board of Health and a decision would be made as to how to address the problem.

Dennis reminded the group that there is not one simple action that will correct the problem. It will likely take a combination of activities and an outline of these activities is what needs to be included in the SIS. This might include education and outreach through the conservation district, Tri Co Health, and the Cattleman's Association. The conservation district, NRCS, and WSU Extension can also assist farmers and ranchers in developing farm and animal management plans. The Cattleman's Association may also want to provide a farm tour to show some examples of what can be done to reduce pollution, such as off-stream watering, fencing, and filter strips. Ecology can assist with locating funding and providing technical assistance. We may want to write the SIS to have a phased approach. Start with education and see if people take individual actions to reduce pollution on their property. If there is little improvement then we can move to some of the other steps suggested.

It was suggested that if cattle are fenced away from the stream and provided with a water trough then they would be gathered around it concentrating the amount of manure in one area. When a rain event occurred more could be washed into the stream. It was noted that even a narrow (30 foot) filter strip would reduce this situation to a minimum.

A list of ideas to address bacteria pollution was brainstormed throughout the meeting:

- Manage for flow
- Water storage at headwaters
- Implement best management practices (BMPs)

- Manage waterfowl in some of the “hot spots” (Federal Wetlands)
- There is no one cause, therefore need several approaches
- Do not disregard wildlife
- Do not forget those sources that are not as visible (i.e. septic systems)
- Address agency vs. agency conflicts of interest
- Education homeowners on septic system maintenance
- Isolate the “real” problem areas
- Manage density of cattle & livestock
- Address urban runoff (pet waste and stormdrains)
- Drain all standing bodies of water

Dennis and Elaine informed the group that information will be sent to everyone present at this meeting and those that committed to being a member of this group that were not present. This information includes items such as other state SIS’s approved by EPA, DNA study information, wildlife and wetland information, etc.

The next meeting was tentatively scheduled for July 30^{h}.

July 16, 2002

Dear :

Thank you for attending the Colville River Bacteria Water Cleanup Plan Citizen Advisory Group meeting on July 9, 2002 at the Stevens County Conservation District meeting room. As stated at the meeting, your participation with this advisory group is essential for water quality improvement strategies in the Colville River watershed.

The Colville River Fecal Coliform Bacteria study technical report will be sent to each of you later this week when the final draft is available. It is more beneficial for all involved to receive the final draft which goes to the publisher.

The meeting minutes are enclosed and if you notice any errors, please do not hesitate to bring these to my attention. I look forward to the opportunity of working with you on this project. If you've any questions or know of someone else who should be added to our mailing list, please contact Dennis Murray at 509-456-4461 or via e-mail at demu461@ecy.wa.gov.

Sincerely,

Dennis Murray
TMDL Lead
Dept. of Ecology/Water Quality Program
N. 4601 Monroe Street
Spokane, WA 99205
509-456-4461

AGENDA

Colville River Advisory Group Meeting
Stevens County Conservation District Conference Room
Friday July 30, 2002 7:00 – 9:00 pm

7:00 Introductions and Meeting Agenda

7:15 Review Colville River Technical Report Major Points

7:35 Review approved Nooksack River bacteria Water Cleanup Plan implementation ("control measure") strategies

7:55 Colville River watershed ***Upper basin** discussion
1. possible bacteria sources
2. implementation strategies for EPA submittal report

* For the purpose of our discussions, the Colville River watershed will be separated into 3 parts (basins):

1) **Upper basin**--Springdale to Chewelah Creek confluence
2) **Middle basin**—end of Upper basin to Little Pend Oreille River confluence
3) **Lower basin**—end of Middle basin to the confluence with Lake Roosevelt

- Revised -
Colville TMDL Advisory Group Meeting
Stevens County Conservation District Conference Room
July 30, 2002
Meeting Notes

Attendees:

Victor Kollock – Stevens Co CD
Len McIrvin – Landowner/Cattleman
Dennis Murray – Dept of Ecology
Ron Rose – Landowner/Cattleman
Matt Schanz – NE Tri Co Health
Elaine Snouwaert – Dept of Ecology
Bert Wasson – US Forest Service
Tom Wilson – Landowner
Ted Wishon – Landowner/Cattleman
Russ Larsen - SCFLAC

The meeting was opened with round table introductions. It was explained that the objective of this advisory group was to assist in developing control measure strategies to reduce the amount of fecal coliform bacteria entering the Colville River and its tributaries. The watershed was broken into 3 basins (upper, middle, lower) for discussion purposes.

Ecology's *Colville River Fecal Coliform Total Maximum Daily Load Study*, Publication # 02-03-036 was distributed to the group. It was explained that the report had been submitted to EPA for review to verify it would be acceptable when the TMDL was submitted at the end of the year. EPA asked Randy Coots to include actual fecal coliform load allocations in addition to the required percent reductions. This review delayed the final draft for publication therefore causing the report to not be available sooner.

Dennis gave a condensed version of Randy Coots technical report presentation to highlight the most important issues for our discussion. A great deal of discussion took place during and after this presentation. This included how the 303(d) listing map differs from the reduction map. The 303(d) listing map shows only where water quality impairments are from previous data through 1998. The listings only appear where the sample data is available. The reduction map shows the required amount of fecal coliform that must be reduced at those segments to meet water quality standards. The color coding on the reduction map is extended beyond the sample location for graphic representation and because we do not know the exact source of the pollution nor the point where the pollution is entering the stream.

Another discussion arose from a question about dilution. Would the fecal coliform levels be cut in half if the amount of water in the stream was doubled? This question can not be answered without knowledge of the source inputs. However, if one assumes that equal amounts of fecal coliform is entering a stream and they are reproducing and dieing at equal rates as the lower flow situation, then the concentration would be reduced but the loading would remain the same.

During this presentation there was an exception raised regarding the statement that "the most obvious sources of bacteria inputs were from cattle directly accessing the streams." It was felt that this was an opinion and not a scientific fact and therefore should not be included as part of the technical report. It was explained that this statement only says it was the most "obvious" source and not the most significant source. Implied in the word obvious is that there could be other not so obvious sources. This statement was made simply from what was observed during the sampling for the study.

A comment was made that it appeared the water quality improved after passing through an area of heavy livestock grazing near Valley. The fecal coliform concentration was lower after it passed through this property. It was explained that this was due to a large amount of water coming in from Jump-Off-Joe Creek which caused some dilution of fecal coliform levels. Even with this dilution the water quality still violates the fecal coliform standards.

It was mentioned there are two drainage ditches draining water from Long Prairie through Len M^{c}Irvin's property and discharging into the Colville River. The water in these ditches has not been sampled and there is a good possibility this drainage water contains fecal coliform bacteria from the Long Prairie area.

The group then looked at an example of a Summary Implementation Strategy (SIS) which had been submitted to and approved by EPA for the Nooksack River in Whatcom County. Dennis explained that all we need at this point is an outline of the implementation strategies and that the specifics will be developed in the Detailed Implementation Plan (DIP). The Nooksack SIS has a table which consists of four columns: 1) the entity or agency which will implement an action; 2) the action; 3) the goals of the action and; 4) the timeline that the action will be implemented or completed.

The group began discussing what was included in the Nooksack SIS and what could be included in the Colville River SIS.

It was stated and discussed that additional water quality monitoring would be necessary to determine the actual fecal coliform bacteria sources prior to establishing specific implementation activities.

It was also discussed that the water coming out of old dairy lagoons could be a bacteria source as well as land applying domestic sewer lagoon water near Valley. These possible sources will be investigated. According to PUD, the lagoon water is land applied two – three times per season (spring to fall) and the lagoon water is tested every month per Ecology regulations. The farmer at Valley essentially irrigates with well water.

It was asked if there was a simple field test for fecal coliform that people could use on their property. It was explained that the test is fairly elaborate and requires the proper auger (bacteria growing media) and incubation temperatures for 24-48 hours.

Some of the strategies discussed were:

- Additional monitoring to identify fecal coliform sources
- The U. S. Fish & Wildlife (USFW) will perform water quality monitoring to determine fecal coliform levels at the Little Pend Oreille Wildlife Area boundary.
- The Spokane Tribe will perform water quality monitoring of the Colville River up and downstream of their property and an intermittent tributary that flows through their property.
- Permit issuance for the cities of Chewelah and Colville wastewater treatment plants should maintain compliance with the water quality standards and be protective of the water resource. Chewelah is utilizing ultra-violet (UV) for effluent disinfection, and Colville will utilize UV upon completion of the treatment plant upgrade (2006).
- Blue Creek is going to be connected to the Addy sewer system
- Tri-County Health will educate landowners with on-site septic systems on proper maintenance and use.
- The SCCD and Tri-County Health will investigate funding sources to help landowners pay to repair or replace their septic systems

- The SCCD and NRCS will assist landowners with Farm Plans and Dairy Nutrient Management Plans
- The current Farm Plan assistance will continue

August 13, 2002

Ms. Linda Kiefer
Stevens County Conservation District
232 Williams Lake Road
Colville, WA 99114

Dear Ms. Kiefer:

This is a reminder notice concerning the Colville River Bacteria Water Cleanup Plan advisory group meeting August 20, 2002. The meeting will be conducted at the Stevens County Conservation District meeting room from 7:00 – 9:00 pm. A **draft** Summary Implementation Strategy (SIS) for the Colville River Bacteria TMDL is enclosed for your review and perhaps your comments can be discussed at the meeting.

For your information, the following are also enclosed:

1) The July 30, 2002 advisory group meeting minutes
2) Agenda for the August 20, 2002 advisory group meeting
3) A brief Colville River Water Cleanup Plan (TMDL) review and update

If you have any questions or desire additional information, please contact Dennis Murray by phone at (509) 456-4461 or via e-mail at demu461@ecy.wa.gov.

I look forward to seeing you at the August 20, 2002 advisory group meeting.

Sincerely,

Dennis Murray
TMDL Lead
Dept. of Ecology/Water Quality Program
N. 4601 Monroe Street
Spokane, WA 99205
509-456-4461

August 4, 2002

Water Cleanup Plans or Total Maximum Daily Loads (TMDLs)

(A TMDL is the maximum amount of pollution a water body can assimilate or digest without violating state water quality standards)
(A TMDL sets "limits" or allocations to reduce the pollution entering a water body)

How did we get here?

- A water body fails to meet the state water quality standards--the Colville River is specifically set at the Class A (excellent) surface water class in the state of Washington and the water quality standards are to protect its beneficial or intended uses, including domestic, industrial, and agricultural water supply, stock watering, and recreation—swimming, fishing, boating, and aesthetic enjoyment)
- It is placed on EPA's list of impaired water bodies ===➔ the 303(d) list
- The Colville River watershed has 24 water body listed segments (9 mainstem & 15 tributaries) for fecal coliform bacteria
- The listed water body is then prioritized and scheduled for a water cleanup plan
- The Colville River was determined a high priority due to:
  1) high citizen interest and numerous water quality projects ongoing
  2) bacteria pollution is a health issue
- This cleanup plan addresses fecal coliform bacteria (although not necessarily agents of disease, **fecal coliform** bacteria may indicate the presence of disease-carrying organisms, which live in the same environment (the digestive tract to aid in food digestion) of warm-blooded animals (mammals and birds)

Why Develop Water Cleanup Plans?

- They will result in cleaner lakes, streams, and rivers
- Clean water is vital for our quality of life ===➔ for both economic development and a healthy environment

Water Cleanup Plans or TMDLs consist of:

- Water sampling to verify impairment and/or gather more data for delisting
- Data Analysis and perhaps Mathematical Modeling
- Set allocations (limits) for pollution sources
- Implementation Strategy (pollution reduction control measures)
- Effectiveness Monitoring (determines success of the implementation effort)

Where are we now?

- The implementation strategy step
- A citizen advisory group is assisting to develop a Summary Implementation Strategy (SIS), which is an **outline** of the activities required to implement the water cleanup plan (**due date—October 11, 2002**)
- The SIS and the Technical Report are then combined for the TMDL Submittal Report and sent to EPA for review (**due date--December 31, 2002)**
- Upon EPA approval (**due date--March 2003)** we have one year to develop the Detailed Implementation Plan (DIP)----implementation specifics (who, what, when, where) of the TMDL (**due date--March 31, 2004)**

Colville TMDL Advisory Group Meeting
Stevens County Conservation District Conference Room
August 20, 2002
Meeting Notes

Attendees:

Victor Kollock – Stevens Co CD
Len McIrvin – Landowner/Cattleman
Dennis Murray – Dept of Ecology
Ron Rose – Landowner/Cattleman
Matt Schanz – NE Tri Co Health Dist.
Elaine Snouwaert – Dept of Ecology
Tom Wilson – Landowner
Russ Larsen - SCFLAC
Tony Delgado – County Commissioners
Lloyd Henry – Landowner/PUD
Charlie Kessler – Stevens Co CD
Jerry Cline – USFW LPO Wildlife Area
Tim Kunka – Landowner/Cattleman

The meeting began with roundtable introductions. Dennis explained if the group chooses, this could be the last meeting for the advisory group until the TMDL Submittal Report is reviewed by the EPA. The group was informed there would be a public meeting in late October and/or early November to begin a 45-day public comment period on the Colville River Bacteria TMDL Submittal Report. Responses to all of the public comments during this 45-day period will be included in the final report submitted to the EPA.

It was again stated that we are at the very beginning of the water cleanup process and what we know at this point is: 1) fecal coliform bacteria levels throughout the Colville River watershed have exceeded the water quality criteria for at least 10 years; 2) there are 24 fecal coliform listings in the watershed (9 mainstem and 15 tributary); and 3) a fecal coliform bacteria water cleanup plan for the watershed is being developed.

There were three objections to the meeting notes from the July 30th advisory group meeting:

1) During a slideshow recap of the technical study presentation there was an objection raised regarding the statement, "the most obvious sources of bacteria inputs were from cattle directly accessing the streams." This objection was not noted in the meeting notes. The notes have been revised to include this objection and the discussion which ensued.
2) Also absent from the meeting notes was a comment relating to the water quality improving upon passing through an area of livestock grazing. The notes have also been revised to include this comment and the discussion concerning the comment.
3) There are two drainage ditches draining water from Long Prairie through Len Mc Irvin's property and discharging into the Colville River. The water in these ditches has not been sampled and there is a good possibility this drainage water contains fecal coliform bacteria from the Long Prairie area.

It was also expressed that some of the comments made by landowners do not appear in the meeting notes and committee members have their names attached to this plan and perhaps are not in agreement.

It was mentioned that in the headwaters area of Grouse Creek and Cottonwood Creek there are high fecal coliform levels but no houses or cattle in the area (not human activity caused). It was thought there might be leaking septic systems in the area of Beitey Lake or beaver dams and wetlands on Grouse Creek that may be elevating the fecal coliform levels. According to the conservation district, Jump-Off-Joe Creek was listed due to septic failures. Also, the lower basin of the watershed (North of Colville) has heavy cattle grazing yet has relatively good water quality for fecal coliform.

There was a lengthy discussion concerning some of the observations and opinions included in the technical report. Some felt the report was blaming livestock for the problem without scientific facts (data showing the bacteria source). It was explained that sampling was conducted every two-weeks and during these sampling events cattle were observed actually in the river. The portions of the report do state it was an observation; however it was some participant's opinion that having these statements included, colors the report (misleads the reader to believe that livestock are the only problem). It was felt that page 15, 2nd paragraph, 3rd sentence set the trend of the report which continually blames livestock for the fecal coliform problems. It was explained that the time of highest fecal coliform levels does correlate with the time period when livestock are most likely to access the stream for water.

It was pointed out that members of the group objected to the statement under the Implementation Activities that the Chewelah and Colville waste water treatment plants were not in the study or the bacteria TMDL targets. There was concern that the Colville and Chewelah publicly-owned treatment works (POTW's), wastewater treatment plants, had permits that allowed them to discharge fecal coliform levels at or higher than the standard (page 9, last paragraph). This sounds as though the wastewater treatment plants are being exempted and Ecology is targeting livestock. With the Chewelah treatment plant upgrade, the discharge permit has been revised with new final effluent limitations. The treated effluent must meet the Class A designated surface water quality standards at the **end of pipe** (before the discharge enters the river) during the summer months. This is based on the fact when the discharge mixes with the river water the fecal coliform will be well below the water quality standard. The June-October effluent limitations state the average monthly fecal coliform bacteria shall not exceed 100 colonies/100 mL and the average weekly fecal coliform bacteria shall not exceed 200 colonies/100 mL. During the winter, the technology-based effluent limitation for fecal coliform bacteria is used. The average monthly fecal coliform bacteria shall not exceed 200 colonies/100 mL and the average weekly fecal coliform bacteria shall not exceed 400 colonies/100 mL. The monitoring requirements state a minimum sampling frequency for fecal coliform is 3/week and sampling shall not be performed on consecutive days. The monitoring results are submitted to Ecology on a monthly basis. Upon completion of Colville's treatment plant upgrade, in 2006, the treated effluent limitations will be the same as Chewelah's treatment plant. The Colville treatment plant year around interim effluent limitations, for the existing lagoon system, are 200 colonies/100 mL monthly average and 400 colonies/100 mL weekly average. The reason is the existing treatment plant lagoon system is not capable of meeting the effluent limitations required upon the treatment plant upgrade.

It was mentioned that the Forest Service land exceeded the standards before there were livestock allotments on it and it also exceeds standards where there are still no livestock. It was felt that the report was biased because it was blaming livestock without first determining the actual bacteria sources which would be considered natural conditions. The "natural

conditions" should be addressed first so those inputs are known and then human caused inputs should be identified. It should be a bottom up approach starting with "natural conditions". Dennis stated that he had worked with the Colville National Forest hydrologists concerning the headwaters of Cottonwood Creek. This creek segment was listed for fecal coliform bacteria while there had been no cattle allotments for 10 years and no homes were present in the area. A delisting petition was developed for this listed water body since it was verifiable that human activity caused bacteria pollution was not the source, rather the high bacteria levels were due to "natural conditions" (wildlife).

Although it was explained the Summary Implementation Strategy (SIS) clearly states that funding is necessary to identify the bacteria sources and that restoration efforts are hampered without accurate bacteria source identification, the group is convinced that Ecology believes the sole problem is with livestock and when livestock are eliminated the bacteria problem will remain. In order to reduce sources of fecal coliform to the river other than wildlife, source identification is crucial. It has been stated that science, (continued inquiry) must be used for implementation decision making to minimize the likelihood of public spending errors. Adaptive implementation is, in fact, the application of the scientific methods to decision-making and it is recommended this TMDL will utilize adaptive implementation. It was felt by members of the group the source identification would be biased because Ecology already assumes that livestock are the problem. It was noted, the EPA considers that if "natural conditions" equal the bacteria standards, then no additional human activity contributions will be allowed to enter the water body. If "natural conditions" exceed the bacteria standards then this level becomes the new water quality standard for this water body and no additional human activity contributions will be allowed to enter the water body.

Another source that needs to be identified is old dairy drain tiles. Many drain tiles were put in 70 to 80 years ago and it is generally unknown where and in what direction they drain. From the ground surface one can not tell the direction they drain and if they are continuing to drain old dairies. Drain tiles were once promoted as a management practice for cleaner discharges since the drain water would be filtered by flowing through the soil prior to discharging to the water body. Research into this has begun, but further research is needed and perhaps, with the assistance from participants of this group, these drain tiles can be identified and water samples can be collected.

The option of dredging water bodies and draining wetlands was brought back to the table. It was felt that speeding up the flow of water would make it cooler and cleaner. It was noted the gradient drop of the Colville River is approximately three feet per mile therefore speeding up the flow would be difficult. It was explained that faster flowing water can improve some water quality problems including temperature and dissolved oxygen but is unlikely to have a significant affect on fecal coliform levels.

Another option of building retention structures near the headwaters was revisited. This water would be used to supplement low flows which would also speed it up and dilute the coliform levels. However, some of the fecal coliform levels are so high that even a large amount of dilution water would not fully address the problem.

A question was asked as to how water quantity relates to a water body's classification for water quality. It was explained that water quantity or flow are not factors in designating a water body a particular class. The class designation denotes for what intended or beneficial

uses the water body will be protected. For example, the Colville River is a Class A stream which means it should be protected for water supply, fish habitat and primary contact recreation (swimming).

In the draft SIS several dates are listed as key milestones. A question was raised as to why the synoptic surveys were conducted in July and September 2000. It was explained the synoptic (general view of condition) surveys were conducted to obtain a preliminary look at nutrient levels in the watershed streams and the effects during the productive period of the year. It was a good opportunity (cheap and easy) to obtain some preliminary data while the fecal coliform bacteria sampling was being conducted. The additional water samples were analyzed for several water quality parameters including nitrogen and phosphorous. Please refer to Appendix B, Tables B5 and B6 in the Technical report for the synoptic survey test results.

The question was asked, does fecal coliform multiply in warm water temperatures. The conservation district staff had done some research to determine the answer to this question. Most research determined that warm temperatures do not encourage a greater reproduction of fecal coliform. There is a natural die-off rate for the bacteria and although they may survive longer in warmer waters they still die-off and the warmer water does not increase the rate of reproduction. It is also true that if the water temperatures are too high that it can kill the bacteria.

It was asked if the water samples used to determine the fecal coliform levels include the dead bacteria. It was explained that bacteria from the water sample are actually grown on specific media in a Petri dish and incubated at an optimal bacteria growing temperature for at least 24 hours. Upon incubation the bacteria colonies are then counted, therefore only living, growing bacteria are counted. It was also mentioned that bacteria can live about 30 days in the stream sediments. This statement will be researched since a multitude of variables are involved and an actual number of day's life expectancy may be very difficult to conclude. If the sediments are stirred up more viable bacteria may be found.

The question was asked if algae were considered a good or bad thing. There is not definitive answer to this question. In general, algae are considered good and shows a healthy water body but an excess of algae is considered detrimental. Some algae is normal in a healthy ecosystem and it is needed for productivity and fish nourishment however, if there is an excess of algae the system can be out of balance. Algae modify pH and dissolved oxygen, which directly affect the health of fish and other aquatic animals. In addition to depleting dissolved oxygen through decomposition, a large quantity of algae in a water body can increase pH, turbidity, and total suspended solids. Although excessive algae growth can be a result of nutrients associated with fecal coliform sources, it is more likely nutrients (ammonia, nitrate, and phosphorous) would be addressed with a dissolved oxygen and/or nutrient TMDL. It is believed the actions taken to reduce fecal coliform bacteria will benefit other water quality impairments and possibly prevent additional listings.

It was asked if water with high fecal coliform was put in a clean jar and capped and then allowed to sit for a few weeks would it be safe to drink. There is a natural die off rate for the bacteria but the only way to determine its safety for consumption would be to test the sample.

The WRIA 59 watershed planning unit has chosen the water quality element; therefore water quality will be included in their watershed management plan. The planning unit is considering applying for a water quality supplemental grant available through the Watershed Management Act. It was asked if this money will also help this committee's effort to reduce the fecal coliform. The money will most likely be used for water quality education and outreach for watershed residents and will address all water quality problems including fecal coliform bacteria. Since fecal coliform bacteria are the highest water quality priority in the watershed, a great deal of effort could possibly be the determination of the bacteria sources. It's important that all the watershed residents' work together to best utilize the resources available.

A discussion about farm plans ensued. It was stated there are no farm plan implementations for farmers and ranchers that do not accept government subsidies. It is true that farm plans are not mandatory in these situations but they may still be implemented on a farm as Best Management Practices (BMPs). BMP applies to structural and management practices used in agriculture, forestry, urban land development, and industry to reduce the potential for damage to natural resources from human activities. It was mentioned some BMPs are site-specific and some work everywhere. Similar to any selected implementations to protect the natural resources, monitoring and evaluating is necessary to determine if they are having the desired effect. A landowner may voluntarily seek assistance from the Natural Resource Conservation Service (NRCS) or the county conservation district to develop a farm plan to protect water quality. Also, if a complaint is made about farm practices that are detrimental to water quality, then Ecology will investigate to verify the problem. If legitimate, Ecology will refer the landowner to NRCS and/or the conservation district to develop a farm plan and implement best management practices to protect water quality. If this assistance is refused by the landowner, a penalty could be issued for knowingly discharging pollution to a water body.

It was suggested that we should look at a farm plan that was developed by Courtney Smith in Asotin County. Some of the BMPs implemented dealt with dairy lagoons. Dennis will follow-up on this suggestion and inform the group of this farm plan.

Since additional fecal coliform bacteria can not be added to a stream if the "natural conditions" exceed the standard, it was asked if making a wheat field into a wetland was a human activity. This is debatable. Many would say that if the activity was to restore a natural wetland then it would not be considered a human activity caused bacteria contribution. It may have been a human activity that dried out the wetland. It was felt that new wetlands adjacent to a water body would attract geese and other animals, thus increasing the fecal coliform bacteria levels. The wetlands will then grow and start attracting mammals like muskrat. It was felt that farmers putting in wheat fields made for cleaner water because it does not attract as much wildlife. It was also expressed that wetlands are an important part of an ecosystem and many have been destroyed.

Watersheds can benefit from wetlands by: 1) improving water quality by breaking down, removing, using or retaining nutrients, organic waste and sediment carried to the wetland with runoff from the watershed; 2) reducing the severity of floods downstream by retaining water and releasing it during drier periods; 3) protecting stream banks and shore lines from erosion; and 4) recharging groundwater, potentially reducing water shortages during the dry time of year. A disadvantage of wetlands, particularly when fecal coliform bacteria are

impairing waters in a watershed, is they provide food habitat, breeding grounds, and resting areas for wildlife, predominately mammals and birds (sources for fecal coliform bacteria). Wetland restoration should be examined from numerous levels to assure their reconstruction does not affect water quality, economics, etc.

The WRIA 59 watershed planning unit water quality committee has discussed the possibility of changing the Colville River from a Class A designation to a Class B designation. Class B waters no longer support or protects recreational uses such as swimming, or spawning of fish. The fecal coliform bacteria water quality criteria for a Class B designated stream is a geometric mean <200 colonies/100 mL and not have more than 10% of all samples obtained to calculate the geometric mean value exceeding 400 colonies/100 mL. With this in mind, 16 of the 24 impaired water body segments in the Colville River watershed would remain on the 303(d) list.

It was noted that Department of Natural Resources (DNR) was not included in the SIS although they have a lot of land in the watershed. Dennis agreed and will contact the DNR to discuss the developing bacteria TMDL.

The Northeast Tri-County Health District stated they should have their actions in the SIS table broken into 3 different actions. They currently distribute educational materials with every permit for on-site septic systems. In addition, they agreed to do additional education if a fecal coliform bacteria water quality problem was determined to be attributed to a leaking on-site septic system.

Water sampling was discussed and Dennis asked one group participant if he would be interested in conducting fecal coliform bacteria water quality sampling near his land. He did agree as long as the samples were split and he could submit his samples to a different accredited laboratory. Dennis agreed and a sampling date was set for the afternoon of August 26, 2002.

It was decided before closing the meeting that the advisory group would meet again to review revisions made to the previous meetings notes and the SIS. This meeting is scheduled for Sept 17th at the Stevens County Conservation District meeting room from 7:00 – 9:00 pm.

The following additional information was not discussed at the meeting but relates to some of the concerns about fecal coliform bacteria and wildlife.

It is understood wildlife does contribute a natural bacteria loading condition to surface waters. Addressing the water quality standards to accommodate this natural loading condition may be an option. Possible evaluation of the following items in relation to the water quality bacteria standard could be investigated. Firstly, the possibility of placing a minimum flow requirement upon the bacteriological standard. As a result, the standard may not apply to flows below the minimum. A low-flow stream analysis modeling study almost certainly would be required. This application of the standard is applied in many states. Secondly, the development of a Use Attainability Analysis (UAA) for streams which is not used for frequent bathing. A UAA is a structured scientific assessment of a water body's uses, including physical, chemical, biological, and economic factors. "Fish habitat (spawning) and swimmable (primary contact recreation)" uses do require this extra effort to

be removed as uses. Depending upon the result of that UAA, it is possible that these streams could be designated primary contact infrequent bathing use (less stringent criteria). A UAA can cost thousands of dollars and can be very time consuming. Thirdly, the possibility to investigate incorporating a "natural background condition" for the bacteriological indicator. **Please keep in mind that implementations to reduce all sources of fecal coliform to the river other than wildlife are necessary while considering water quality standards modifications.**

Agenda

Colville River Advisory Group Meeting
Steven's County Conservation District Conference Room
September 17, 2002 7:00 – 9:00 pm

7:00	Introductions
7:10	Review July 30th meeting note revisions and August 20th meeting notes
7:20	Review & discuss revisions to Summary Implementation Strategy
8:20	Brainstorm additional strategies
8:45	Questions & discussion
9:00	Adjourn

Colville TMDL Advisory Group Meeting
Stevens County Conservation District Conference Room
September 17, 2002 Meeting Notes

Attendees:

Victor Kollock – Stevens Co CD
Len McIrvin – Landowner/Cattleman
Dennis Murray – Dept of Ecology
Ron Rose – Landowner/Cattleman
Elaine Snouwaert – Dept of Ecology
Tom Wilson – Landowner
Russ Larsen - SCFLAC
Tony Delgado – County Commissioners
Lloyd Henry – Landowner/PUD
Charlie Kessler – Stevens Co CD
Tim Kunka – Landowner/Cattleman
Brian W.Culler Sr. - Landowner
Jeff D. Dawson – Landowner/Cattleman
John Dawson – Landowner/Cattleman
Merrill Ott – Ag/Farmer
Gary Fetter – Landowner/Cattleman
Keith Ringer – Landowner/Cattleman
Ted Wishon – Cattleman's Assoc

The meeting began with roundtable introductions. The changes to the July 30th meeting notes were reviewed. It was felt the comment regarding the decrease in fecal coliform bacteria observed after passing through an area of heavy grazing should be revised. The comment currently reads that the water from Jump-Off-Joe (JOJ) creek is diluting the water in the Colville and therefore we see the lower fecal coliform counts. JOJ Creek does flow into the Colville River between the two Colville River sample sites, CR6 and CR4 (downstream and upstream of the livestock grazing, respectively). The flow data collected during the year study does show a much larger volume of water (~142%) at the downstream (of grazing) sample site. This flow data does indicate a fecal coliform dilution factor between these two sampling sites. However, without scientific proof we can not determine that JOJ is not a source of fecal coliform possibly making the counts higher than if the creek did not enter the stream at this point. The study results did show that JOJ Creek does, to some extent, contribute fecal coliform to the river. The creek flow contributes approximately 14% to the river. While considering the flow volumes and the fecal coliform test results, JOJ creek appears to have a minimal effect upon the river main stem in comparison to the bacteria levels in the main stem upstream of the JOJ confluence. The fecal coliform levels in the main stem decrease downstream from the CR4 (Betteridge Road) site, which is located just upstream of the JOJ confluence. It is important to determine where the fecal coliform sources are upstream of CR4.

The comment regarding the drainage ditches from Long Prairie states "…there is a good possibility this drainage water contains fecal coliform…." Without scientific proof we do not know this; therefore it should not be stated this way. These drainage ditches, when flowing, need to be sampled and tested to determine if fecal coliform is present.

It was felt if natural conditions such as wildlife cause the fecal coliform to exceed the standard then landowners should use what ever means possible to control the wildlife coming onto their property to limit natural contributions. It was again pointed out that the CWA and the TMDL process are concerned only with human-activity caused pollution. Also, our one-time sampling event actually showed lower fecal coliform levels in the area of high geese activity. It is recommended that any landowner that feels the necessity of controlling wildlife should contact Washington Fish and Wildlife (WDFW).

The question was asked as to what Ecology is looking for in a farm plan. If the farm plan is a result of a water pollution complaint, then Ecology requires the farm plan to eliminate the pollution cause. Ecology is not involved if the farm plan implementation is voluntary. The Natural Resource Conservation Service (NRCS) assists landowners with developing site-specific farm plans by developing and/or revising BMPs for the protection of surface and ground waters from activities related to agricultural practices. A farm plan helps the landowner to implement the proper BMPs to meet any state and federal regulations and to manage their land by having the least negative affect on the environment. An unsubsidized farm does not require a farm plan unless a complaint against the farm is the driving force for the farm plan.

It was asked if a farm plan can say that pollution will be reduced by not overgrazing, speeding up the water and providing sunlight to clean the water. The idea of a farm plan is to eliminate the pollution and/or reduce the pollution to meet the regulatory criteria. It's a known fact that to reduce or eliminate pollution (pollution prevention) one must focus on the pollution source versus changing the environment to deal with the pollution. Effectiveness monitoring is essential to show if the pollution reducing implementations are successful. Effectiveness monitoring is an

action that is essential for any water improvement plan (TMDL). Keep in mind, the goal is to reduce the bacteria levels in the river, which may be accomplished by incremental steps of improving the water quality.

Farm plans involve animal and land management changes that can include rotation of crops or cattle, off stream watering, stream exclusion, and pasture grazing management. Farm plans implement BMPs that are very site-specific. Again, NRCS and the CD can assist with farm plans. The Environmental Quality Incentives Program (EQIP) through the NRCS offers financial, educational, and technical assistance for the implementation of water quality BMPs. The NRCS administers cost share programs such as EQIP, to provide funding for farm improvements and farm plan implementations. The conservation district works closely with the NRCS.

Some of the group members believe the Colville River will clean up faster without fencing cattle away from the streams. It has not been determined what implementations will be necessary in reducing the bacteria levels in the river. Also, there are many tasks that must be accomplished prior to any major implementations. It was also pointed out that "where" the fecal coliform pollution is coming from must be determined by additional fecal coliform water quality monitoring. As stated at previous meetings, bacteria in the river is a health issue for humans when in contact with the water (swimming). The major health problem is acquiring parasites from livestock excretion and viruses from human excretion.

The group felt the fecal coliform pollution is not a nonpoint source problem but rather a point source problem. Point and nonpoint source pollution were again reviewed for the group and it was explained that a point source is a pollution discharge from an "end of pipe" source such as an industrial or waste water treatment plant discharge. All point source discharges must be permitted through the federal National Pollution Discharge Elimination System (NPDES) which Ecology manages in this state. Nonpoint source pollution is a dispersed or widespread pollution including wild animals, domestic animals, leaking septic systems, and urban runoff. Stating the fecal coliform pollution in the Colville River is not a nonpoint pollution source indicates that wildlife is also not a source of fecal coliform bacteria. The group agreed that wildlife is a fecal coliform pollution source, consequently a nonpoint source problem.
Len McIrvin asked to present the results of some sampling on his property. On August 26th Dennis met with Len McIrvin, Tony Delgado, and Merrill Ott to collect Colville River water samples upstream and downstream of a cattle grazing area by Valley. Jump-Off-Joe creek was also sampled. Proper quality assurance/quality control (QA/QC) fecal coliform sampling technique was shown, as well as sample labeling, chain-of-custody forms, and sample handling and storage prior to delivery to the laboratory for analysis. Two samples were collected at each river sampling site and after sampling was concluded, the samples were split with Len and Dennis delivering the samples to different accredited laboratories. The tested samples had very similar results and were discussed with the group. The sample sites and test results are presented below in Figure 1. The first test result listed for each site was from the laboratory that Dennis submitted the samples to and the second test result listed is from the laboratory that Len submitted the samples to.

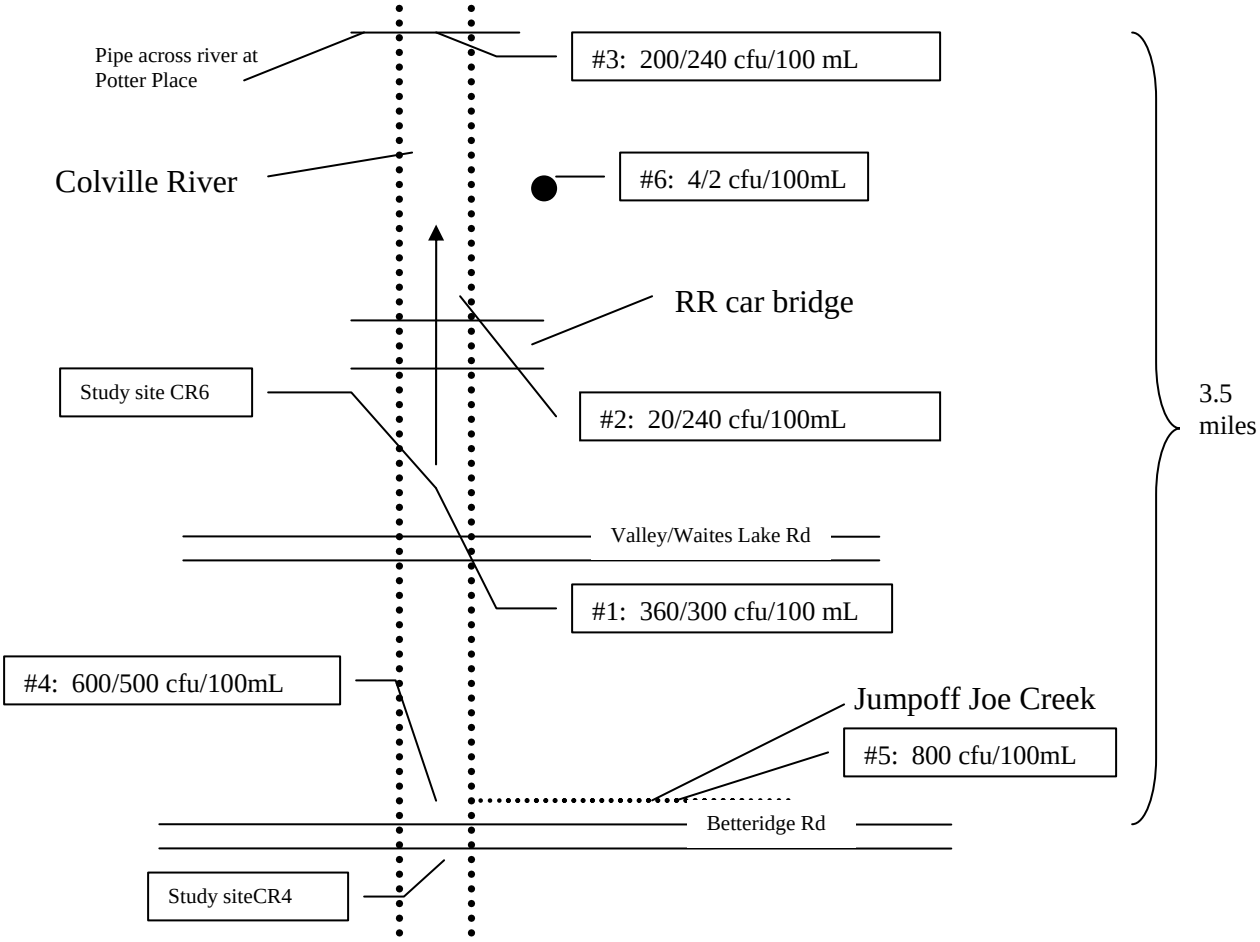


Figure 1. Sample sites and test results from the single August 26, 2002 sampling event.

We decided the sample points would be: #1) near the upstream boundary of the grazing area; #2) near the middle of the grazing area; #3) at the downstream boundary of the grazing area; and #4) just downstream of the Jump-Off-Joe creek confluence with the river. Also, #5) Tony and Dennis wanted to sample Jump-Off-Joe creek; #6) Tony & Dennis collected samples from Potters running lawn sprinkler as a blank sample or a control sample.

Figure 1 above shows the sample sites as follows:
#1) Valley/Waitts Lake Road Bridge (~30' downstream) TMDL study site **CR6**
#2) Railroad Car Bridge (just downstream of)
#3) Pipe across river at the Potter Place
#4) Approximately 30' downstream of Jump-Off-Joe creek confluence
#5) Approximately 30' upstream from confluence—TMDL study site **CR4** is located just upstream of the JOJ confluence
#6) Potter farm front yard spigot that was running
The test results show a similar downstream decrease in fecal coliform density as the technical report results indicated. The technical report results also showed that the segment of the Colville River upstream of the Valley bridge to the JOJ confluence requires the second largest percent

reduction (84%) of fecal coliform bacteria to meet water quality standards. The TMDL study sample site **CR4** is located just upstream of the Jump-Off-Joe confluence with the river. Upstream of the **CR4** site, this is upstream of the grazing area we sampled. This site had the highest levels of fecal coliform in the river while the levels continued to decrease downstream.

Although the fecal coliform level is reduced upon flowing through this livestock grazing property, as a rule, one can not positively determine the answer to any issue including water quality issues with only one sample or conducting only one sampling event. Therefore we can not jump to conclusions based on one. The decrease is attributed to dilution from the increased river flow and bacteria die-off.

Several members felt we need to focus on more water quality testing and find out where the spikes occur. Once the spikes are identified it should be fairly easy to pinpoint the source. Testing should occur upstream of any spikes. The SIS will state that additional fecal coliform water quality sampling will need to be conducted to narrow the geographical area of the pollution source. The river upstream of our sampling sites and upstream of the TMDL study sample site **CR4** are the most important areas requiring additional fecal coliform monitoring. This is especially true considering the fact that the Springdale sample site was within the water quality standards and that the CR4 site recorded the highest levels. In this ~8 mile stretch there are large gaps with no data and the bacteria loading is the worst in the mainstem.

It was suggested that the state standards are not based on natural conditions. Streams are simply put into a class and then expected to meet those standards. This practice was compared to grades in school. Only streams that received top marks passed.

Under the Clean Water Act (CWA), every state has its own water quality standards designed to protect, restore, and preserve water quality. Water quality standards consist of designated uses, such as domestic, industrial and agriculture water supply, recreation (fishing, swimming, and aesthetic enjoyment) and wildlife habitat. These uses are protected by the standards, and usually are numeric standards. In other words, the designated uses of a water body determine the Class (Class AA, Class A, or Class B in Washington State)) of the water body and the standards for each of these classes are made to protect the water body for the uses by humans, wildlife and biota.

Clarification was requested on what the WRIA planning unit was going to do as part of the implementation strategy. Several members would like to see the planning unit pick a part of the watershed and use their water quality money to determine the source of the fecal coliform. Currently, the WRIA planning unit will only be doing a water quality assessment and they do plan on submitting a water quality supplemental grant application for additional water quality work. When and if this grant application is submitted and if it is approved, then additional water quality monitoring may be done.

The conservation district said their district board asked to be removed from the Table in the SIS. Instead they will provide a narrative of what implementation practices the conservation district will provide. They have limited funding and need the narrative description to explain that their implementation activities are based on funding availability. They would also like more interaction between the conservation district and Ecology to determine what they can and can not do as part of this SIS. Ecology plans on working closely with the District. Some of the work the District will implement will depend upon grant submittal and approval. In the next draft of this

portion of the TMDL submittal report, this Table will be converted to narrative. This Table was used for presentation to the group at the meetings. The thought was that a Table may be easier to comprehend at this beginning stage of the TMDL process than narrative.

It was asked why WDFW is not at the table. Geese and other wildlife are one of the contributors of fecal coliform. WDFW will be sent a copy of the draft SIS as well as a draft copy of the TMDL submittal report. WDFW will be contacted and asked if they would care to be involved with the advisory group that will be developing the DIP, or be on the mailing list to keep abreast of this plan development.

The highest levels of fecal coliform are observed between May and October. There was also a spike in January when no cattle were present. It was mentioned that a snow melt in January may have factored into the spike in January. This extra melt water may also have diluted the fecal coliform present.

The suggestion of speeding up the river and providing more sunlight to purify the water was raised again. Dennis explained that the current slope of the river would not allow for a greater velocity and that even if it were possible erosion of the banks could become another water quality concern. In addition increasing the sunlight to the river could cause raised temperatures. Raised temperatures are another water quality issue which is directly related to salmonids (the trout that inhabit these streams). If the temperature is increased, then we enter a fish habitat problem which could lead to an Endangered Species Act (ESA) issue. We will have to answer to fish and wildlife agencies and possible endangered species problems.

It is felt by some that cattle have a right to get to the river. When the land was bought it was bought with access to the river. If cattle need to be removed from the river then houses should also be moved as they contribute pollution to the river. If the water body is impaired (polluted), landowners are required to implement BMPs to decrease this pollution in an effort to meet water quality standards. RCW 90.48 states that it is a violation to knowingly pollute waters of the state. The states water bodies are protected from pollution just as ground water is protected.

One member of the group handed out a form stating that fecal coliform pollution is not a nonpoint source of pollution and that if cows were grazed 10 head or less to an acre, then cows would not be considered a contamination factor. See attached handout.

Several inaccuracies and misleading statements in this handout were pointed out. The second "Whereas" states "the bacteria load is *not* a non-point source issue at all" which is untrue. In essence this statement says that all fecal coliform bacteria are coming out the end of a pipe and wildlife, domestic animals, septic systems, and livestock are not a source. At previous meetings the group agreed that likely sources include wildlife and septic systems and that livestock may also be contributing. It also states the vast majority of the bacteria may come from point sources. The only point sources on the Colville River are the wastewater treatment plants which have either recently been upgraded or are in the process of upgrading their facilities. These improvements ensure that fecal coliform levels entering the river from these facilities are at or below the water quality standard. The new permits issued after upgrading the facilities will require the discharge to not increase the fecal coliform levels in the river.
It will be necessary that the group review and comprehend the difference between point and nonpoint source pollution prior to when the implementation plan is developed.

In the third “whereas” it says “the Year 2002 laboratory testing….” This statement is misleading because it implies there is a year’s worth of laboratory testing when in actuality there was only one sample taken and it was not taken with an approved quality assurance project plan.

In the fifth “whereas” it states “it has been proven that this low-density grazing does not raise fecal coliform bacteria count; but to the contrary, it is indicated that with proper grazing, the bacteria load is dramatically reduced.” At this point nothing has been *proven* one way or another. It was explained that even with a great deal of proof indicating a trend theories are rarely proven. This statement is worded to strongly to be accurate.

It has previously been pointed out that fecal coliform levels do decrease through this grazing area and this is due to dilution and die-off. If the cattle were not grazing in this area, and if the bacteria levels were at the same high levels entering this area, the levels would decrease also.

The final paragraph states that if cattle are grazed at 10 head or less per acre they will not be considered a contamination factor. This practice is based on the Savory method of ranching in which cattle are grazed 10 to an acre until all vegetation is removed. Then they are rotated to a new pasture and the vegetation in the previous pasture gets reestablished. The theory states that if the grazing is not intense then the cattle will eat the desirable plants and leave the undesirable plants. If cattle are rotated too soon then the undesirable plants will take over.

For the purpose of this project, we are concerned only with water quality and the bacteria levels in the river. The desirable plants versus undesirable plants is another issue.

It was asked how many cattle are currently grazing in one of the areas that is violating the fecal coliform standards. There is an average of 2 cows per acre in the area where the above mentioned water sampling took place. The practice of intense grazing is not being applied but instead the cows roam and are not rotated between separate pastures. When asked if the cattleman planned to implement the Savory method the answer was no but they would agree to maintaining 10 head or less per acre. However, if this current area of violation is averaging 2 head per acre it is evident that this method would not work without the rotation and intense grazing. It was admitted that when the number 10 was chosen for this statement that is was an arbitrary number. It was stated that if they are going to use a method similar to the Savory method it needs to be one that is documented in academia and shown to work over time.

Regardless of the problems with this handout those present at the meeting, with the exception of three people, agreed to revise the statement and adopt it as the Cattleman’s Association’s best management practice.

It was explained that this statement alone would not be sufficient to get EPA approval. Much more needs to be done to reduce the pollution. One member suggested that if EPA is not going to approve it then why not just let EPA write the TMDL. If Ecology does not submit a TMDL that EPA can approve EPA will write the TMDL. By working with Ecology the interests in the watershed will have more of a voice as to what they can do to improve water quality rather than have it dictated by EPA. It is beneficial to the watershed residents if this water quality improvement plan is developed and implemented by the watershed residents.

Tim Kunka volunteered to draft up something that supports each statement in the handout so anyone reading it can understand where it’s coming from.

It was asked what Ecology knows about antibiotic resistance testing. Very little is known about this approach, but EPA Region 3 in Virginia is accepting it for TMDL development. Although, Ecology can accredit labs for this type of work no labs in the state have requested accreditation for this type of microbial work.

The group concluded that we need to find additional funding to test upstream of the hot spots. We should start at the confluence of Jump off-Joe and work upstream in the river since that is the area we know the least about concerning bacteria pollution sources.

It was agreed that this area of the main stem should be the first area to have further fecal coliform testing and narrow down the geographical area for the bacteria source determination.

COLVILLE RIVEER BACTERIA WATER CLEANUP PLAN ADVISORY GROUP
"BMP POSITION STATEMENT"

WHEREAS,
The Colville River Water Cleanup Plan Advisory Group is composed of agency personnel and private citizens wishing to incorporate both logic and science to achieve improved water quality, from a bacteria standpoint, in the Colville River.

AND WHEREAS,
Additional bacterial testing is indicating that the bacteria load is *not* a nonpoint source issue, but *very possibly* the vast amount of contamination comes from point source (septic) problems.

AND WHEREAS,
The Year 2002 laboratory testing shows a *300% decrease* in fecal coliform contamination as the Colville River flows through 3 ½ miles of grazed pasture land.

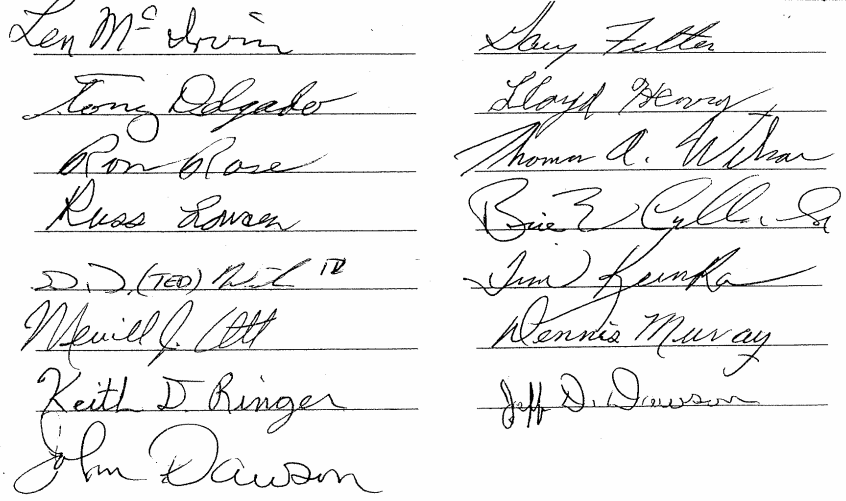
AND WHEREAS,
The Year 2000 laboratory testing showed this *same* trend of improved water quality as the Colville River flowed through grazed pasture land.

AND WHEREAS,
It has been proven that this low-density grazing does not raise fecal coliform bacteria count, *but to the contrary*, it is indicated that with proper grazing, the bacteria load is dramatically reduced.

NOW THEREFORE,
Be it resolved that the Colville River Bacteria Water Cleanup Plan Advisory Group's official position is that *proper grazing along the Colville River with a density of 10 head or less per acre of grazed area is not a contamination factor and will no longer be considered as such in this ongoing water quality study or in any literature published by this group, unless proven otherwise.*

As Revised

The undersigned attest to the approval and passage of this statement this 17 day of Sept 2002.



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
4601 N. Monroe Street • Spokane, Washington 99205-1295 • (509) 456-2926

October 17, 2002

Mr. Jerry Cline
Little Pend Oreille Nat'l Wildlife Refuge
1310 Beor Cr Rd
Colville, WA 99114

Dear Mr. Cline:

In response to the September 17, 2002 Colville River Bacteria TMDL advisory group meeting, I would like to clarify several issues. Nine segments of the Colville River main stem and 13 tributaries are on the 303(d) list of impaired water bodies not meeting water quality standards for fecal coliform bacteria. Water quality monitoring throughout the watershed over the past ten years have resulted in frequent fecal coliform bacteria violations of the standards. A TMDL or Total Maximum Daily Load is a tool for implementing water quality standards and is based upon the relationship between pollution sources and in-stream water quality. The TMDL process establishes control measures that should provide the pollution reduction necessary for a water body to meet water quality standards.

Since the bacteria levels have caused its listing on the 303(d) list of impaired waters, the Colville River **must** have a TMDL developed and implemented to bring it into compliance with the state water quality standards. This requirement is pursuant to Section 303(d) of the federal Clean Water Act and the Memorandum of Agreement (MOA) between Ecology and the Environmental Protection Agency (EPA). If Ecology cannot or will not develop a particular TMDL, EPA is the designated "backstop" and must develop one.

Washington's Water Pollution Control Act (chapter 90.48 RCW) provides broad authority to issue permits and regulations, and prohibits **all** discharges to water. The act openly declares that it is the policy of the state to maintain the highest possible standards to ensure the purity of all waters of the state and require the use of all known, available, and reasonable means to prevent and control water pollution. The act defines waters of the state and pollution, and authorizes the Department of Ecology to control and prevent pollution, and to make and enforce rules including water quality standards. The act also designates Ecology as the state water pollution control agency for all the purposes of the federal Clean Water Act. Under this statute, Ecology is authorized to administer wastewater disposal permits and to require prior approval of plans and methods of operation of sewage or other disposal systems.

Pollution is generally the presence of matter or energy whose nature, location, or quantity produces undesired environmental effects. Under the Clean Water Act, the term is defined as the **man-made or man induced** alteration of the physical, biological, chemical, and radiological integrity of water. Livestock polluting the waters of the state with fecal coliform bacteria is considered a man induced pollution of our waters.

Ecology believes that all citizens should be cognizant of our needs for current and future clean water and would want to participate in that endeavor. The voluntary implementation of best management practices (BMPs) to achieve water quality standards is the desired implementation format. If voluntary implementations to achieve the required bacteria reductions are not completed, then Ecology is required to use its authority under 90.48 RCW to enforce against polluters; EPA also has enforcement authority. Enforcement means that dischargers will be given a notice of violation to motivate change. Should change not be forthcoming, they will receive an order. If the order is disobeyed they will be issued a fine. Enforcement is available to ensure the viability of pollution prevention programs.

The Cattleman's "BMP Position Statement" contains numerous inaccuracies and absence of scientific proof. I am concerned that several members of the advisory group may not fully understand the difference between point source and nonpoint source pollution. Point source pollution is any pollution that comes out the **end of a pipe**. Nonpoint source pollution is any source from which pollution is discharged that is not identified as a point source. Nonpoint source bacteria pollutants including livestock operations, faulty septic systems, and wildlife wastes have impaired the designated uses of many water bodies in the Colville River watershed. The TMDL study indicated that the bacteria in the Colville River were from nonpoint sources. Therefore, it is the responsibility of the land owners to implement BMPs to reduce or eliminate the pollution reaching the water from their land.

The third statement of the "BMP Position Statement" says the **one-time** 2002 sampling event resulted in a 208% and a 300% decrease in fecal coliform density. A scientific conclusion can not be made from **one** set of water sample results. As has been previously discussed, there is a significant dilution factor of 142% flow increase through the 3.5 miles of livestock grazed pasture. This flow increase is credited to tributaries and groundwater inflow to the river. This dilution factor is a scientific fact that contributes a major component to the fecal coliform density reduction as the river passes through this grazed property.

The full year of water quality data from the 2000 TMDL study does not correlate with the one-time sampling event. The study data does show some decreasing fecal coliform densities; however, the study data also shows 117% density increases. Considering that the study data over time showed increases in fecal coliform densities and the tributary and groundwater dilution factors through the grazed area invalidates statement #4 of the position statement. There is no scientific evidence that shows livestock grazing along the Colville River reduces fecal coliform density and improves the water quality. However, there are hundreds of examples with scientific evidence from studies across the United States that show livestock grazing does **increase** fecal coliform densities and **impairs** water quality. As discussed in our advisory group meetings, the segment upstream of this grazing area requires an 89% fecal coliform reduction and the segment downstream requires an 84% fecal coliform reduction. Since both segments are in violation of the standards at that level, this 5% reduction differential is not significant and certainly does not demonstrate that livestock grazing is improving the river water quality.

In view of the inaccuracies mentioned, the "BMP Position Statement" can not be considered a scientifically factual statement. Livestock grazing practices allowing full access to the river without off-stream watering or fencing is contributing to the bacteria water quality impairment of the Colville River. In addition to other human caused contributors, livestock grazing **will** be considered a contamination factor in this water cleanup plan.

It is very important that the advisory group and the Cattleman's Association members understand the issues addressed in this letter and the TMDL so we can continue to work together and return the Colville River to a healthy water body. Please contact me at (509) 456-4461 or by email at demu461@ecy.wa.gov if clarification on any of the issues in this letter is desired.

Sincerely,

Dennis Murray
Water Cleanup Specialist
Water Quality Program

DM:slt

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Appendix B

Responses to Comments

Comments from the November 21, 2002 Public Meeting

Comments regarding factual inaccuracies, improved wording, or that clarify policy positions by other government agencies have been directly incorporated into the text of the submittal report. All other comments are summarized below. In order to avoid redundant and/or repeated responses to similar or related comments, some comments may refer back to a previous response.

The following comments were recorded on a flip chart at the public meeting. These are not exact quotes but are paraphrased. Every effort was taken to reflect the accuracy of the comment from the speaker.

1	**Comment:** You can see a gradual reduction in fecal coliform from upstream locations to downstream locations. Why won't Ecology test upstream of the site to determine where the sources are? Complete testing should be done before any implementation is done. We can not correct obvious sources without further testing upstream.
	Response: Upon EPA approval of the TMDL submittal report, the Detailed Implementation Plan will be developed by the Advisory Group and the TMDL Lead. The first part of the implementation plan will be additional fecal coliform water quality monitoring. This will be necessary to decrease the geographical area to determine where the bacteria pollution is coming from. Since we are at the very beginning of this water quality improvement project in the Colville River watershed, it is essential to determine the "where" question and then "what" the actual source is prior to implementing bacteria reducing Best Management Practices (BMPs).
2	**Comment:** One sample site is impaired and therefore the whole creek is listed without being tested which does not seem right.
	Response: When water quality standards are not being met at a particular stream sample site, the segment of that stream is placed on the 303(d) list of impaired water bodies. Water body segments listed are approximately 1 mile. The water segmentation system states that segments of rivers, streams, and lakes of less than 1,500 acres are defined as the portion of the water body lying within a square mile. The fecal coliform reduction maps generated by Ecology for the Colville River watershed do indicate an entire tributary as needing bacteria reductions. This was for graphic presentation purposes only.
3	**Comment:** There are no cattle up Haller Creek, why are the fecal coliform numbers so high there?
	Response: Why the fecal coliform numbers are high in Haller Creek has yet to be determined. Additional fecal coliform water quality monitoring will be necessary to determine the source(s) of the bacteria pollution. Please see response to comment #1.
4	**Comment:** The current technical analysis is just statistical analysis and there are still questions as to the actual sources. Gene Cada wants to go on record to state that we must determine the sources first.
	Response: This water quality project is at the beginning stages with only large geographical areas known for high fecal coliform levels or densities. Additional fecal coliform water quality monitoring will be necessary prior to implementing appropriate site-specific fecal coliform reducing BMPs. The next steps in determining the fecal coliform sources would be to: 1) focus on the river main stem segments and the tributaries that require the greatest fecal coliform reductions to meet water quality standards; 2) then decrease the geographical area of "where" the bacteria sources are; 3) then determine "what" the sources are. The

	upper basin of the Colville River watershed, as well as some tributaries will require additional bacteria water monitoring to determine where and what the sources are.
5	**Comment:** Has there been any DNA sampling on where the bacteria are coming from?
	Response: DNA analysis has not been conducted in the Colville River watershed. One very significant problem of the bacteria source tracking (BST) methods, including the DNA ribotyping method, is that they are very expensive. While DNA testing shows which species are contributing fecal coliform bacteria (or e-coli bacteria) to a water sample it can not at this time, with the number of samples taken in accordance with current methodologies, quantify what percent is from the various species. Currently, DNA testing can not determine the percentage of bacteria contamination that comes from wildlife or human activity. Additional fecal coliform water quality monitoring would be much more economical for decreasing the geographical area to determine "where" the bacteria sources are located. This information will be very beneficial to further determining "what" the sources are.
6	**Comment:** Even during the pasture season we have dirtier water above our property than below. How can we contemplate a plan without knowing the sources?
	Response: Since we are at the very beginning of this water quality improvement project in the Colville River watershed, it is essential to determine where and what the actual fecal coliform bacteria sources are. Please see response to comment #4.
7	**Comment:** You can smell feces in the water in some places. Does more wildlife contribute fecal coliform in the water?
	Response: The fecal coliform bacteria sources in the Colville River watershed have yet to be determined, for that reason it is unknown if wildlife are the primary fecal coliform contributors.
8	**Comment:** By federal law this action (TMDL) needs NEPA assessment. It needs to consider economic and cultural impacts. A request for a full blown NEPA study was asked for.
	Response: NEPA applies to proposed federal studies or project actions. The state is conducting this water quality improving TMDL study; therefore it is not a federal action. An action itself would be the proposed response to the TMDL study and the potential effects of this response. Studies or projects are not actions; they are precursors to potential actions proposed at a later date. Invoking NEPA would be an incorrect application of that law in this circumstance.
9	**Comment:** Is funding available on the main stem and tributaries to identify sources and pinpoint which parts of the tributary are impaired.
	Response: The Stevens County Conservation District currently has an Ecology grant to perform additional fecal coliform water quality monitoring of the main stem upper basin and tributaries, which have the most bacterial pollution concern. Ecology's Environmental Assessment Program (EAP) technical personnel may also do some fecal coliform monitoring during this water quality improvement project. The purpose of this additional monitoring will be to decrease the geographical areas to help determine where the bacteria pollution is coming from, which will help in determining what the source(s) are. Funding

	may also be available from Ecology's grant and loan programs.
10	**Comment:** What is being submitted to EPA? Is it the Summary Implementation Strategy and Technical Report? The Technical Report said that the "obvious" source is cattle.
	Response: The entire Colville River watershed Bacteria TMDL submittal report includes the: 1) technical report, *Colville River Fecal Coliform Total Maximum Daily Load Study*; 2) Summary Implementation Strategy (SIS); and 3) responses to comments *made* during the 45-day comment period. Ecology acknowledges and the report describes the highest potential sources of bacteria to the Colville River as leaking on-site septic systems or straight piped septic systems, wildlife, and livestock. Many areas in the watershed will require additional bacteria water quality monitoring to identify the contributions from different sources. The report stated "the most obvious source of bacteria was from cows directly accessing the streams". This was a personal observation of the investigator doing the fecal coliform bacteria study. It is based on the investigator's best professional judgment. From additional monitoring, watershed residents and interested entities with Ecology's technical assistance will determine the fecal coliform bacteria sources.
11	**Comment:** Why are the Chewelah and Colville POTWs allowed to meet or exceed the limits for the river?
	Response: The POTW permit criteria are water-quality based at the "end-of-pipe" limits. These are the plants' effluent limits, prior to being discharged to the river. The POTW discharge criteria are based on the volume of water in the river. These flow volume limits are such that the POTWs are not allowed to increase the fecal coliform levels in the river. The discharge permits designate these limits, and the POTWs generally discharge well below these limits. If the POTW discharges a pollutant above these limits they are in violation of their permits. POTWs that are in violation can be fined but are usually under an order to fix the problem and train the operators so the violation will not be repeated. The POTW discharge is monitored and this monitoring report is submitted to Ecology on a regular basis.
12	**Comment:** The sampling is topsy-turvy to what you would think. You would think it (fecal coliform counts) would get worse downstream, instead they get better.
	Response: There are many reasons why bacteria counts could decrease from upstream to downstream locations. If a stream reach does not have additional bacteria contributions, one would expect a decrease in counts. As streams flow downstream, usually additional water is gained through tributaries and groundwater. The more volume of water in a stream, the more pollutants the water body can assimilate (absorb). Bacteria also have a natural die-off rate and if the stream flow is slow enough, bacteria can settle to the bottom because velocities are not fast enough to keep them suspended.
13	**Comment:** If the water slowed down would it cause the fecal coliform to increase because of increasing warmth?
	Response: The result of slower water velocities on bacterial counts are difficult to predict since there are many variables that must be considered. Bacteria can go through a number of processes in surface waters and are very likely site-specific. Slower water velocities could increase water temperature in the summer months and warmer water could promote growth of bacteria; however, slower velocities could also settle out more bacteria.
14	**Comment:** How long can fecal coliform survive outside an animals gut? Will high water

	temperatures (85 degrees F) increase the fecal coliform?
	Response: Fecal coliform bacteria survival is dependent upon many environmental variables. High water temperatures could increase the fecal coliform count. Fecal coliform bacteria can survive for months given a protected environment.
15	**Comment:** Do you determine the sources of fecal coliform by eliminating the obvious sources or by more testing? Would testing be based on funding availability? What is the process for determining the sources (What are the next steps?)?
	Response: Please see response to comments #4 and #9.
16	**Comment:** The river is plugged up and picking up fertilizer and nitrogen from crops. It sits there incubating bacteria and gets worse.
	Response: Streams that lack riparian buffers do tend to get wider and shallower when sediment and/or silt, carrying nutrients, are allowed to flow into it. Nutrients can increase bacteria growth as well as other water flora. Sediments and aquatic vegetation can harbor bacteria in streams.
17	**Comment:** Is dredging the river an option if it is part of the TMDL? Who (what agency) would oppose this and why?
	Response: There are three main reasons dredging or channelizing the river would not be an option to address fecal coliform issues under a TMDL: 1) dredging activities increase water quality problems including higher levels of suspended sediments, increases in water temperature, and higher levels of other pollutants; 2) dredging reduces fish and wildlife habitat; and. 3) dredging can increase flood damage. Most state and federal agencies would oppose dredging as an option to address TMDLs. This opposition would not only come from the WA Department of Ecology, but also from the WA Department of Fish and Wildlife who requires permits for all dredging activities in the state. The Army Corp of Engineers may also be involved in the permitting process, as well as the Environmental Protection Agency (EPA), and the National Marine Fisheries Service (NMFS) and/or the US Fish and Wildlife Service, particularly if the stream or river to be dredged provides habitat for endangered species.
18	**Comment:** Is groundwater recharge also diluting the river (leading to lower fecal coliform counts downstream)? What about including strategies to increase groundwater recharge of the river during low flow periods?
	Response: Groundwater in the Colville River basin is contained in two hydrostratigraphic (water bearing) units. These units are a highly permeable surficial alluvium and fractured bedrock. Due to the shallow groundwater and the very permeable glacial and alluvial soils, groundwater in the river basin does inflow to the Colville River. Also, faults in the bedrock may direct additional water from the surrounding hills into the alluvial deposits, which could possibly flow into the river (Russell, 1971). An example of groundwater flowing into the river and diluting the bacterial counts can be found in the technical report. The Colville River at Greenwood Loop Road was the furthest downstream site for the study and did not violate the fecal coliform water quality standards throughout the year-long study. All other sample sites except Sheep Creek in Springdale violated the standards. When the river flows were developed, a substantial volume of

	groundwater was found flowing into the river just downstream of the Mill Creek confluence. The increased river volume is likely the reason for the lower bacteria concentrations at the Greenwood Loop Road site. Generally, groundwater has much lower bacteria counts than surface waters. Options to increase groundwater inflow to the river during low flow periods are limited. When groundwater is at its lowest level, water use is at its highest level. Rather than deal with the complications of using groundwater to dilute the bacteria levels, a better option would be pollution prevention strategies to decrease or limit the sources of the bacteria contributions.
19	**Comment:** The TMDL should be based on science. Are there grants available for individuals to do testing?
	Response: The TMDL is based on science. Please refer to Appendix E of the submittal report for the TMDL study *Quality Assurance Project Plan,* which describes the scientific methods used for this science based study. Numerous bacteria water quality studies over the past ten years have shown fecal coliform bacteria counts exceed water quality standards throughout the Colville River watershed. Each of these studies was required to have a *Quality Assurance Project Plan* that described the scientific methods used. Public entities can apply to Ecology for grants and loans to do monitoring. There are also many sources of private grants and loans which schools, nonprofit groups and others can apply for. There are many environmental education grants available to schools which have been used to study water quality. The internet is a great resource for searching for grant opportunities.
20	**Comment:** If it is shown that cattle are trashing the river then people will do something to fix it but first it needs to be proven that cattle are the problem. Currently the TMDL is based on assumptions.
	Response: Ecology appreciates that people will be willing to address the problem. Please refer to the response to comments #4 and #19.
21	**Comment:** Is this TMDL being driven by EPA?
	Response: The Total Maximum Daily Load (TMDL) or Water Cleanup Plan process is established by Section 303(d) of the Clean Water Act (CWA). The Environmental Protection Agency (EPA) is responsible for upholding the CWA and in Washington State the Department of Ecology is required to complete the TMDL process for water bodies on the 303(d) list. Section 303(d) of the CWA requires states to identify sources of pollution in waters that fail to meet state water quality standards, and to develop Water Cleanup Plans to address those pollutants. The Water Cleanup Plan (TMDL) establishes limits on pollutants that can be discharged to the water body and still allow state standards to be met. In addition, a 1998 citizen lawsuit settlement resulted in a Memorandum of Agreement (MOA) between the Washington Department of Ecology (Ecology), U.S. Environmental Protection Agency (EPA), Northwest Environmental Advocates, and Northwest Environmental Defense Center. The MOA outlines a clean up schedule directing how Washington State will improve the health of nearly 700 water segments.
22	**Comment:** Before money is spent on shotgun approach, maybe we should spend money on DNA/RNA studies to know what animal or human it's coming from.

	Response: One very significant problem of the bacteria source tracking (BST) methods, including the DNA ribotyping method, is that they are very expensive. While DNA testing shows which species are contributing fecal coliform bacteria (or e-coli bacteria) to a water sample it can not at this time, with the number of samples taken in accordance with current methodologies, quantify what percent is from the various species. Currently, DNA testing can not determine the percentage of bacteria contamination that comes from wildlife or human activity. Additional fecal coliform water quality monitoring would be much more economical for decreasing the geographical area to determine "where" the bacteria sources are located. This information will be very beneficial to further determining "what" the sources are.
23	**Comment:** If all human activity is removed and the river still violates the standards Ecology will not remove all the wildlife.
	Response: TMDLs only address human-caused pollution per the federal Clean Water Act (CWA). Human-caused pollution is normally manageable with the implementation of BMPs. If all human caused pollution is eliminated and a water body continues to not meet the water quality standards, then it is determined a natural condition. The water quality standard for this particular water body segment is then set at this natural condition or background level.
24	**Comment:** In 1910 they dredged many miles of the river and small portions of it did not make a difference therefore individual landowners can not make a difference.
	Response: Dredging the river and reducing the bacteria to the river deal with two different problems. Dredging was done for flood prevention and to help in farming the fertile valley bottom land not for any pollution prevention. Although it is difficult to see the affect one landowner can have when taking steps to reduce pollution, great progress can be made when several landowners combine their efforts.
25	**Comment:** Who or what gets to determine the obvious sources? Is it the best agency guess?
	Response: Please refer to response to comment #10. Additional monitoring will be necessary to determine the actual sources. From the additional monitoring, watershed residents and interested entities with Ecology's technical assistance will determine the fecal coliform bacteria sources.
26	**Comment:** Gene Cada wanted to go on the record to say that if the obvious source is my cow then that hits me right in the pocket book. I would like my criteria of what an obvious source is as important as an agency's employee's observation.
	Response: Please refer to response to comments #4 and #25. Where and what the fecal coliform sources are will be identified and upon this identification the proper bacteria reducing BMPs will be implemented. Cost share funding may be available for watershed residents from conservation districts and NRCS to implement BMPs.
27	**Comment:** Would a NEPA report help address the concerns about the TMDL?
	Response: Please refer to the response to comment#8.

28	**Comment:** If a specific project like fencing uses state or federal money then it would need

	a SEPA/NEPA report.
	Response: The need for SEPA and/or NEPA review would depend on the individual projects and the permitting agencies for those projects. When state and/or federal funding for a project an environmental evaluation may be needed. This evaluation may either indicate that the project is minor and no further evaluation is needed or the project involves a complicating environmental concern, such as endangered species, and a detailed environmental assessment is required which may lead to a complete environmental impact statement. It would be unlikely that a fencing project would require either a SEPA or NEPA.
29	**Comment:** What I gather is that this meeting is to kickoff a public comment period. What do we comment on?
	Response: The November 21, 2002 meeting was a meeting to kick-off the public comment period for the TMDL submittal reports. There are two reports: one report addresses dissolved oxygen and the other report addresses fecal coliform bacteria. Each reports include a technical study and a summary implementation strategy. A 45-day comment period was established to give people additional time to review and comment on the reports.
30	**Comment:** Will the BMP position statement from the cattleman be in the TMDL plan? It was a unanimous vote.
	Response: The meeting notes from the September 17, 2002 citizen advisory group meeting discusses the cattlemen's BMP position statement and includes the statement as an attachment. Therefore it will be included in Appendix A (Public Participation Materials) of the submittal report.
31	**Comment:** If the BMP position statement isn't used, why does Ecology have an advisory group?
	Response: The advisory group meetings were held as discussion groups to generate ideas on
	how to reduce the fecal coliform bacteria entering the water bodies. Another advisory group will be formed to work on the detailed implementation plan, which will specify actual BMPs to be implemented. Please refer to response to comment #30 regarding the BMP position statement.
32	**Comment:** In regard to the whole advisory group not being present during the vote on the statement, if you aren't present you don't get a vote.
	Response: When the advisory group was established there was representation from a wide variety of interests (health district, PUD, cattlemen, landowners, Stevens County Conservation District, tribes, NRCS, etc). These meetings were held as discussion groups to generate ideas on how to reduce the fecal coliform bacteria entering the water bodies and voting procedures were not established for making decisions. A vote should not have been called for without first establishing ground rules for that procedure. Ground rules for making decisions at future meetings will be established by the advisory committee.
33	**Comment:** Can we have another public meeting before the TMDL is submitted to EPA?
	Response: In response to this request another meeting was held on December 19, 2002 to take additional comments on the submittal reports.

The following comments were recorded on a flip chart at the public meeting. These are not exact quotes but are paraphrased. Every effort was taken to reflect the accuracy of the comment from the speaker.

34	**Comment:** Why are the Washington State water quality standards more stringent than the federal standards established by EPA? EPA says that 200 cfu/100ml is safe but Washington uses 100 cfu/100ml.
	Response: Any numerical value chosen for an indicator organism, such as fecal coliform bacteria, is associated with at least some theoretic level of risk to human health. These risks can be defined and reduced through setting water quality standards and taking control actions. In setting standards, statistics are used to establish the level of illness expected based on the rates of illness actually observed among swimmers. The issue of setting a numerical limit at some defined level of potential illness suggests that there can be an acceptable level of risk. This means some number of illnesses in a given population is acceptable. The Environmental Protection Agency (EPA) fecal coliform criterion of 200 cfu/100mL carries a theoretical risk level of 8 illnesses per 1,000 swimmers in freshwater (USEPA, 1986). These coliform criteria were initially described as being chosen specifically so as not to have a statistically discernable increase in illness (USEPA, 1986). At the time Ecology established the existing fecal coliform water quality standards a discussion paper noted "it was desirable to have the fecal coliform level as low as possible to have the safest level of water to accommodate swimming" (Ecology, 1976). Ecology chose a standard that would result in a statistical discernable decrease in illness.
35	**Comment:** A lawsuit in California is saying that breaking the land "clay pan" with a plow would be considered a point source because it is identifiable. At previous Ecology meetings a point source has been defined as only those sources that come out of a pipe. What is the right definition and how will affect the TMDL?
	Response: This lawsuit pertains to the conversion and subsequent filling of wetlands using "deep ripping." The court ruled the land conversion was a "change in use" and does not qualify for the "normal farming activity" exemption under the Clean Water Act (Environmental Due Diligence Report vol. 11, no. 03). The Colville River Watershed Bacteria TMDL only addresses bacteria levels in water; therefore the lawsuit does not relate to the TMDL. The definition of point and nonpoint source pollution is also not affected by this lawsuit. Point source means any confined and discrete conveyance including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, CAFO, or vessel or other floating craft, from which pollutants are or may be discharged directly into receiving water bodies. Non-point source water pollution arises from a broad group of human activities for which the pollutants have no clear or concentrated point of entry into receiving water bodies.
36	**Comment:** What does a TMDL have to do with a NPDES permit, point source vs. nonpoint source and how does a landowner with cattle fit in?
	Response: The Environmental Protection Agency (EPA) has an extensive permitting system for point source discharge of pollutants into receiving water bodies. This permitting system is called the National Pollutant Discharge Elimination System (NPDES), which is managed by

	Ecology in Washington State. The goal of a Total Maximum Daily Load (TMDL) is to ensure the impaired water body will attain water quality standards. The TMDL determines the amount of a given pollutant, in this case bacteria, which can be discharged to the water body and still meet water quality standards. This pollutant amount is called the loading capacity, and allocates or assigns that load among all of the various sources. If the pollutant arises from a discrete or distinct point source, such as an industrial facility or a city waste water treatment plant, its NPDES permit will specify its share of the loading capacity. If the pollutant arises from no obvious point of entry, it is considered a nonpoint source of pollution and does not require an NPDES permit. A landowner with cattle, other than those designated as an Animal Feeding Operation (AFO) or Concentrated Animal Feeding Operation (CAFO), is treated as a possible agricultural non-point source and is encouraged to implement appropriate BMPs.
37	**Comment:** How does EPA's interpretation of point source vs. nonpoint source pollution (if a nonpoint source is identifiable then it is a point source) differ from Washington State's Dept of Ecology's interpretation?
	Response: Please see response to comment #35 for EPA's definition of point and nonpoint source pollution, which is also Ecology's interpretation. A nonpoint source may be identifiable but it does not become a point source unless there is a confined and discrete point of entry into receiving water bodies.
38	**Comment:** Ecology should be required to perform bacterial source tracking (DNA) analysis to determine the bacteria source.
	Response: Please see response to comment #22.
39	**Comment:** What is the maximum level of fecal coliform bacteria allowable in the Colville River?
	Response: Based on water use, beneficial or intended, the Colville River is designated as a Class A surface water in the state of Washington. For fecal coliform bacteria the *Water Quality Standards for Surface Waters of the State of Washington*, Washington Administrative Code (WAC) Chapter 173-201A-030 (2) (A) states: Freshwater—fecal coliform organism levels shall both not exceed a geometric mean value of 100 colonies/100mL, and not have more than 10 percent of all samples obtained for calculating the geometric mean value exceeding 200 colonies/100 mL.
40	**Comment:** How could the fecal coliform levels upstream of the livestock grazing be higher than downstream of this grazing?
	Response: Please see response to comment #12.
41	**Comment:** In the 1930's there were approximately 600 head grazing and currently there is only 100 head grazing. Post war there was approximately 200 dairies and now there are 14. Prior to mining and forestry, cattle was the number 1 production in Steven's County. How does today's water quality compare with historical water quality and can the TMDL background section address this historical information? The study should also consider the custom, culture, and economic health of this watershed.
	Response: Unfortunately, we do not have historical water quality data with which to compare the current water quality. The background section of the submittal report has been revised to include some additional historical information on the regional background of Stevens County.
42	**Comment:** Best available science (requested this be underlined) needs to be used to determine the fecal coliform bacteria sources. Also science needs to be used to show when

	fecal coliform pollution becomes toxic.
	Response: Best available science will be used to determine where and what the bacterial sources are, thereby enabling the implementation of site-specific BMPs necessary to reduce the bacteria levels. The term toxic refers to poisonous substances. Fecal coliform, while not considered toxic, are indicators of pathogenic organisms which are capable of causing disease. Indicator bacteria mimic the survival characteristics of the pathogenic viruses and bacteria of concern. Indicator bacteria also allow the ability to be analyzed rapidly to obtain feedback on health issues.
43	**Comment:** Is there any study to show that the bacteria we're talking about in the Colville River are pathogenic?
	Response: A study has not been done showing what bacteria in the Colville River are pathogenic. However, fecal coliform bacteria are indicators of the presence of pathogenic organisms. Please see response to comment #42.
44	**Comment:** How do bacteria and nutrients relate?
	Response: Fecal material will contain bacteria and nutrients, and often (but not always) elevated concentrations of both will be present in a stream below a fecal source. Nutrients can also be elevated from sources other than fecal material. Bacteria survival improves in an environment rich in nutrients, but many organisms that are predators on bacteria also benefit from the nutrient rich environments. Typically, there is not a clear correlation between bacteria levels and nutrient concentrations.
45	**Comment:** There must be reliable science use, not just best available science.
	Response: The TMDL is based on science. Please refer to Appendix E of the submittal report for the TMDL study *Quality Assurance Project Plan*, which describes the scientific methods used for this science based study. Numerous bacteria water quality studies over the past ten years have shown fecal coliform bacteria counts exceed water quality standards throughout the Colville River watershed. Each of these studies was required to have a *Quality Assurance Project Plan* that described the scientific methods used.
46	**Comment:** Objects to the enforcement of an indicator bacteria in determining the toxicity of water.
	Response: Please see response to comment #42.
47	**Comment:** Fecal coliform itself does not cause health problems.
	Response: Fecal coliform bacteria are an indicator of the presence of pathogenic organisms and some species of fecal coliform can be pathogenic themselves, such as *E. coli*. Please see response to comment #42.
48	**Comment:** Study needs to show percent of the bacteria responsibility coming from wildlife.
	Response: DNA tracking of fecal coliform bacteria is the method used to determine which species of animals are sources of the bacteria. Currently, however, DNA testing can not determine the percentage of bacteria contamination that comes from wildlife or human activity.
49	**Comment:** Any enforcement must be site-specific actions.
	Response: Enforcement actions are always site-specific. There must be evidence of a discharge of a pollutant to a water body. Prior to an enforcement action, Ecology must address several issues which are as follows:

	1. Revised Code of Washington (RCW) 90.48.080 specifies that "Discharge of polluting matter in waters prohibited." 2. The violation needs to meet the definition of "Pollution" listed in RCW 90.48.020. 3. The discharge needs to occur in Waters of the State which are defined in RCW 90.48.020 and Surface Waters of the State as defined in WAC 173-201A-020. 4. Pollution of groundwater will fall under WAC 173-200. When Ecology investigates a site where an alleged violation/discharge has occurred, the above regulations are reviewed to determine whether the listed conditions of a violation have been met. The surface water quality regulations in Washington Administrative Code (WAC) 173-201A-180 specify the methods of enforcement. It lists the different enforcement tools which the inspector would deem appropriate based on the severity of the violation.
50	**Comment:** The TMDL program has nothing to do with point source (these are permitted).
	Response: Please see response to comment #36.
51	**Comment:** Is wetland creation and other wildlife enhancement projects considered a human activity and therefore a nonpoint source of pollution? For example there are wetland projects in Havermail Meadows and Delbert Fields. Were these projects required to submit an Environmental Impact Statement because they will be increasing bacteria, nutrients and other pollution? Did they have to assess the projects impacts to water quality? What requirements are there for these pollution increasing projects? Did these projects have to consider how they would affect people's livelihood? We need a definition from Ecology if creating ponds in wheat fields and thereby increasing bacteria and nutrients is a human source of pollution. We need to drain existing stagnant ponds to combat West Nile Virus and create no new ponds.
	Response: Wetlands do not create pollution. Scientific research shows that wetlands are the best way to combat pollution. Wetlands do not generate bacteria (or other pollution),rather the vegetation filters the water and traps the pollutants. As a result, wetlands are now being created to treat human waste due to efficiency, improved water quality, lowered costs, wildlife benefits, etc The same is true for the nutrient cycle. Wetlands are exceptional at capturing and utilizing nutrients Draining wetlands and ponds is not recommended for controlling mosquitoes. Healthy wetlands provide minimal habitat for mosquitoes because water conditions, water quality, and natural predators deter mosquito use and minimize larval success if egg lying occurs. Predators, including other aquatic insects, amphibians, bats and birds, feed heavily on any mosquitoes present. When necessary, mosquito populations may be minimized by treating the larvae with an appropriately registered pesticide. For more information about West Nile Virus, contact your local Health department. The State Department of Health also has a website about West Nile Virus. The address is: http://www.doh.wa.gov/ehp/ts/Zoo/WNV/WNV.html
52	**Comment:** Will off-stream watering, fencing off river, etc. be considered a point source in the future?
	Response: Pollution that could potentially reach the river from off-stream watering areas or fences will not be considered a point source in the future. Please see response to comment #

	35 for point source definition.
53	**Comment:** Need DNA testing to determine fecal coliform sources and wildlife's contribution. The standards (criteria) should begin at the background and/or wildlife level and then allow room above.
	Response: Please see response to comment # 22. The total amount allowed for fecal coliform must include the background level to meet water quality standards. Any additional levels of fecal coliform amounts above the standards would increase the risk to human health.
54	**Comment:** Wildlife is more abundant than historically due to farming because the available food dictates how much the land can support.
	Response: The Washington Department of Fish and Wildlife (WDFW) do not have any historical nor current wildlife count data for the Colville River watershed.
55	**Comment:** Wouldn't DNA analysis be necessary to know what to look for to help in what the sources are?
	Response: Please see response to comment #22.
56	**Comment:** Do we have a benchmark to tell what the bacteria levels are without cattle? Do we know what waterfowl and other animals contribute?
	Response: There is no benchmark showing what the bacteria levels are without cattle. Currently, the bacteria source levels of each contributor are not known. Future monitoring may give some insight to the levels contributed from the various sources.
57	**Comment:** What about LBar? The site does not seem to be cleaned up.
	Response: The L-Bar site was a toxic cleanup site for ammonia and chlorides and does not have any affect on the fecal coliform TMDL. For more information about the L-Bar cleanup site please contact our Toxic Cleanup Program at 509-329-3400.
58	**Comment:** Tests taken this summer showed the colonies dropped from 600 to 200 colonies/100ml after going through pastures with 1200 cows. How can Ecology say cows contribute all the coliform?
	Response: Ecology does not believe that cows are the only contributor of fecal coliform bacteria to the Colville River and its tributaries. The decrease in fecal coliform levels through this particular livestock grazing area adjacent to the Colville River is largely due to the flow volume increase from tributaries and groundwater inflow along with the bacteria die-off. Please refer to responses to comments #10 & 12.
59	**Comment:** Was there flow data taken when the samples were taken in August during a drought that was one of the most severe? We do not know if dilution was a factor then.
	Response: River flow data was not taken during the August sampling event and it is correct to say that we can not determine the dilution factor magnitude during this sampling event.
60	**Comment:** Is there a study to tell if a fecal coliform level is pathogenic or not?
	Response: Please see responses to comments #43 and #34.
61	**Comment:** The background section of the report is simplistic and does not assess the past history of the watershed that may have impacted the river and the area. Need a true history of the area including the improvements that have occurred.
	Response: The background section of the submittal report has been revised to include some additional historical information on the regional background of Stevens County. Several improvements that affect water quality have already been included in the submittal report under the Implementation Activities section. Additional improvements that are expected to improve water quality are also included in the Reasonable Assurance section.
62	**Comment:** Where is the enforcement of the TMDL's? Any enforcement with the TMDL needs to be based on site-specific pollution.
	Response: If a water quality violation occurs within a TMDL area, the same criteria

	regarding investigations and enforcement should be followed as listed in the response to comment #49.
63	**Comment:** Request that the TMDL program does not list cattle grazing as point sources requiring NPDES or permits.
	Response: The grazing of cattle is not considered a point source and will not require a NPDES permit. Please see Response to Comment #35 for the definitions of point and nonpoint source pollution.
64	**Comment:** Ninety-five percent of Stevens County streams would not have met standards years ago due to beavers.
	Response: Neither historical nor current data on the abundance of beavers and their influence on Stevens county stream water quality is available. While we will never know what the bacteria levels were prior to settlement of the area, the current water quality standards are written to protect beneficial uses of the county water bodies.
65	**Comment:** If we fence cattle off the streams can you get compensation for giving up your land. You're asking us to give up land we have worked on all our lives. You're asking us to donate our land. This is a take of land similar to taking a house to build a freeway.
	Response: Landowners are not being required to fence off streams, however for those landowners who chose to construct fences on a portion of their property, federal and state cost-share funding is available through the Natural Resource Conservation Service (NRCS) or the conservation district to help off-set fencing costs. NRCS's continuous Conservation Reserve Program (CRP) does pay rental rates for the land that has been enrolled in the program. A take can also be considered the operation of a business or farm in a manner that fails to protect human health and water use, thereby denying the public's right to clean water.
66	**Comment:** How long do we keep removing all human activities before determining if the bacteria are coming from wildlife?
	Response: Ecology is not proposing the removal of any human activity from the watershed. Ecology would like to work with the watershed landowners and local interests on strategies to reduce the amount of fecal coliform bacteria pollution entering the streams. Ecology acknowledges there are multiple sources of fecal coliform bacteria including wildlife, leaking and/or straight-piped septic systems, and domestic animals.
67	**Comment:** How far do we suppress human activity for the good of wildlife?
	Response: Please see response to comment #66.
68	**Comment:** We (advisory committee) were told we weren't dealing with dissolved oxygen – just fecal coliform. We don't have any representation from anyone dealing with dissolved oxygen. The two documents will likely be combined and there they should be null and void since there was no representation
	Response: Ecology is submitting two separate TMDL submittal reports for the Colville River. One is the fecal coliform bacteria TMDL and the other is the dissolved oxygen TMDL. These TMDLs are two separate documents and will not be combined. The dissolved oxygen TMDL addresses the impaired river segments directly downstream from where the city of Colville and the city of Chewelah wastewater treatment plant (WWTP) discharge to the river. The strategies to meet the requirements of the dissolved oxygen TMDL will be addressed with new effluent discharge permits for these facilities. Ecology permit managers have been working directly with the appropriate city administrators for several years concerning treatment plant upgrades enabling the plant discharges to meet water quality standards.
69	**Comment:** Fencing off our land – Any of our land that has to be fenced off needs to be

	compensated for – if you take it you pay for it. Include this in your budget.
	Response: Fencing off streams in the watershed is not required. Please see response to comment #65 concerning the fencing issue. The bacteria TMDL submittal report is only an outline of current bacteria reducing water quality improvement projects in the watershed and future water quality monitoring that will be done. The submittal report does not contain any plan nor does it specify any BMP implementations to reduce bacteria pollution in the watershed, consequently a budget can not be developed. Ecology will work with watershed residents and interested parties over the next year to develop the required Detailed Implementation Plan (DIP). The DIP will contain specific strategies to reduce fecal coliform bacteria levels in the watershed, enabling the Colville River to meet water quality standards and to ensure protection of its beneficial uses.
70	**Comment:** It is impossible for off site watering trough to not discharge during a storm event because the valley is so flat. Water will flow from land with manure around the trough and into the stream. The BMPs won't work here.
	Response: There is a possibility for run-off from storm events to carry bacteria and nutrients from manure around an off-site water tank to a stream. Placement of the trough and amount of standing vegetation along the river can decrease this risk. Any potential pollution from around a stock tank would have to flow through vegetation over the ground or percolate into the ground prior to entering a stream, greatly reducing and perhaps eliminating any pollution.
71	**Comment:** Where do we go from here? I'd like to see study above/upstream of Springdale and cattle grazing to identify sources rather than study the same old sites.
	Response: Please see response to comment #4.
72	**Comment:** Wouldn't the DNA test tell you what you are looking for?
	Response: Please see response to comment #22.
73	**Comment:** Vegetation will grow up in area where it is fenced which will eventually cause production of the land to decrease**.**
	Response: While it is true that vegetation along streams will grow in fenced areas, production does not decrease. Trees, shrubs and grasses thrive due to a constant source of moisture, and plants are constantly being regenerated as a result of frequent floods. The conservation district and/or NRCS can assist landowners with balancing vegetative growth and grazing along streams using BMPs such as pasture rotation, off-stream watering, etc.
74	**Comment:** Is the management plan and complete BMPs in the draft report? Are the Advisory Committee BMPs in the draft report?
	Response: The bacteria TMDL submittal report is only an outline of current bacteria reducing projects in the watershed and future water quality monitoring. The submittal report does not contain any plan nor does it specify any BMP implementations to reduce bacteria pollution in the watershed. The BMP position statement from the Advisory Committee meeting is discussed in the September 17, 2002 meeting notes and includes the statement as an attachment, therefore it will be included in Appendix A (Public Participation Materials) of the submittal report.

Responses to Written Comments

Due to the length of some of the written comments Ecology received, excerpts from the letters as the "Comment" are recorded below with the response.

75. Letter from Stevens County Cattlemen's Association

A. Comment: "You must understand this river may have never met current state water quality standards under the natural conditions which existed before the early settlements."

Response: While we will never know what the bacteria levels were before the settlement of the area, the current water quality standards are written to protect current beneficial uses of the water body. Those uses established for the Colville River watershed are water supply, stock watering, fish and shellfish, wildlife habitat, recreation, commerce and navigation. If water quality is found to exceed these standards and it is discovered that human activities do not contribute, then it may be considered a natural condition. Moreover, current land use practices have significantly altered the landscape since early settlement times. Therefore, it is just as likely water quality has decreased.

B. Comment: "However, we already have examples where wildlife and natural conditions are the only violators of the standards. Livestock may be considered a man-induced source of fecal coliform bacteria, but we must first determine where the pollution is coming from (source) and identify the Colville River's normal range of conditions."

Response: Additional fecal coliform water quality monitoring will be necessary prior to implementing site-specific best management practices. Please refer to response to comment #4.

C. Comment: "DOE expects the advisory group to comply with a predetermined desired response based on the paradigm that 'livestock are bad for the environment,' and the only way to improve the perceived conditions is to remove livestock."

Response: Removing livestock and fencing off the river is not required. Rather the submittal report only contains general ideas about how to reduce pollution from on site septic systems, wastewater treatment plants, and domestic animals. Site-specific implementation activities will be addressed later in the Detailed Implementation Plan.

D. Comment: "The study data does show…an increase in fecal bacteria density occurs even when livestock are not present at the time of collection and the main source of the increase could be wildlife. …However, there are studies which will give information on the source of the bacteria. Those studies must be completed before you can speculate on how much livestock contribute to fecal coliform bacteria. …you don't know the levels of contribution each source may have; yet you are confident in your assumption that livestock must be removed. …we support the "BMP Statement Position" which continues current grazing practices until additional information surfaces."

Response: Please see responses to comments #4, #22 and #30.

E. Comment: "…a certain 3.5 mile section of river/creek that had a significantly reduced level of fecal bacteria; and…the water flow was increased by 142%. You state that this cannot be 'scientifically significant' due to the fact it is one sample period. We agree with the flow of your thought however, if it cannot be considered significant, neither can it be considered insignificant."

Response: The decrease in fecal coliform levels through this particular livestock grazing area adjacent to the Colville River is largely due to the flow volume increase from tributaries and groundwater inflow along with the bacteria die-off. A water body with a larger volume of water can assimilate or absorb a larger amount of pollutants. Please see response to comment #12.

The sample referred to in your comment, while collected and analyzed scientifically, can not be considered statistically significant since it was a single sample.

F. Comment: "Animal impact was beneficial to this system in several ways which includes, but is not limited to, additional impact at the waters edge due to the trampling effect by the grazing cattle. …Fencing of riparian areas…has several damaging consequences. …grazing reduced rodent populations…which in turn decreased the need for rodenticide use as a control method. Wildlife …taken up residency…this creates a large amount of fecal contamination. …Invasion and take over by non-native species. …Let's look at the alternative: grazing will open areas, create more useable vegetation to foraging animals and will create a situation where animals will not camp along the stream bank. …Fencing to exclude livestock is expensive. …these fences have to be maintained and at some point replaced. …Steep banks and frequent flooding are major drawbacks to fencing. If we attempt to fence above the high water levels or the entire riparian area we damage our ability to operate. If the "BMP" is to fence both sides of the Colville River then where does it stop? Will we be told to fence every stream, lake and pond in Stevens County?"

Response: Fencing off portions of the river does have benefits (protecting water quality, decreasing stream bank erosion, and increasing vegetation). However, fencing off the river will not be required. Please see response to comment #65.

Again, the submittal report only contains general ideas about how to reduce pollution and does not suggest site-specific activities, rather site-specific implementation activities will be addressed later in the Detailed Implementation Plan.

G. Comment: "Off-sight watering creates bare and compacted soil conditions, because use is concentrated instead of distributed as it would be without riparian fencing. …even the best management practices which are widely accepted can not be assumed effective in every environmental system."

Response: Guidance on how to choose and design off-stream watering locations is available so that impacts to the soil are lessened. [Natural Resources Conservation Service Conservation Practice Standard Watering Facility (No.) Code 614: Areas adjacent to the trough or tank that will be trampled by livestock shall be graveled, paved, or otherwise treated to provide firm footing and reduce erosion. Design of the protective surface around the trough shall be in accordance with NRCS Conservation Practice

Standard 561, Heavy Use Area Protection.] Where the off-stream watering management practice is not used, bare and compacted soil also occurs along streams in grazed pastures where livestock can gain easiest access to the water.

H. Comment: "If the DOE is convinced that off-stream watering and fencing is the best approach, then we must request to see a long-term cost-benefit analysis of this program and research on how your BMP would affect our community, economy and our rural environment."

Response: We are not requiring landowners to fence or install off-stream watering; however, for those landowners who would like to implement these or other best management practices on a portion of their property, federal and state cost share funding may be available through NRCS or the conservation district to help off-set these costs. The submittal report only contains general ideas about how to reduce pollution and does not suggest site-specific activities; therefore a cost-benefit analysis can not be developed. Specific implementation activities will be addressed later in the Detailed Implementation Plan.

76. Dan Hopp comments:

A. Comment: "…I question why the study of the Colville River water cleanup was not started at the River source instead of Springdale?"

Response: The sites used in this study were the same sites used in previous studies by Stevens County Conservation District. Ecology determined that the study would use these established sites for consistency.

B. Comment: "According to your presentation the water was highly polluted at your first station at Springdale."

Response: The Sheep Creek sampling site at Springdale did meet water quality standards.

C. Comment: "Your chart showed it was less polluted going downstream."

Response: The river main stem does have decreasing fecal coliform bacteria concentrations going downstream. Please see response to comment #12.

D. Comment: "I would recommend another study be made beginning at the source of the Colville River and end at the beginning of the present survey."

Response: It is Ecology's intention to fill the existing fecal coliform bacteria data gaps in the headwaters of the Colville River as the first step in identifying the actual fecal coliform bacteria source(s). In addition to Sheep Creek and Deer Creek, the first four to five mile segment of the Colville River main stem will be included. Please see response to comment #4

77. Bill Kurrle, III comments:

A. Comment: "Didn't think your presentations were all that great. Didn't focus on the pertinent issues."

Response: Comment noted**.**

B. Comment: What about the nonpoint polluters in the Colville drainage watershed? How are you suggesting we stop these polluters?

Response: This TMDL is considering both the nonpoint and point sources of the bacteria pollution and when these sources are identified, the appropriate site-specific bacteria reducing BMPs will be recommended.

C. Comment: "Push for legislation that would make it necessary and required to 'fence off' all class 3-5 drainages intermittent or not."

Response: It is more appropriate that legislation be promoted by the general public rather than by a state agency.

D. Comment: "Can you see ways for big municipalities like Colville and Chewelah can reduce the amount of fecal coliform and bacterial matter in the Colville watershed? And if so how soon can this clean up operation resume."

Response: Chewelah has upgraded their wastewater treatment plant and Colville is in the process of upgrading their plant. Please see response to comment #11.

E. Comment: "You didn't identify the sources of the high readings at the various checkpoints that occurred."

Response: The checkpoints (sample sites) identified the high bacteria concentration segments of the river, but the actual bacteria sources for these segments have not been identified yet. Please see response to comment #4.

F. Comment: "Cut the time limit in the data collection and get some positive, concrete steps in place to correct and clean up the Colville River watershed. Pronto."

Response: The TMDL process requires planning before implementation, however the conservation district and NRCS are implementing BMPs with various watershed landowners.

78. Matt Schanz, Northeast Tri-County Health District comments:

A. Comment: Letter suggested new language to include in the Submittal Report on page 21 under the headings "Northeast Tri County Health District."

Response: The TMDL submittal report text revisions suggested have been made.

B. Comment: "…under the heading 'Potential Funding Sources'…Ecology will work with public entities to prepare appropriate scopes of work…and assist with applying for grant

opportunities as they arise. ...Ecology should ensure these found sources could be applied to improvements administered by public entities given Stevens County Growth Management Act status."

Response: Ecology staff does work with public entities to prepare grant applications. The funding sources can be applied to activity (nonpoint) projects. The Growth Management Act requirements apply to facilities (point source) projects only.

79. Tim Kunka comments:

A. Comment: "Object to the TMDL. Natural background conditions must be established by conducting studies which determine if the fecal bacteria are from wildlife or human sources. Natural background conditions for temperature, dissolved oxygen, etc. must also be determined."

Response: This TMDL only addresses fecal coliform bacteria, not temperature or dissolved oxygen. Please see response to comment #4 and #22.

B. Comment: "The TMDL is being used as a tool to remove human impact (i.e. livestock grazing and other agricultural activities) even though some human activities like livestock grazing are a net benefit to the ecosystem."

Response: Please see responses to comments #66 and #75 F.

C. Comment: "D.O.E. has not identified wildlife as a major most obvious source of fecal contamination based on information collected in several areas [where] livestock grazing is not occurring but water is polluted with wildlife fecal bacteria."

Response: Ecology does recognize that wildlife, on-site septic systems, wastewater treatment plants, as well as livestock and other domestic animals are all sources of fecal coliform. The primary fecal coliform contributors have yet to be determined. Please see responses to comments #4, #7 #23, and #66.

D. Comment: "Buffer fencing and off site watering, [and] tree planting should not be the only "BMP" methods to improve water quality because it has been demonstrated in our area not to work."

Response: The NRCS and conservation district can assist landowners with best management practice design and implementation so that the proper best management practice is chosen for a given site and there is a greater likelihood of success. Some best management practices, such as revegetating stream banks, take a few years to establish, demonstrate results, or for the livestock to adjust to, so although the practices may not appear successful at first, they are usually effective over time.

E. Comment: "Does the 'Hawes Case' in Oregon have any impact on Washington TMDLs?"

Response: There are no changes in Washington laws or TMDLs due to the outcome of this Oregon case. Ecology is required to implement RCW 90.48 and the federal Clean Water Act. In addition, Ecology has been directed to complete TMDLs as stated in our

memorandum of agreement (MOA) with EPA. This MOA was a result of a citizen's lawsuit.

F. Comment: "Before "BMPs" are developed downstream, water quality standards should be met upstream, [where] standards are exceeded upstream."

Response: Please see response to comment #4.

G. Comment: "Background history of the river needs to be rewritten. Need to address all previous impacts to the river. Industry, homesteads, agriculture, etc. conditions which no longer exist."

Response: Please see response to comment #61.

80. Carl W. Anderson comments

A. Comment: "Clarify whether off site watering troughs for livestock can become point source pollution."

Response: Please see responses to comments #52 and #35 (for the definition of point source pollution).

B. Comment: "Identify by DNA testing of fecal coliform to determine what species whether domestic or wildlife i.e. what is the source?"

Response: Please see response to comment #22.

C. Comment: "Use best available science instead of visible identification."

Response: Please see responses to comments #10 and #19.

D. Comment: "Identify sites where fecal coliform is introduced to streams by species and what species."

Response: Please see responses to comments #4 and #22.

E. Comment: "Is created wetlands by human activity classified by DOE and EPA as human activity, or is it natural once constructed?"

Response: The official wetlands definition used by the state of Washington (RCW 36.70A) and federal agencies (EPA, US Army Corps of Engineers), are used to distinguish if a wetland is covered by regulations. For example, a rancher who digs a hole in an upland habitat, for the sole purpose of watering livestock, is not creating a wetland. Conversely, if a hole reaching the water table is dug and over time plants and soils develop, this created wetland may be protected. The reason being is that the latter case clearly meets all three of the wetland definition criteria (soil, water and plants). Please see response to comment #51.

F. Comment: "What happens when the rules change from coliform to E. coli, a new study?"

Response: Since the Colville River was placed on the 303(d) list of Impaired and Threatened Water bodies for fecal coliform, the TMDL will continue to reduce fecal coliform levels in the river, even if the standard changes to E. coli. A new study will not be conducted.

81. Keith Ringer comments

A. Comment: "The position taken by Ecology is to restore the river back to prior water quality. Historically the river never did have as much free flow as was accomplished by dredging and draining. The condition of the river today is much better than in the past. This would make [Ecology's] statement inaccurate."

Response: Ecology's goal is to have the Colville River meet state water quality standards, not to revert back to a historic condition. Please see response to comment #75A.

B. Comment: "Ecology has been unwilling to look at science when considering the benefit of cattle pasturing on the river. This would make their position biased and scientifically inaccurate."

Response: Please see responses to comments #19 & 75 F.

C. Comment: "If Ecology should require removal of livestock from the river by fencing, this would in fact be a Taking of ancient riparian rights. To do so would be unconstitutional under the Washington State Constitution. I would ask, is the D.O.E. in violation of due process of law and the Washington State Constitution?"

Response: We are not requiring removal of livestock and fencing off the river, so the Department of Ecology is not in violation of due process of law. Riparian rights are legal rights of owners of land bordering on a river or other body of water; also, a law which pertains to use of the water for that land. Washington State recognizes both the Riparian and Appropriation Doctrines of Water Law. The Riparian Doctrine allows a person who owns land bordering a lake or stream to have a right to use the water from that waterbody. For the riparian water right to be recognized a person must have owned the land prior to 1917 and put the water to beneficial use prior to Dec. 31, 1932. Since the passage of the state Water Code in 1917 a permit has been required for all diversions of surface water.

82. Larry Sweat comments:

A. Comment: "I believe there is further need for more scientific testing to verify the actual sources of the bacteria: either human, wildlife, or cattle."

Response: Please see response to comment #4.

B. Comment: "Pathogens need to be proven present not just assumed they are."

Response: Direct testing for pathogens is very expensive and impractical, because pathogenic microorganisms (including bacteria, viruses, and protozoan) tend to be found in very low concentration levels in the water and there are countless different pathogens. Instead, monitoring for pathogens uses indicator species; so called because their presence indicates an occurrence of fecal contamination. Indicator bacteria mimic the survival

characteristics of the pathogenic viruses and bacteria of concern. Indicator bacteria also allow the ability to be analyzed rapidly to obtain feedback on health issues. Please see responses to comments #42 and #43.

C. Comment: "I don't believe there is any way of knowing whether fencing would be beneficial or detrimental to any watershed. Fencing is only another liability on the property owner that isn't necessary. "

Response: Please see response to comment # 75 F.

Landowners are not being required to fence off streams, however for those landowners who chose to construct fences on a portion of their property, federal and state cost-share funding is available through the Natural Resource Conservation Service (NRCS) or the conservation district to help off-set fencing costs. NRCS's continuous Conservation Reserve Program (CRP) does pay rental rates for the land that has been enrolled in the program.

D. Comment: "Fecal numbers have been noted to decrease as they pass through farms, ranches, or pasture land."

Response: Please see response to comment #12.

83. Fred Edwards Comments:

A. Comment: "…1943-1971 and before most every farm that bordered the river down the Colville Valley had some kind of domestic livestock that contributed to the river pollution. Most of the small towns along the rivers path probably contributed to the pollution also. Now some thirty years later most of the communities along the rivers path have some kind of sewage treatment plant in operation and there seems to be a considerably smaller amount of domestic livestock population in the same area. So, I would think the source for all bacterial pollution must be considerably less now also."

Response: It is possible that bacteria pollution is less now than it was historically but we do not have scientific data from 30 years ago with which to compare the current levels. Significant improvement has been obtained from the installation of several sanitary sewers in rural areas and wastewater treatment plant upgrades in the cities of Chewelah and Colville. However the Colville River is not currently meeting water quality standards for fecal coliform.

B. Comment: "If fencing is the solution for keeping domestic livestock out of the Colville River and keeping fecal contamination under control, what is the plan to keep the state of Washington's wildlife from the same waters or are they exempt?"

Response: Wildlife is considered a natural background condition. Please see response to comment #23. Fencing is only one option in reducing the amount of fecal coliform bacteria and there are many other BMPs that can be implemented.

C. Comment: "I doubt that the Colville River has ever been pollution free and if it were to be near pollution free what would be the 'purpose' of that?"

Response: The state's surface water quality standards set limits on the amount of pollution in our lakes, rivers and marine waters in order to protect water quality. These standards protect beneficial uses, such as swimming, fishing, aquatic life habitat, and agricultural and drinking water supplies. Most of the state's water quality standards allow some pollution and still protect beneficial uses. The standard for bacteria in the Colville River is 100 colony-forming-units of bacteria per 100 mL of water. 100 mL is approximately ½ cup. The goal of the TMDL is not to have pollution free water. The target is to have 100 or less colonies of bacteria for each ½ cup of water.

D. Comment: It seems ironic to me that we and the fish who are native to the area have been able to survive …with little effect from the Colville River pollution, but we have…. If a decision is to be made to fence off the Colville River to domestic livestock I think the property owner should be compensated for the initial fencing, and the "thereafter" repair and maintenance costs, the "off river" livestock watering supply costs, the river bank seeding, and weed control costs and also compensated for property taxes on property, meaning the Colville River and its water, the owner no longer can profit from, that seems to belong to the state of Washington. Is this project really about pollution…and also about saving the poor fish…or is it all about the taking of private property and the taking of property rights for the state of Washington and the federal government without compensation.

Response: This TMDL is being implemented to protect the beneficial uses of the Colville River which include recreation (swimming, fishing, etc.). The standards which limit fecal coliform bacteria levels in the water are designed to protect human health when recreating in and on the water. Fecal coliform levels do not affect fish therefore this TMDL is not designed to protect fish.

We are not requiring landowners to fence or install off-stream watering; however, for those landowners who would like to implement these or other best management practices on a portion of their property, federal and state cost share is available through NRCS or the conservation district to help off-set these costs. The submittal report only contains general ideas about how to reduce pollution and does not suggest site-specific activities.

84. Len McIrvin Comments:

A. Comment: "Even though there have been several water samples tested with high levels of bacteria, the Department of Ecology has not in the vast majority of the cases, followed the contaminated water upstream to find the actual source of contamination. This could very easily be done with water samples being taken and tested. The bacteria source must be identified before any SISs or DIPs are implemented."

Response: Please see response to comment #4.

B. Comment: "The Colville River is a slow moving, almost stagnant stream of water with a very high percentage of the stream banks being covered with a tangled mass of grass and weeds. This over burden of vegetative growth…chokes the river flow, which compounds the problem of slow moving water. If there is bacteria contamination in a stream the most effective way under natural condition of reducing the bacteria count is to increase the speed of stream flow and to allow the sun to shine directly on the stream….It is a common misconception among many people that allowing this sunlight to reach the stream will increase the water temperature. Actually the ground temperature, the atmospheric

temperature and the speed of stream flow are the three main factors which determine the water temperature. Since the Colville River is a sluggish, slow moving stream and the major bacteria problems occur during the hot summer months, the stream speed must be increased to lower stream temperature.

Response: Increasing the amount of sunlight to a stream does very little for disinfection. For ultraviolet (UV) radiation to be effective the water must be extremely clear with little to no suspended sediments. The suspended sediments refract the sunlight and provide a refuge to bacteria. Even in the clearest waters the UV light will only have disinfecting effects to a shallow depth within the water column.

In regards to water temperature, research from other parts of the country and our state show that when canopy cover is low (providing little shade), direct solar radiation (from sunlight hitting the stream surface) is generally the main factor influencing water temperature. When canopy cover is high, air temperature is often the main factor. There is a high correlation between water and air temperature because solar radiation is also affecting air temperature.

Increasing sunlight to the river will increase the temperature of the water resulting in a more favorable growing environment for bacteria and aquatic plants like the grass and weeds you mentioned. While solar radiation is the major influence on stream temperature, it is true that air temperature, ground temperature and stream velocity effect stream temperature. Two equally stagnant pools in the exact same environment with the exception of one being in the shade and one being in the sun will have lower water temperature in the shaded pool.

Options to increase stream flow in the river during low flow periods are limited. When groundwater is at its lowest level, water use is at its highest level. Rather than deal with the complications of using groundwater to dilute the bacteria levels, a better option would be pollution prevention strategies to decrease or limit the sources of the bacteria contributions.

C. Comment: "If cattle are fenced away from the stream banks, this overburden of vegetative growth and water being denied the benefit of sunlight problem will be magnified."

Response: Please see response to comment # 84 B.

D. Comment: "Department of Ecology's water quality testing in the years 2000 and 2002 both showed that the Colville River TMDL decreased dramatically in areas where the river flowed through grazed pasture land. The year 2002 tests showed a 300% decrease in fecal coliform as the river flowed through 3 ½ miles of pasture land."
Response: The decrease in fecal coliform levels through this particular livestock grazing area adjacent to the Colville River is largely due to the flow volume increase from tributaries and groundwater inflow along with the bacteria die-off. A waterbody with a larger volume of water can assimilate or absorb a larger amount of pollutants. Please see the response to comment # 12.

E. Comment: "We must have DNA testing of the fecal coliform bacteria in the Colville River to determine what warm blooded species are responsible for this bacteria load, so that we can plan accordingly to reduce the TMDL."

Response: Please see the response to comment #22.

F. Comment: "Farmland that has unnatural swamps developed in it that attracts wildlife and increases the TMDL must be considered human activity and not natural conditions."

Response: Please see the responses to comments #51 & #80 E.

G. Comment: "Through DNA testing, we must determine the percentage of the TMDL caused by natural conditions and the percentage of the TMDL caused by human activity."

Response: Please see the response to comment #22.

H. Comment: "After determining the amount of bacteria occurring from natural conditions, we must use that number as our starting point and allow 100/100 ml for human activity."

Response: Adding an extra 100/100 ml fecal coliform to natural sources could increase the illness rates to some level above what the 100/100 ml standard would allow if implemented to the waterbody. Please see response to comment #34.

I. Comment: "This whole Colville River TMDL program could devastate the Stevens County economy. Therefore, we must comply with the NEPA requirements, which require consideration of the affected area's custom, culture and economic stability."

Response: Please see response to comment # 8.

J. Comment: "In the event that the forthcoming DIP from the Department of Ecology makes it impossible to use the Colville River Valley land in an economically feasible manner; then this must be considered a taking, and funds must be made available to compensate the landowner."

Response: We can not predict what activities will be included in the DIP. Ecology will be working with an advisory group to develop the DIP and will ask the advisory group to consider various alternatives taking into consideration the cost of each alternative. Please see response to comment #65.

K. Comment: "At this point in time, the only guideline or BMP that the Colville valley landowners have regarding the grazing of cattle along the Colville River is the BMP accepted unanimously by the Colville TMDL Advisory Group. This BMP must remain in effect unless science proves it non-workable."

Response: See the responses to comments # 31 & #32.

L. Comment: "Off-stream stock watering will possibly work fairly well with small numbers of livestock but as livestock numbers increase, the practicality of off-stream watering in pasture land will decrease. If off-stream watering is required by final Ecology DIP, then funding must be available to compensate stock owners for death or weight loss of livestock in the event of water failure."

Response: Ecology will not be requiring off-stream watering. However, if a landowner chooses to install off-stream watering, guidance on how to choose and design off-stream

watering systems is available at www.ext.vt.edu/pubs/bse/442-755/442-755.html, or from NRCS, and/or conservation district. These sources will enable a landowner to create a watering system that will accommodate large numbers of livestock as well as water storage in case of an emergency in between routine system maintenance and monitoring.

M. Comment: "As a final comment, landowners that are not adding to the TMDL with their agricultural practices, must not be penalized or restricted in their land use. We cannot take a shotgun approach to cleaning up the Colville River. One practice does not necessarily help all landowners to improve water quality. In our personal operation, testing has proved that if contaminated water flows into our property, our BMPs will allow us to improve the water quality somewhat. If clean water flows into our property it will also be clean when it flows out of our property."

Response: Please see response to comment #49 about penalties.

Ecology acknowledges that there is not a single method of reducing the amount of bacteria reaching the river. Many activities and methods are available as BMPs. Any practice chosen for a particular site will need to be evaluated for its effectiveness at that site. NRCS and the conservation district can provide technical assistance.

85. Stevens County Conservation District comments

A. Comment: Grammatical and editorial revisions concerning the submittal report.

Response: Grammatical and editorial suggestions have been reviewed and incorporated as appropriate. Please see the end of this appendix for the entire suggestions.

B. Comment: "Does Ecology intend to use ARA (antibiotic resistance analysis) or some other BST methodology, as part of the Colville River water cleanup plan?"

Response: The DIP advisory committee along with Ecology will consider various methods to identify the actual fecal coliform bacteria sources? Please see response to comment #22.

C. Comment: "Has Ecology successfully used BST methodology as part of any of the approved TMDLs or TMDLs under development for fecal coliform.? If yes, describe how the use of BST methodology was determined to be successful?

Response: BST methodologies have been used for determining source identification in the Grainger Drain Bacteria TMDL, and others.

D. Comment: Is there something unique about the Colville River that makes it a good candidate for BST? The draft report implies that BST may be required "due the large number of wildlife and waterfowl in the Colville River watershed.

Response: BST techniques may be used where regular monitoring methods do not determine the source.

86. Richard Oman comment:

Comment: "To help keep the stream banks in good condition there should be enough livestock to keep vegetation down so predators (coyotes, eagles, and hawks, and etc.) can catch the muskrats…These little rodents move tons of earth into the streams and cause lots of erosion and [pollution]. Sometimes even changing stream channels."

Response: Restricting livestock access to a water body does have benefits including protecting water quality, preventing stream bank erosion, and promoting stream bank vegetation. Ecology does not have data on muskrats.

87. Lorren Hagen comments

A. Comment: "This plan is supposed to be a local watershed plan that reflects the local environment, wildlife, agriculture, business and community uses of the region. The plan flagrantly fails to accurately assess the local conditions and needs."

Response: The bacteria TMDL submittal report is only an outline of current bacteria reducing projects in the watershed and future water quality monitoring. The submittal report does not contain any plan nor does it specify any BMP implementations to reduce bacteria pollution in the watershed. To further address local conditions and needs, Ecology will continue to work with watershed residents and interested parties over the next year to develop the Detailed Implementation Plan (DIP).

B. Comment: "This area has an abundance of wildlife using the area with new populations introduced and encouraged through a variety of projects. Two projects …are currently being turned into additional wetlands, which will encourage additional wildlife. This will result in more fecal coliform entering our water. …These areas appear to fail to meet the standard because of wildlife fecal coliform counts. Yet the establishment of additional wetlands and a thirty-foot strip buffer are promoted in this study as best management practices to reduce fecal coliform counts. A thirty foot buffer is not accepted universally as a necessary or practical width for buffers. …Strip buffers do keep cattle out but they encourage wildlife…where their fecal coliform is either directly deposited or easily transferred to the water. …Buffers should be established reasonable distances away from the water supply so the fecal coliform is not deposited in the water. This approach is consistent with what cattlemen are being told is the best management practices for cattle and eliminate the double standard being promoted between wildlife and agriculture in this plan. This plan does not require any review or permitting process for wetlands to assess the potential impact of wetland restoration on fecal coliform counts…."

Response: Please see response to comment # 51 concerning wetlands. Creation of buffers will not be required; however, buffers do have benefits, such as protecting eroding stream banks and water quality. Landowners interested in installing buffers can acquire assistance from the conservation district and/or NRCS to design buffers with widths that are appropriate for the site.

C. Comment: "I am also concerned that this plan does not require the use of science at any point. DNA testing is available and reliable to determine the species which is the major contributor to the fecal coliform counts. …The only DNA testing that was done was conducted at the insistence of the local citizens on the committee. The test results showed wildlife was the major contributor and resulted in Cottonwood Creek being delisted. I firmly

believe that if other tributaries were DNA tested we would find the major contributors would be wildlife and these streams would also be delisted. This plan doesn't require any DNA testing, employs no scientific strategy, relies on best management practices which are not monitored or supported by scientific measures of any kind except to extract fecal coliform counts after the best management practice has been fully implemented…"

Response: There has not been any DNA analysis in the Colville River watershed. Cottonwood Creek is currently being considered for delisting because cattle and human sources (septic systems, etc.) have been absent for several years, indicating the fecal coliform levels are due to natural conditions.

The TMDL is based on science. Please refer to Appendix E of the submittal report for the TMDL study *Quality Assurance Project Plan*, which describes the scientific methods used for this science based study. Numerous bacteria water quality studies over the past ten years have shown fecal coliform bacteria counts exceed water quality standards throughout the Colville River watershed. Each of these studies was required to have a *Quality Assurance Project Plan* that described the scientific methods used. Please see responses to comments # 4 and 22.

D. Comment: "I am also concerned **t**here is no exemption for fecal coliform counts during low flow caused be drought.…"

Response: The Washington State surface water quality standards (WAC 173-201A) do not have an exemption for fecal coliform levels during low flow times. For additional details about the standards please see response to comment # 34.

88. Newspaper article regarding Hawes Case in Oregon submitted by Len McIrvin

Response: Please see response to comment #79 E.

89. Brad and Phyllis Fitzgerald comments

A. Comment: "We are concerned by the lack of contact by your organization to those people directly affected by your Colville River study and proposals."

Response: Ecology, with assistance from the conservation district, has made an effort to notify watershed residents on the progress of the TMDL. Please see the Public Participation Materials in Appendix A of the *Colville River Watershed Bacteria TMDL* submittal report for additional announcements and new releases concerning the TMDLs. Ecology will work with watershed residents and interested parties over the next year to develop the required Detailed Implementation Plan (DIP). In addition a web site for the Colville River TMDL was created and can be found at:
www.ecy.wa.gov/programs/wq/tmdl/watershed/colville/index.html

B. Comment: "We feel that the idea of fencing a large area on each side of the river and creek is not practical. This would not keep out wildlife including the hundreds of geese, ducks, and turkeys that use the area. If this is your intent we feel that you should purchase the land involved.

Response: Landowners are not being required to fence off streams, however for those landowners who chose to construct fences on a portion of their property, federal and state

cost-share funding is available through the Natural Resource Conservation Service (NRCS) or the conservation district to help off-set fencing costs. NRCS's continuous Conservation Reserve Program (CRP) does pay rental rates for the land that has been enrolled in the program.

90. Tony Delgado comments

A. Comment: "We realize that since the bacteria levels have caused its listing on the 303(d) list of impaired water, the Colville River must have a TMDL developed and implemented to bring it into compliance with the state water standards. However, let me remind you that…a small group met with you…at the Colville River Bridge on the Valley Waitts Lake Road and took eleven water samples at six different sites….Let the record show, that samples 3, 4, and 5 where 1200 head of cattle were grazing and drinking, the water cleared up from 600 colonies down to 200 colonies."

Response: The decrease in fecal coliform levels through this particular livestock grazing area adjacent to the Colville River is largely due to the flow volume increase from tributaries and groundwater inflow along with the bacteria die-off. A water body with a larger volume of water can assimilate or absorb a larger amount of pollutants. Please see response to comment # 12.

B. Comment: "It is obvious that the high coliform count is coming from some unknown source upstream, possibly wildlife or failing septic systems. And it is imperative [that] this source should be identified before the cattle issue is ever addressed…."

Response: Please see response to comment # 4.

C. Comment: "We just cannot tolerate anymore devastation to our county's economy, also any drastic decisions on the part of Department of Ecology without first considering the best available science is infringing on the Custom, Culture, and Economic stability of our county."

Response: After EPA approval of the TMDL submittal report, the next step in the process will be to develop a Detailed Implementation Plan (DIP), which includes more specific actions to take to meet water quality standards. At this time we can not predict what activities will be included in the DIP. Ecology will be working with an advisory group to develop the DIP and will ask the advisory group to consider various alternatives taking into consideration the cost of each alternative. Please see response to comment # 45 regarding the use of science in the study.

91. Ron Rose comments:

A. Comment: "The local people within their communities have the greatest knowledge of both the resources and the aspirations of those who live and work in the watershed; and who has the greatest stake and investments in the proper, long term management of the resources…. Local strategies should be based on existing studies of water quality violations in the management areas and identifying the source of TMDL violations."

Response: Ecology will be working with a local advisory group to develop implementation strategies based on the TMDL study and previous water quality studies in

this watershed. Please see response to comment # 4 regarding source identification.

B. Comment: "[Bacterial Source Tracking] methods represents the best tools available for determining sources of [fecal coliform] in water, and should be an integral part of any project that involves TMDL development for [fecal coliform], or design and implementation of best management practices (BMP) to identify fecal loading in water."

Response: Please see responses to comments # 22 & # 48.

C. Comment: "Long-term recommendations should include three primary elements: designation of the specific organizations that will implement the plan; a continued collaborative decision-making process; and a long-term information-collection strategy to improve understanding of critical trends and to monitor changing conditions."

Response: These three elements are and will continue to be included in the TMDL development. The Detailed Implementation Plan (DIP) will specify the organizations involved in implementation and include an effectiveness monitoring plan. The DIP will be developed by a local advisory group.

92. Ken Anderson comments

A. Comment: "The next step is very important, [the agencies] involved need to be site-specific in determining the pollution source. Is the pollution from agriculture, septic leakage or wildlife?"

Response: Please see response to comment # 4. Agriculture, septic leakage and wildlife are all possible sources of fecal coliform.

B. Comment: "The solution is not just to fence the river. Fencing the river will lead to excessive growth of woody brush along the banks which causes the loss of grass. Because of the loss of grass we will have more erosion problem causing water quality problems. I have observed this cycle during the 23 years I have managed a mile of property along the Colville River."

Response: Landowners are not being required to fence off streams. Streambank vegetation, depending upon the site, usually consists of grasses, shrubs, and trees which stabilize the banks with intertwining roots of varying depth that essentially form a net to protect soil from being eroded away. To protect the streambank from erosion, all three vegetative components should be included.

93. Bob Playfair comments:

A. Comment: "…I feel the landowners were short-circuited in this process. The conservation district, of which I'm a board supervisor, has operated a water quality testing program in the basin for nearly ten years. There has been an active citizens committee (WRIA Planning Unit) meeting monthly for a couple of years in this WRIA. Why then was this TMDL program singled out for the back door approach?...In the past Ecology has worked with the district to inform the landowners of a problem and help them search out a equitable solution. Only 2 inadequately advertised public meetings were held prior to announcing the rule. These were attended by a limited number of landowners. A larger audience could have been reached by involving the WRIA 59 team."

Response: A TMDL is not a rule but a planning process to meet water quality standards and therefore is not subject to the same public participation requirements for going through the rule making process. However, several methods were used to inform the watershed residents about the TMDL development:

- A news release by the Stevens County Conservation District (SCCD), *Colville River Water Quality monitoring will begin soon,* was submitted in December 1999 to the Colville Statesman-Examiner, Chewelah Independent, and the Deer Park Tribune. This publicly announced news release made known that the TMDL water quality monitoring was to begin in March 2000 in the Colville River.

- In the June 2001 conservation district's newsletter, an article announced the completion of Colville River bacteria monitoring and encouraged watershed residents to become involved in the water cleanup plan development. The article also stated that the newsletter would continue to keep watershed residents informed of plan progress.

- On March 7, 2002 Ecology presented a Colville River Fecal coliform bacteria TMDL briefing to the WRIA 59 Watershed Planning Unit. In addition, eight public meetings were announced and held between March and September 2002 prior to the public comment period for the TMDL submittal report. Please see the Public Participation Materials in Appendix A of the *Colville River Watershed Bacteria TMDL* submittal report for additional announcements and new releases concerning the TMDLs.

B. Comment: The Public participation approach was grossly deficient when compared with the rules imposed by the Eastern Washington Growth Management Hearings Board on the Stevens County government in their comprehensive resource planning efforts. Your efforts were short about 10 meetings and a similar number of news articles.

Response: Please see response to comment #93 A.

C. Comment: "I also question the timing in release of the document. I just received notice that a new Rule making process is starting on the Water Quality Standards. Does this mean we will have to repeat the process in a few months?"

Response: The proposed modifications of Washington's Surface Water Quality Standards will not have an effect on the Colville River TMDL projects. It will not be necessary to repeat this TMDL process due to the proposed water quality modifications.

D. Comment: "Nowhere in the proposal documents do I find reference to the implementation of a Small Business Economic Impact study and statement provided for under the Regulatory Fairness Act (RFA), 19.85 RCW.

Response: The Washington State legislature enacted the Regulatory Fairness Act RCW 19.85, with the intent of reducing the disproportionate impact of state administrative rules on small business. The Clean Water Act (CWA) is a federal statute that requires states to cleanup their impaired water bodies. A TMDL is not a rule but a planning process to meet water quality standards and therefore is not subject to the Regulatory Fairness Act.

E. Comment: "In a couple of meetings I attended it was apparent by the comments about fencing that livestock grazing adjacent to the Colville River was the first thing to be addressed. This was apparently determined without re-looking at the original "hot spots", most of which residents know or suspect is domestic sanitation problems."

Response: Please see responses to comments # 4 & # 65.

F. Comment: "It has come to my attention that the state standards being imposed in this Okanogan Highlands WRIA are more restrictive than the Federal requirements. If this is the case, it may explain why the Colville River today cannot always meet the state requirements."

Response: Please see Response to Comment #34.

G. Comment: "Historically this River was a series of beaver dams with muskrats and large numbers of waterfowl. The river is cleaner today in both DO and fecals than it was when David Thompson first walked to Spokane."

Response: Please see response to comment # 64.

H. Comment: "…I will…ask the Department to re-evaluate their [policies] and procedures bringing them in line with Stevens County Code Title 1 Public Participation Policy."

Response: Please see response to comment # 93A.

Appendix C

Technical Reports

Bound separately as Ecology Publication No. 96-349 - *Colville River Water Quality: Pollutant Loading Capacity and Recommendations for Total Maximum Daily Loads*

Website Link

http://www.ecy.wa.gov/biblio/96349.html

Bound separately as Ecology Publication No. 02-03-036 – *Colville River Fecal Coliform Total Maximum Daily Load*

Website Link

http://www.ecy.wa.gov/biblio/0203036.html

Appendix D

Quality Assurance Project Plan

Website Link

http://aww.ecology.ecy.wa.gov/programs/eap/Documents/QAPPs/Colville%20River%20Fecal%20Coliform%20TMDL.PDF