



# Fact Sheet

**The U.S. Environmental Protection Agency (EPA)**

**Proposes to Reissue a National Pollutant Discharge Elimination System (NPDES) Permit to  
Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA) to:**

## **The Town of Coulee Dam Wastewater Treatment Plant**

Public Comment Start Date: August 16, 2017

Public Comment Expiration Date: September 15, 2017

Technical Contact: John Drabek  
206-553-8257  
800-424-4372, ext. 8257 (within Alaska, Idaho, Oregon and Washington)  
[drabek.john@epa.gov](mailto:drabek.john@epa.gov)

### **The EPA Proposes To reissue NPDES Permit**

The EPA proposes to reissue the NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to waters of the United States within the Confederated Tribes of the Colville Reservation (Colville Reservation). In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

### **Public Comment**

Persons wishing to comment on, or request a Public Hearing for the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to the EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, the EPA's regional Director for the Office of Water and Watersheds will make a final decision regarding permit

issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, the EPA will address the comments and issue the permit. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days pursuant to 40 CFR 124.19.

**Documents are Available for Review**

The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting the EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at  
“<http://EPA.gov/r10earth/waterpermits.htm>.”

United States Environmental Protection Agency  
Region 10  
1200 Sixth Avenue, OWW-191  
Seattle, Washington 98101  
(206) 553-0523 or  
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permits are also available at:

Office of Environmental Trust  
Confederated Tribes of the Colville Reservation  
PO Box 150  
Nespelem, WA 99155

The Colville Tribes have not yet been authorized to provide 401 certifications; therefore, EPA is responsible for issuing 401 certifications in this case

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## Acronyms

1Q10	1 day, 10-year low flow
7Q10	7 days, 10-year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
30Q10	30 day, 10-year low flow
ACR	Acute-to-Chronic Ratio
AML	Average Monthly Limit
ASR	Alternative State Requirement
AWL	Average Weekly Limit
BA	Biological Assessment
BAT	Best Available Technology economically achievable
BCT	Best Conventional pollutant control Technology
BE	Biological Evaluation
BOD <sub>5</sub>	Biochemical oxygen demand, five-day
BOD <sub>5u</sub>	Biochemical oxygen demand, ultimate
BMP	Best Management Practices
BPT	Best Practicable
°C	Degrees Celsius
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COD	Chemical Oxygen Demand
CSO	Combined Sewer Overflow
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act

FR	Federal Register
gpd	Gallons per day
HUC	Hydrologic Unit Code
ICIS	Integrated Compliance Information System
I/I	Infiltration and Inflow
LA	Load Allocation
lbs/day	Pounds per day
LTA	Long Term Average
LTCP	Long Term Control Plan
mg/L	Milligrams per liter
ml	milliliters
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
N	Nitrogen
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SIC	Standard Industrial Classification
SPCC	Spill Prevention and Control and Countermeasure

SS	Suspended Solids
SSO	Sanitary Sewer Overflow
s.u.	Standard Units
TMDL	Total Maximum Daily Load
TRC	Total Residual Chlorine
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards
WWTP	Wastewater treatment plant

## I. Applicant

### A. General Information

This fact sheet provides information on the draft NPDES permit for the following entity:

NPDES Permit #:	WA00208201
Applicant:	Town of Coulee Dam / Wastewater Treatment Plant
Type of Ownership	POTW
Physical Address:	101 Beaver Drive, Coulee Dam, WA 99116
Mailing Address:	300 Lincoln Ave, Coulee Dam, WA 99116
Facility Contact:	Mike Steffens, Public Works Superintendent 509-633-0160
Facility Location:	Latitude 47.971 Longitude 188.98
Receiving Water	Columbia River, within the boundaries of the Colville Reservation

### B. Permit History

The most recent NPDES permit for the Town of Coulee Dam wastewater treatment plant (facility) was issued on July 21, 2008, became effective on September 1, 2008, and expired on August 30, 2013. An NPDES application for permit issuance was submitted by the permittee on February 28, 2013. The EPA determined that the application was timely and complete. Therefore, pursuant to 40 CFR 122.6, the permit has been administratively extended and remains fully effective and enforceable.

## II. Facility Information

### A. Treatment Plant Description

#### *Service Area*

The Town of Coulee Dam owns and operates a facility that treats wastewater from domestic, industrial, and commercial sources. The facility discharges secondarily treated wastewater throughout the year to the Columbia River.

The collection system has a separate sanitary sewer system. The facility serves a resident population consisting of approximately 1300 from the Town of Coulee Dam, the City of Elmer and the U.S. Bureau of Reclamation (USBR) Grand Coulee Dam complex. See the map in Appendix A. The plant is located next to Coulee Dam between State Route 155 and the Columbia River on land leased from USBR. It is within exterior boundaries of the Confederated Tribes of the Colville Reservation (Colville Reservation).

### ***Treatment Process***

The design flow of the facility is 0.50 million gallons per day (mgd) on an average day maximum monthly basis. The facility was constructed in 1970 and upgraded in 1976 when Elmer City began to send its wastewater to the facility. The collection system consists of 49,000 linear feet of sewer pipe, 2400 feet of force main and a lift station used to pump wastewater from the west Coulee Dam to the treatment plant. The existing wastewater treatment facility include grit removal, screening, an oxidation ditch, secondary clarifier, sodium hypochlorite disinfection and an outfall to the Columbia River on the Colville Reservation. A flow diagram is shown in Appendix A. The solids handling facilities consist of sludge bagger unit for sludge dewatering.

The City is in the process of constructing a new replacement facility with a design flow of 0.195 mgd. The proposal went to bid and recently a contractor has been selected.

Construction began on July 12, 2017. Start-up is estimated to be between March and April 2018. The permit requires notification to the EPA and the Colville Tribes of start-up of the new plant and when the existing plant goes off-line.

The existing plant's electrical, control and mechanical systems are old and in many cases obsolete and at the end of their service life. Long term operating and reliability of the plant concerns the Town's elected official and operating staff. It also does not meet federal and state redundancy requirements of Reliability Class II treatment plants.

The new plant will consist of a new sewer main to raise the hydraulic profile, new headworks with flow monitoring, a new extended aeration active sludge treatment system (Aero-Mod configuration) including selector tanks, aeration tanks and clarifiers, and ultraviolet disinfection system to replace the hypochlorite disinfection.

The existing plant will be demolished. Both will discharge through the existing outfall.

## **B. Background Information**

### ***Effluent Characterization***

In order to determine pollutants of concern for further analysis, the EPA evaluated the application form, additional discharge data, and the nature of the discharge. Pollutants typical of a sewage treatment plant are five-day biochemical oxygen demand ( $BOD_5$ ), total suspended solids (TSS), pH, ammonia, total residual chlorine, enterococci and fecal coliform bacteria. Based on this analysis, pollutants of concern are as follows:

- $BOD_5$
- TSS
- Fecal Coliform
- Enterococci
- pH
- Ammonia
- Total residual chlorine

The concentrations of pollutants in the discharge were reported in the NPDES application and in discharge monitoring reports (DMRs) and were used in determining reasonable potential. (see Appendix D).

### ***Compliance History***

The EPA reviewed the last three years of effluent monitoring data from the DMR.

A summary of effluent violations is provided in Table 1.

<b>Table 1: Effluent Limit Violations</b>			
<b>Parameter</b>	<b>Limit</b>	<b>Units</b>	<b>Number of Instances</b>
pH	instantaneous	Std. units	30
Total Residual Chlorine (TRC)	Weekly Average	lb/day	14

In 2013 a magnesium hydroxide chemical addition system was installed to increase pH prior to discharge. No pH violations have been reported since July, 2014.

## **III. Receiving Water**

This facility discharges to the Columbia River east of the centerline of the River within the boundaries of the Colville Reservation. A 10" dual ported pipeline extends approximately 60 feet into the Columbia River. Treated wastewater is discharged at this location downstream of Grand Coulee Dam.

### **A. Low Flow Conditions**

The Technical Support Document for Water Quality-Based Toxics Control (hereafter referred to as the TSD) (EPA, 1991) recommends the flow conditions for use in calculating water quality-based effluent limits (WQBELs) using steady-state modeling. The TSD states that WQBELs intended to protect aquatic life uses should be based on the lowest seven-day average flow rate expected to occur once every ten years (7Q10) for chronic criteria and the lowest one-day average flow rate expected to occur once every ten years (1Q10) for acute criteria. (see Appendix B)

The EPA used flow data collected at USGS 12436500 COLUMBIA RIVER AT GRAND COULEE, and the EPA's DFLOW 3.1b model to calculate the low flow conditions for Columbia River. The critical low flows are shown in Table 2.

<b>Table 2: Critical Flows in Receiving Water</b>			
<b>Units</b>	<b>1Q10</b>	<b>7Q10</b>	<b>30B3</b>
USGS Data in cfs	24,100	42,200	51,900

### **B. Receiving Water Quality**

The EPA reviews receiving water quality data when assessing the need for and developing water quality based effluent limits. In granting assimilative capacity of the receiving water, the EPA must account for the amount of the pollutant already present in the receiving water. In situations where some of the pollutant is actually present in the upstream waters, an assumption of "zero background" concentration overestimates the available assimilative

capacity of the receiving water and could result in limits that are not protective of applicable water quality standards.

## C. Water Quality Standards

### ***Overview***

Section 301(b)(1)(C) of the Clean Water Act (CWA) requires the development of limitations in permits necessary to meet water quality standards. Federal regulations at 40 CFR 122.4(d) require that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States. A State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria and an anti-degradation policy.

The use classification system designates the beneficial uses that each water body is expected to achieve, such as drinking water supply, contact recreation, and aquatic life. The numeric and narrative water quality criteria are the criteria deemed necessary to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

In 40 CFR Part 131.35, EPA promulgated federal water quality standards for the Confederated Tribes of the Colville (Colville Tribes) that were derived, in part, from water quality standards that have been adopted by the Colville Tribes Business Council, CTC Title 33 (Resolution No. 1984-526 (August 6, 1984) as amended by Resolution No. 1985-20 (January 18, 1985). The purpose of these Federal water quality standards is to prescribe minimum water quality requirements for the surface waters located within the exterior boundaries of the Colville Reservation. 40 CFR Part 131.35(c)(1) states that: "*The water quality standards in this section shall be used by the Regional Administrator for establishing any water quality based National Pollutant Discharge Elimination System Permit (NPDES) for point sources on the Colville Confederated Tribes Reservation.*"

### ***Designated Beneficial Uses***

40 CFR 131.35(g)(8) states that "[a]ll other waters not specifically assigned to a classification of the reservation are classified as Class II." 40 CFR 131.35(h) does not assign a specific classification to the Columbia River. Therefore, the Columbia River is classified as Class II for purposes of determining the appropriate designated uses and corresponding water quality criteria.

40 CFR 131.35(f)(2) sets forth the designated uses for Class II waters within the Colville Reservation. They are as follows:

Class II (Excellent)--(i) Designated uses. The designated uses include but are not limited to, the following:

- (A) Water supply (domestic, industrial, agricultural).
- (B) Stock watering.
- (C) Fish and shellfish: Salmonid migration, rearing, spawning, and harvesting; other fish migration, rearing, spawning, and harvesting; crayfish rearing, spawning, and harvesting.

- (D) Wildlife habitat.
- (E) Ceremonial and religious water use.
- (F) Recreation (primary contact recreation, sport fishing, boating and aesthetic enjoyment).
- (G) Commerce and navigation.

### ***Antidegradation***

In setting permit conditions, the EPA must consider the Tribe's antidegradation policy which is set forth in 40 CFR 131.35(e)(2). This policy is designed to protect existing water quality when the existing quality is better than that required to meet the standard and to prevent water quality from being degraded below the standard when existing quality just meets the standard. For high quality waters, antidegradation requires that allowing lower water quality is necessary to accommodate important economic or social development before any degradation is authorized. This means that, if water quality is better than necessary to meet the water quality standards, increased permit limits can be authorized only if they do not cause degradation, or if the EPA makes the determination that more stringent limits are necessary. An antidegradation analysis is provided in Appendix E.

### **D. Water Quality Limited Waters**

Any waterbody for which the water quality does not, and/or is not expected to meet, applicable water quality standards is defined as a "water quality limited segment."

Section 303(d) of the CWA requires states to develop a Total Maximum Daily Load (TMDL) management plan for water bodies determined to be water quality limited segments. A TMDL is a detailed analysis of the water body to determine its assimilative capacity. The assimilative capacity is the loading of a pollutant that a water body can assimilate without causing or contributing to a violation of water quality standards. Once the assimilative capacity of the water body has been determined, the TMDL will allocate that capacity among point and non-point pollutant sources, taking into account natural background levels and a margin of safety. Allocations for non-point sources are known as "load allocations" (LAs). The allocations for point sources, known as "waste load allocations" (WLAs), are implemented through effluent limitations in NPDES permits. Effluent limitations for point sources must be consistent with applicable TMDL allocations.

The Columbia River in the vicinity of the discharge is listed for dissolved oxygen, total dissolved gas and temperature based on the Department of Ecology 303(d) list. A TMDL does not exist for these pollutants.

## **IV. Effluent Limitations**

### **A. Basis for Effluent Limitations**

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than

technology-based effluent limits. The basis for the effluent limits proposed in the draft permit is provided in Appendix C.

## B. Proposed Effluent Limitations

The following summarizes the proposed effluent limits that are in the draft permit.

***Narrative limitations to protect the aesthetic qualities of water within the Colville Reservation as promulgated in 40 CFR 31.35(e)(3):***

The permittee must not discharge any substances that:

- (i) Settle to form objectionable deposits;
- (ii) Float as debris, scum, oil, or other matter forming nuisances;
- (iii) Produce objectionable color, odor, taste, or turbidity;
- (iv) Cause injury to, are toxic to, or produce adverse physiological responses in humans, animals, or plants; or
- (v) produce undesirable or nuisance aquatic life.

***Numeric Limitations***

Table 4 below presents the proposed effluent limits for BOD<sub>5</sub>, TSS, fecal coliform bacteria, enterococci bacteria, total residual chlorine and pH.

**Table 4: Proposed Effluent Limits**

Parameter	Units	Effluent Limits		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit
Five-Day Biochemical Oxygen Demand (BOD <sub>5</sub> )	mg/L	30	45	---
	lbs/day	125 <sup>4</sup>	187 <sup>4</sup>	---
	lbs/day	48.8 <sup>5</sup>	73.1 <sup>5</sup>	---
	% removal <sup>1</sup>	85% (min)	---	---
Total Suspended Solids (TSS)	mg/L	30	45	---
	lbs/day	125 <sup>4</sup>	187 <sup>4</sup>	---
	lbs/day	48.8 <sup>5</sup>	73.1 <sup>5</sup>	---
	% removal <sup>1</sup>	85% (min)	---	---
Enterococci Bacteria	#/100 ml	16 <sup>2</sup>	---	---
Fecal Coliform Bacteria	#/100 ml	50 <sup>3</sup>	---	75 <sup>6</sup>
pH (daily)	s.u.	6.5-8.5		---
Total Residual Chlorine	µg/L	0.5 <sup>4</sup>	0.75 <sup>4</sup>	---
	lbs/day	2.1 <sup>4</sup>	3.1 <sup>4</sup>	---

1. Percent removal is calculated using the following equation: ((influent - effluent) / influent) x 100
2. The sampling shall be based on a geometric mean of samples equally spaced over 30 days. No single sample shall exceed 75/100 ml. Sampling shall be conducted in accordance with Test Methods for Escherichia coli and Enterococci in Water By the Membrane Filter Procedure (EPA 600/4-85-076).
3. The Average Monthly Limit and the Average Weekly Limit for Fecal Coliform are based on the Geometric Mean in organisms/100ml. See Part VI for a definition of geometric mean. If any value used to calculate the geometric mean is less than 1, the permittee must round that value up to 1 for purposes of calculating the geometric mean.
4. Limit applies until the existing plant goes off line.
5. Limit applies when the existing plant goes off line.
6. No single sample shall exceed 75 #/100 ml. The sampling shall be based on a geometric mean of samples equally spaced over 30 days.

***Effluent Limit Changes from the Existing Permit***

Changes in effluent limits from the existing permit are shown in Table 5.

<b>Table 5. Changes in Permit Effluent Limits</b>		
<b>Parameter</b>	<b>Existing Permit</b>	<b>Draft Permit</b>
BOD <sub>5</sub> Average Monthly Mass Limit	none	125/48.8 lbs/day
BOD <sub>5</sub> Average Weekly Mass Limit	none	187/73.1 lbs/day
TSS Average Monthly Mass Limit	none	125/48.8 lbs/day
TSS Average Weekly Mass Limit	none	187/73.1 lbs/day
Total Residual Chlorine Monthly Mass Limit	none	2.1 lbs/day Discontinued when existing plant is taken off line
Total Residual Chlorine Weekly Mass Limit	none	3.1 lbs/day Discontinued when existing plant is taken off line
Total Residual Chlorine Monthly Concentration Limit	0.5 mg/l	Discontinued when existing plant is taken off line
Total Residual Chlorine Weekly Concentration Limit	0.75 mg/l	Discontinued when existing plant is taken off line
Fecal Coliform Bacteria Monthly Limit	200 #/100 ml	50 #/100 mls and no single sample shall exceed 75/100 ml
Fecal Coliform Bacteria Weekly Limit	400 #/100 ml	none

**C. Compliance Schedules**

Compliance schedules are authorized by federal NPDES regulations at 40 CFR 122.47. Compliance schedules allow a discharger to phase in, over time, compliance with water quality-based effluent limitations when limitations are in the permit for the first time. 40 CFR 122.47 requires that the compliance schedules require compliance with effluent limitations as soon as possible and that, when the compliance schedule is longer than 1 year, the schedule shall set forth interim requirements and the dates for their achievement. The time between the interim dates shall generally not exceed 1 year, and when the time necessary to complete any interim requirement is more than one year, the schedule shall require reports on progress toward completion of these interim requirements. In order to grant a compliance schedule the permitting authority must make a reasonable finding that the discharger cannot immediately comply with the water quality-based effluent limit upon the effective date of the permit and that a compliance schedule is appropriate (see 40 CFR 122.47 (a)). The EPA has found that a compliance schedule is not required because the facility can achieve the effluent limitations.

**V. Monitoring Requirements****A. Basis for Effluent and Surface Water Monitoring**

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permit also requires the permittee to perform effluent monitoring required by the NPDES Form 2A application, so that these data will be available when the permittee applies for a renewal of its NPDES permit.

The permittee is responsible for conducting the monitoring and for reporting results on DMRs or on the application for renewal, as appropriate, to the EPA.

## B. Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using the EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit.

Table 6, below, presents the proposed effluent monitoring requirements in the draft permit. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

**Table 6: Effluent Monitoring Requirements**

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Flow	Mgd	Effluent	daily	measured
BOD <sub>5</sub>	mg/L	Influent & Effluent	1/week	24-hour composite
	% Removal	--	--	Calculation
TSS	mg/L	Influent & Effluent	1/week	24-hour composite
	% Removal	--	--	Calculation
pH	standard units	Effluent	1/week	grab
Enterococci Bacteria	#/100 ml	Effluent	1/week	grab
Fecal Coliform	#/100 ml	Effluent	1/week	grab
Total Residual Chlorine <sup>1</sup>	mg/L	Effluent	5/week	grab
Total Ammonia as N	mg/L	Effluent	1/month	grab

1. Chlorine monitoring is discontinued after the existing plant is taken off line

### ***Monitoring Changes from the Existing Permit***

Monitoring meeting the requirements of NPDES Application Form 2A.Part B.6. is added to the permit to insure the data is available for the next permit reissuance.

#### Ammonia

The existing permit does not require ammonia effluent monitoring. Ammonia effluent levels provide an indication of the operational efficiency of the wastewater treatment plant. In the proposed permit, ammonia effluent sampling will be required once per week.

#### Chlorine

Because of the history of compliance, the following requirement is discontinued. "If the effluent limitation is violated monitoring must be seven days per week for three months."

Chlorine monitoring is discontinued after the existing plant goes off line.

### Fecal Coliform

Compliance monitoring for the fecal coliform effluent limit is increased from monthly to weekly. This is consistent with weekly compliance monitoring of the bacteria standard enterococci.

Also, the Colville Tribes have a water quality standard criterion for fecal coliform in tribal code. There is no criterion for enterococci bacteria in the tribal code. Tribal codes are laws of the Reservation, adopted following administrative procedures (also established by code) and by resolution of the Colville Business Council. Weekly monitoring will provide a better determination of fecal coliform impacts to the Columbia River.

Since approval of the 50 #/100 ml Colville tribal water quality standard may be within the term of the term of the permit, monitoring weekly is required to characterize fecal coliform discharges similar to the weekly monitoring of enterococci bacteria. This is also consistent with the weekly monitoring of fecal coliform for the Grand Coulee Dam NPDES permit.

### C. Electronic Submission of Discharge Monitoring Reports

The draft permit requires that the permittee submit DMR data electronically using NetDMR. NetDMR is a national web-based tool that allows DMR data to be submitted electronically via a secure Internet application. NetDMR allows participants to discontinue mailing in paper forms under 40 CFR 122.41 and 403.12. Under NetDMR, all reports required under the permit are submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it is no longer required to submit paper copies of DMRs or other reports to EPA.

The EPA currently conducts free training on the use of NetDMR. Further information about NetDMR, including upcoming trainings and contacts, is provided on the following website: <http://www.epa.gov/netdmr>. The permittee may use NetDMR after requesting and receiving permission from EPA Region 10.

Monitoring results must be submitted to the Colville Tribes each month.

The EPA currently conducts free training on the use of NetDMR. Further information about NetDMR, including upcoming trainings and contacts, is provided on the following website: <https://netdmr.zendesk.com>. The permittee may use NetDMR after requesting and receiving permission from EPA Region 10.

## VI. Sludge (Biosolids) Requirements

The EPA Region 10 separates wastewater and sludge permitting. The EPA has authority under the CWA to issue separate sludge-only permits for the purposes of regulating biosolids. The EPA may issue a sludge-only permit to each facility at a later date, as appropriate.

Until future issuance of a sludge-only permit, sludge management and disposal activities at each facility continue to be subject to the national sewage sludge standards at 40 CFR Part 503 and any requirements of the State's biosolids program. The Part 503 regulations are self-implementing, which means that facilities must comply with them whether or not a permit has been issued.

## VII. Other Permit Conditions

### A. Quality Assurance Plan

In order to ensure compliance with the federal regulation at 40 CFR 122.41(e) for proper operation and maintenance, the draft permit requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The Town of Coulee Dam is required to update the Quality Assurance Plan within 180 days of the effective date of the final permit. The Quality Assurance Plan must include of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan must be retained on site and be made available to the EPA and the Colville Tribes upon request.

### B. Operation and Maintenance Plan

The permit requires the Town of Coulee Dam to properly operate and maintain all facilities and systems of treatment and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements, and all other permit requirements at all times. The permittee is required to develop and implement an operation and maintenance plan for their facility within 180 days of the effective date of the final permit. The plan must be retained on site and made available to the EPA and the Colville Tribes upon request.

### C. Sanitary Sewer Overflows and Proper Operation and Maintenance of the Collection System

Untreated or partially treated discharges from separate sanitary sewer systems are referred to as sanitary sewer overflows (SSOs). SSOs may present serious risks of human exposure when released to certain areas, such as streets, private property, basements, and receiving waters used for drinking water, fishing and shellfishing, or contact recreation. Untreated sewage contains pathogens and other pollutants, which are toxic. SSOs are not authorized under this permit. Pursuant to the NPDES regulations, discharges from separate sanitary sewer systems authorized by NPDES permits must meet effluent limitations that are based upon secondary treatment. Further, discharges must meet any more stringent effluent limitations that are established to meet the EPA-approved water quality standards.

The permit contains language to address SSO reporting and public notice and operation and maintenance of the collection system. The permit requires that the permittee identify SSO occurrences and their causes. In addition, the permit establishes reporting, record keeping and third party notification of SSOs. Finally, the permit requires proper operation and maintenance of the collection system. The following specific permit conditions apply:

**Immediate Reporting** – The permittee is required to notify the EPA of an SSO within 24 hours of the time the permittee becomes aware of the overflow. (See 40 CFR 122.41(l)(6))

**Written Reports** – The permittee is required to provide the EPA a written report within five days of the time it became aware of any overflow that is subject to the immediate reporting provision. (See 40 CFR 122.41(l)(6)(i)).

**Third Party Notice** – The permit requires that the permittee establish a process to notify specified third parties of SSOs that may endanger health due to a likelihood of human exposure; or unanticipated bypass and upset that exceeds any effluent limitation in the permit

or that may endanger health due to a likelihood of human exposure. The permittee is required to develop, in consultation with appropriate authorities at the local, county, tribal and/or state level, a plan that describes how, under various overflow (and unanticipated bypass and upset) scenarios, the public, as well as other entities, would be notified of overflows that may endanger health. The plan should identify all overflows that would be reported and to whom, and the specific information that would be reported. The plan should include a description of lines of communication and the identities of responsible officials. (See 40 CFR 122.41(l)(6)).

**Record Keeping** – The permittee is required to keep records of SSOs. The permittee must retain the reports submitted to the EPA and other appropriate reports that could include work orders associated with investigation of system problems related to a SSO, that describes the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the SSO. (See 40 CFR 122.41(j)).

**Proper Operation and Maintenance** – The permit requires proper operation and maintenance of the collection system. (See 40 CFR 122.41(d) and (e)). SSOs may be indicative of improper operation and maintenance of the collection system. The permittee may consider the development and implementation of a capacity, management, operation and maintenance (CMOM) program.

The permittee may refer to the Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (EPA 305-B-05-002). This guide identifies some of the criteria used by the EPA inspectors to evaluate a collection system's management, operation and maintenance program activities.

Owners/operators can review their own systems against the checklist (Chapter 3) to reduce the occurrence of sewer overflows and improve or maintain compliance.

#### D. Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs each federal agency to “make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities.” The EPA strives to enhance the ability of overburdened communities to participate fully and meaningfully in the permitting process for EPA-issued permits, including NPDES permits. “Overburdened” communities can include minority, low-income, tribal, and indigenous populations or communities that potentially experience disproportionate environmental harms and risks. As part of an agency-wide effort, the EPA Region 10 will consider prioritizing enhanced public involvement opportunities for EPA-issued permits that may involve activities with significant public health or environmental impacts on already overburdened communities. For more information, please visit <http://www.epa.gov/compliance/ej/plan-ej/>.

As part of the permit development process, the EPA Region 10 conducted a screening analysis to determine whether this permit action could affect overburdened communities. The EPA used a nationally consistent geospatial tool that contains demographic and environmental data for the United States at the Census block group level. This tool is used to identify permits for which enhanced outreach may be warranted.

The Town of Coulee Dam WWTP is not located within or near a Census block group that is potentially overburdened. The draft permit does not include any additional conditions to address environmental justice.

Regardless of whether a facility is located near a potentially overburdened community, the EPA encourages permittees to review (and to consider adopting, where appropriate) Promising Practices for Permit Applicants Seeking EPA-Issued Permits: Ways To Engage Neighboring Communities (see <https://www.federalregister.gov/articles/2013/05/09/2013-10945/epa-activities-to-promote-environmental-justice-in-the-permit-application-process#p-104>). Examples of promising practices include: thinking ahead about community's characteristics and the effects of the permit on the community, engaging the right community leaders, providing progress or status reports, inviting members of the community for tours of the facility, providing informational materials translated into different languages, setting up a hotline for community members to voice concerns or request information, follow up, etc.

## **E. Design Criteria**

The permit includes design criteria requirements. This provision requires the permittee to compare influent flow and loading to the facility's design flow and loading and prepare a facility plan for maintaining compliance with NPDES permit effluent limits when the annual average flow or loading exceeds 85% of the design criteria values for two consecutive months.

## **F. Industrial Waste Management Requirements**

EPA implements and enforces the National Pretreatment Program regulations of 40 CFR 403, per authority from sections 204(b)(1)(C), 208(b)(2)(C)(iii), 301(b)(1)(A)(ii), 301(b)(2)(A)(ii), 301(h)(5) and 301(i)(2), 304(e ) and (g), 307, 308, 309, 402(b, 405, and 501(a) of the Federal Water Pollutant Control Act as amended by the CWA of 1977.

The proposed permit contains requirements that the WWTP control industrial dischargers, pursuant to 40 CFR 403. Indirect dischargers to the treatment plant must comply with the applicable requirements of 40 CFR 403, any categorical pretreatment standards promulgated by the EPA, and any additional or more stringent requirements imposed by the WWTP as part of its approved pretreatment program or sewer use ordinance (e.g., local limits).

## **G. Standard Permit Provisions**

Sections **III, IV and V** of the draft permit contain standard regulatory language that must be included in all NPDES permits. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

# **VIII. Other Legal Requirements**

## **A. Endangered Species Act**

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species.

NOAA Fisheries prepared a species document entitled, “ Status of ESA Listings & Critical Habitat Designations for West Coast Salmon & Steelhead”, (updated 10-31-12). EPA reviewed the above document, and two NOAA’s Federal Register notices to determine if there would be any potential impacts to species. The two Federal Register notices reviewed were:

Federal Register Notice (Vol. 74, No. 162/ Monday, August 24, 2009) entitled, “Listing Endangered and Threatened Species: Change in Status for Upper Columbia River Steelhead Distinct Population Segment”; and,

Federal Register notice (Vol. 73, No. 200/ Wednesday, October 15, 2008), entitled, “Fisheries off West Coast States; West Coast Salmon Fisheries; Amendment 14; Essential Fish Habitat Descriptions for Pacific Salmon”.

These three NOAA documents indicate that there are no NOAA listed species at the discharge since there is an impassible man-made Barrier downstream at Chief Joseph Dam.

EPA also reviewed USFWS species list for Okanogan County entitled, “Listed and Proposed Endangered and Threatened Species and Critical Habitat; Candidate Species; and Species of Concern in Okanogan County” (Revised April 24, 2013). The following specie was listed:

Bull trout (*Salvelinus confluentus*)

The Bull Trout would not be impacted due to the large dilution from the Columbia River. Therefore, the EPA determines the discharges from the facility will have no effect on listed species.

## **B. Essential Fish Habitat**

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires the EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH). The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species’ fecundity), site specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

The USFWS identified the following species as having Critical Habitat in Okanogan County in a document entitled, “Listed and Proposed Endangered and Threatened Species and Critical Habitat; Candidate Species; and Species of Concern in Okanogan County” (Revised April 24, 2013):

Bull Trout (*Salvelinus confluentus*)

The Bull Trout would not be impacted due to the huge dilution from the Columbia River. Therefore, there is no effect to Essential Fish Habitat from the discharge.

## **C. Certification Requirement**

Section 401 of the CWA requires EPA to seek State certification before issuing a final permit. As a result of the certification, the State may require more stringent permit conditions

or additional monitoring requirements to ensure that the permit complies with water quality standards, or treatment standards established pursuant to any State law or regulation. The state in which the discharge originates is typically responsible for issuing the certification pursuant to CWA Section 401(a)(1). Tribes may issue 401 certifications for discharges within their boundaries if the Tribe has been approved by the EPA pursuant to CWA Section 518(e) and 40 CFR Section 131.8 to administer a water quality standards program. Here, the outfall is located within the boundaries of the Colville Reservation. The Colville Tribes have not yet been authorized to provide 401 certifications; therefore, EPA is responsible for issuing 401 certifications in this case. In the course of issuing this NPDES Permit, EPA has consulted with the Colville Tribes.

#### **D. Permit Expiration**

The permit will expire five years from the effective date.

### **IX. References**

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control*. US Environmental Protection Agency, Office of Water, EPA/505/2-90-001.

<https://www3.epa.gov/npdes/pubs/owm0264.pdf>

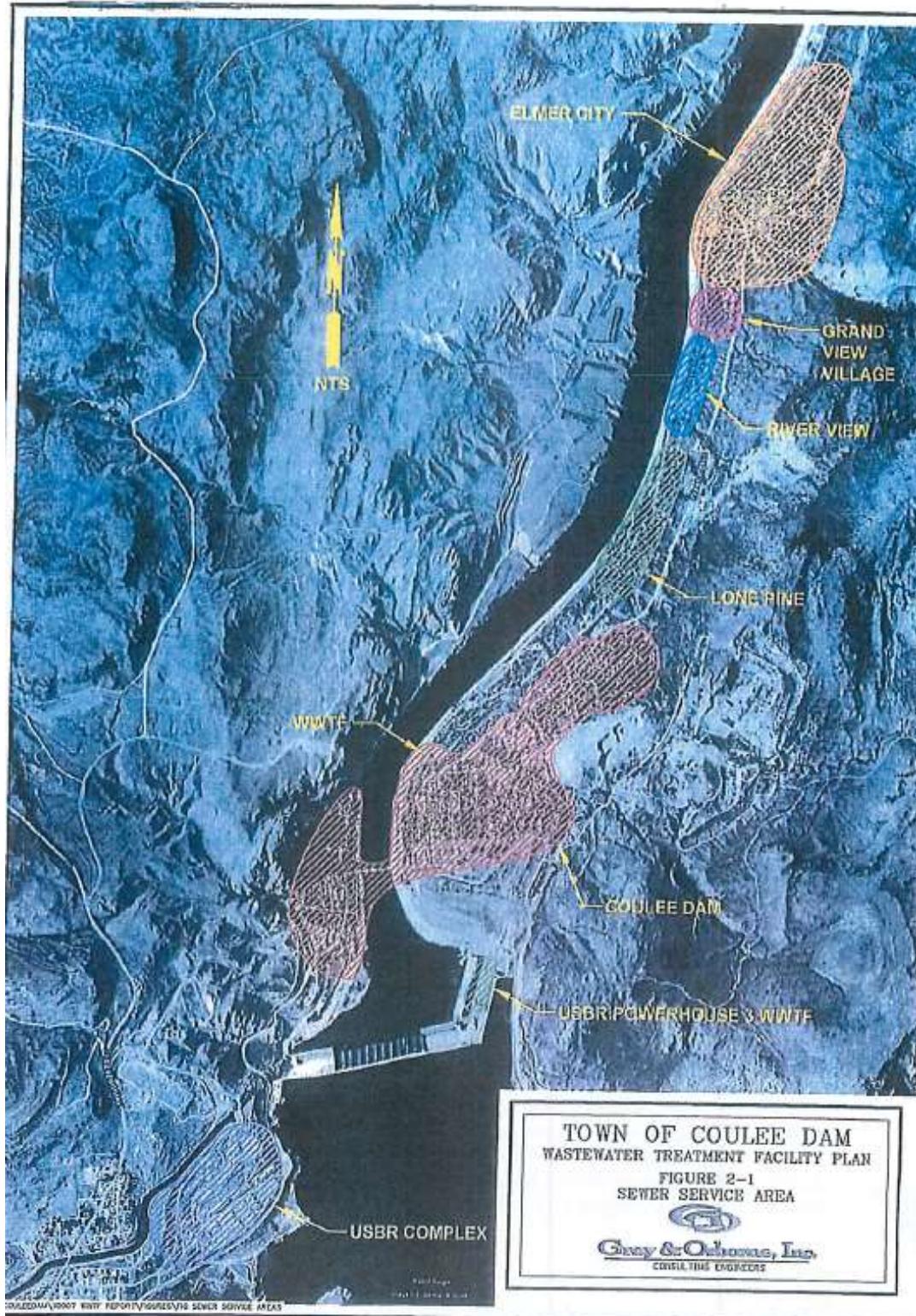
EPA. 2010. *NPDES Permit Writers' Manual*. Environmental Protection Agency, Office of Wastewater Management, EPA-833-K-10-001.

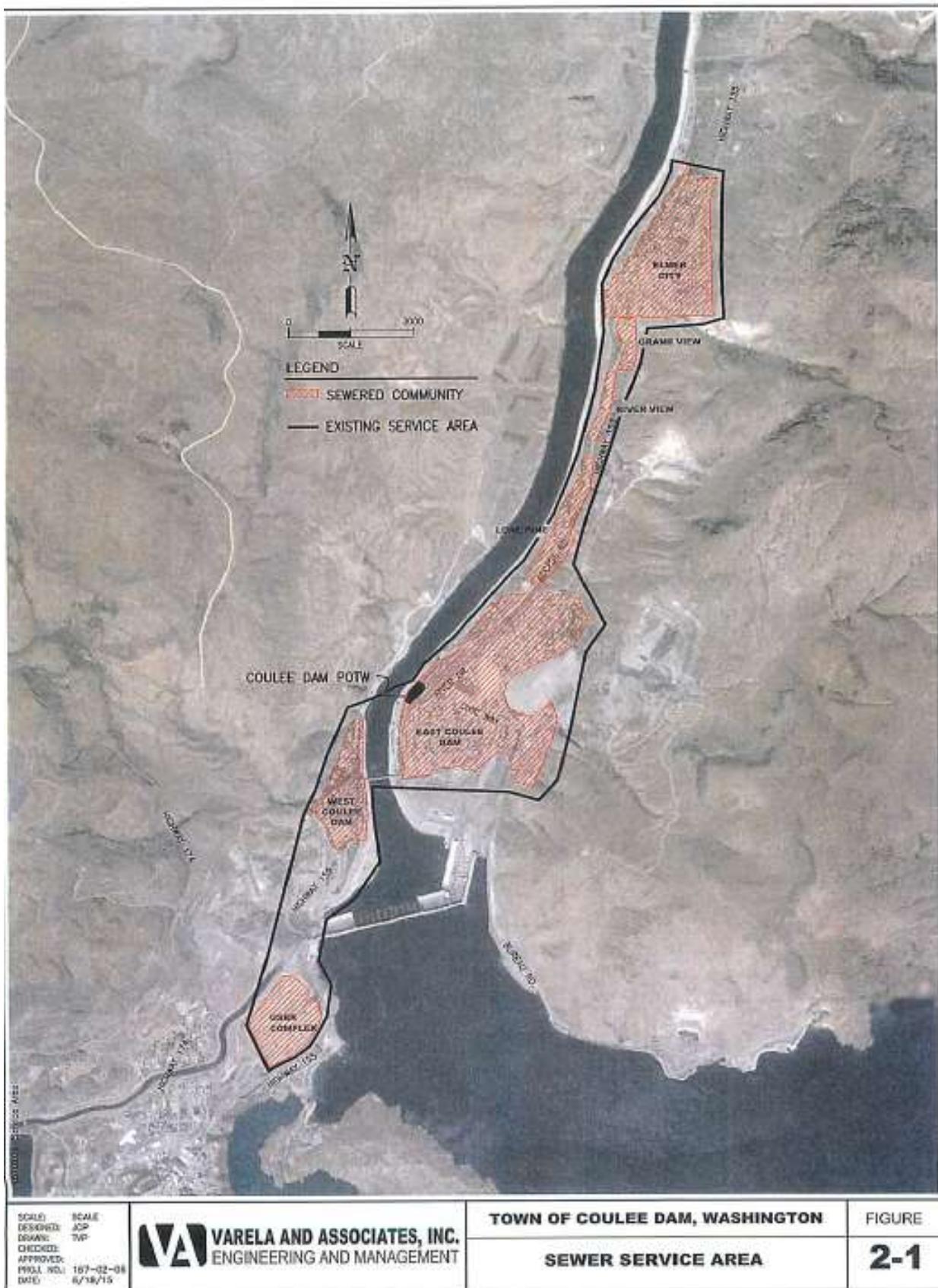
[https://www3.epa.gov/npdes/pubs/pwm\\_2010.pdf](https://www3.epa.gov/npdes/pubs/pwm_2010.pdf)

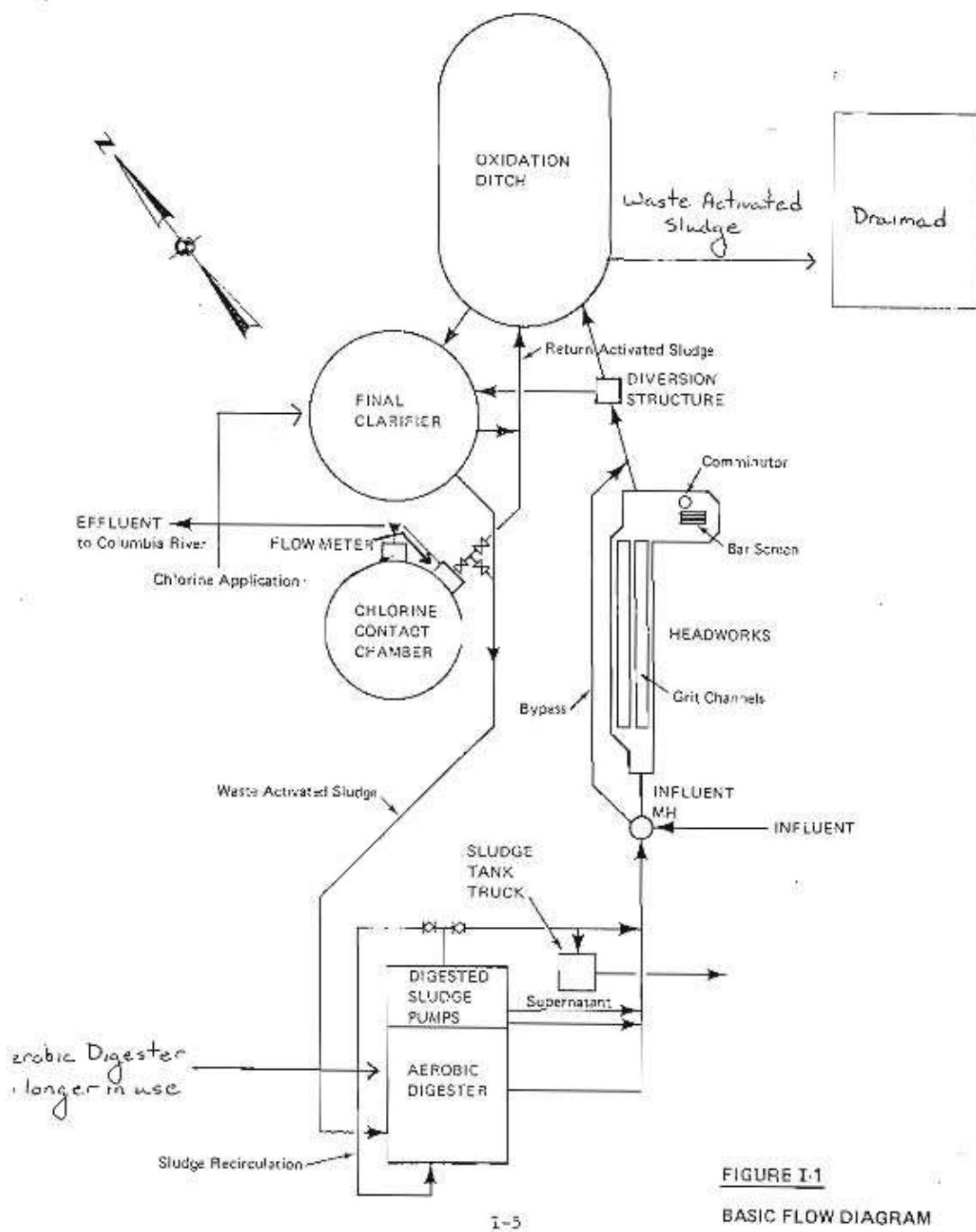
EPA. 2014. Water Quality Standards Handbook Chapter 5: General Policies. Environmental Protection Agency. Office of Water. EPA 820-B-14-004. September 2014.

<https://www.epa.gov/sites/production/files/2014-09/documents/handbook-chapter5.pdf>

## Appendix A: Facility Information and Flow Diagram







**FIGURE I-1**  
**BASIC FLOW DIAGRAM**

## Appendix B: Low Flow Conditions and Dilution

### A. Low Flow Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits. For reference, the TSD was used to evaluate low flow receiving water conditions as defined below:

Acute aquatic life	1Q10 or 1B3
Chronic aquatic life	7Q10 or 4B3
Non-carcinogenic human health criteria	30Q5
Carcinogenic human health criteria	harmonic mean flow
Ammonia	30B3 or 30Q10

1. The 1Q10 represents the lowest one day flow with an average recurrence frequency of once in 10 years.  
 2. The 1B3 is biologically based and indicates an allowable exceedence of once every 3 years.  
 3. The 7Q10 represents lowest average 7 consecutive day flow with an average recurrence frequency of once in 10 years.  
 4. The 4B3 is biologically based and indicates an allowable exceedance for 4 consecutive days once every 3 years.  
 5. The 30Q5 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 5 years.  
 6. The 30Q10 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 10 years.  
 7. The harmonic mean is a long-term mean flow value calculated by dividing the number of daily flow measurements by the sum of the reciprocals of the flows.

The EPA's *Water Quality Criteria; Notice of Availability; 1999 Update of Ambient Water Quality Criteria for Ammonia; Notice* (64 FR 719769 December 22, 1999) identifies the appropriate flows to be used for ammonia.

### B. Mixing Zones and Dilution

In some cases a dilution allowance or mixing zone is permitted. A mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient water body. A mixing zone is an allocated impact zone where the water quality standards may be exceeded as long as acutely toxic conditions are prevented (the EPA, 2014).

The following formula is used to calculate a dilution factor based on the allowed mixing zone.

$$D = \frac{Q_e + Q_u \times \%MZ}{Q_e}$$

Where:

- D = Dilution Factor
- $Q_e$  = Effluent flow rate (set equal to the design flow of the WWTP)
- $Q_u$  = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10, 30B3, etc)
- %MZ = Percent Mixing Zone

The EPA calculated dilution factors for critical low flow conditions. All dilution factors are calculated with the effluent flow rate set equal to the design flow of 0.50 mgd. The dilution factors are listed in Table B-1.

40 CFR 131.35(c)(2) requires the size of a mixing zone to be consistent with the applicable procedures and guidelines in EPA's Water Quality Standards Handbook and the Technical Support Document for Water Quality Based Toxics Control (TSD).

The TSD in Section 4.32 states:

#### “4.32 Minimizing the Size of Mixing Zones

Concentrations above the chronic criteria are likely to prevent sensitive taxa from taking up long-term residence in the mixing zone. In this regard, benthic organisms and territorial organisms are likely to be of greatest concern. The higher the concentrations occurring within an isopleth, the more taxa are likely to be excluded, thereby affecting the structure and function of the ecological community. It is thus important to minimize the overall size of the mixing zone and the size of elevated concentration isopleths within the mixing zone.”

The EPA minimized the size of the mixing zone necessary for no reasonable potential to violate the water quality standards for total residual chlorine thus complying with the 40 CFR 131.35.

The minimum size mixing zone and minimum dilution factor are shown below in Table B-1.

**Table B-1: Minimum Mixing Zone and Dilution Factors**

<b>Flow</b>	<b>Mixing Zone</b>	<b>Dilution Factor</b>
1Q10	0.099 %	31.8
7Q10	0.099 %	56.0

## Appendix C: Basis for Effluent Limits

The following discussion explains the derivation of technology and water quality based effluent limits proposed in the draft permit. Part A discusses technology-based effluent limits, Part B discusses water quality-based effluent limits in general, Part C discusses anti-backsliding provisions.

### A. Technology-Based Effluent Limits

#### *Federal Secondary Treatment Effluent Limits*

The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as “secondary treatment,” which all POTWs were required to meet by July 1, 1977. The EPA has developed and promulgated “secondary treatment” effluent limitations, which are found in 40 CFR 133.102. These technology-based effluent limits apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD<sub>5</sub>, TSS, and pH. The federally promulgated secondary treatment effluent limits are listed in Table C-1.

<b>Table C-1: Secondary Treatment Effluent Limits (40 CFR 133.102)</b>		
<b>Parameter</b>	<b>30-day average</b>	<b>7-day average</b>
BOD <sub>5</sub>	30 mg/L	45 mg/L
TSS	30 mg/L	45 mg/L
Removal for BOD <sub>5</sub> and TSS (concentration)	85% (minimum)	---
pH	within the limits of 6.0 - 9.0 s.u.	

#### *Mass-based Limits*

The federal regulations at 40 CFR §122.45(b) and (f) require that POTW limitations be expressed as mass-based limits using the design flow of the facility. The mass-based limits, expressed in lbs/day, are calculated as follows based on the design flow:

$$\text{Mass-based limit (lbs/day)} = \text{concentration limit (mg/L)} \times \text{design flow (mgd)} \times 8.34$$

The mass limits for BOD<sub>5</sub> are calculated as follows:

$$\text{Average Monthly Limit} = 30 \text{ mg/L} \times 0.50 \text{ mgd} \times 8.34 = 125 \text{ lbs/day}$$

$$\text{Average Weekly Limit} = 45 \text{ mg/L} \times 0.50 \text{ mgd} \times 8.34 = 187 \text{ lbs/day}$$

The mass limits for TSS are calculated as follows:

$$\text{Average Monthly Limit} = 30 \text{ mg/L} \times 0.50 \text{ mgd} \times 8.34 = 125 \text{ lbs/day}$$

$$\text{Average Weekly Limit} = 45 \text{ mg/L} \times 0.50 \text{ mgd} \times 8.34 = 187 \text{ lbs/day}$$

### Chlorine

The Town of Coulee Dam uses chlorine disinfection.

A 0.5 mg/L average monthly limit for chlorine is derived from standard operating practices. The Water Pollution Control Federation's *Chlorination of Wastewater* (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after 15 minutes of contact time. Therefore, a wastewater treatment plant that provides adequate chlorine contact time can meet a 0.5 mg/L total residual chlorine limit on a monthly average basis. In addition to average monthly limits (AMLs), NPDES regulations require effluent limits for POTWs to be expressed as average weekly limits (AWLs) unless impracticable. The AWL is calculated to be 1.5 times the AML, consistent with the "secondary treatment" limits for BOD<sub>5</sub> and TSS. This results in an AWL for chlorine of 0.75 mg/L.

The mass limit is calculated as shown below:

$$\text{Average Monthly Limit} = 0.5 \text{ mg/L} \times 0.50 \text{ mgd} \times 8.34 = 2.1 \text{ lbs/day}$$

$$\text{Average Weekly Limit} = 0.75 \text{ mg/L} \times 0.50 \text{ mgd} \times 8.34 = 3.1 \text{ lbs/day}$$

The new plant will use ultraviolet radiation for disinfection. The facility at this time does not have plans for using chlorine as a backup to the ultraviolet disinfection.

## **B. Water Quality-based Effluent Limits**

### *Statutory and Regulatory Basis*

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Discharges to State and Tribal waters must also comply with limitations imposed by the State and Tribe as part of its certification of NPDES permits under section 401 of the CWA. Federal regulations at 40 CFR 122.4(d) prohibit the issuance of an NPDES permit that does not ensure compliance with the water quality standards of all affected States.

The NPDES regulation (40 CFR 122.44(d)(1)) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State and Tribal water quality standard, including narrative criteria for water quality, and that the level of water quality to be achieved by limits on point sources is derived from and complies with all applicable water quality standards.

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

### *Water Quality Criteria Summary*

The Colville Tribe has applied for the status of Treatment as a State (TAS) from the EPA for purposes of the Clean Water Act. The EPA has not acted on this application. However, the EPA has promulgated water quality standards for the Colville Reservation that are based upon

tribally-adopted water quality standards. See Chapter 4-8 Water Quality Standards" of the CTCR Code-.

Water quality criteria.

(A) Bacteriological Criteria—The geometric mean of the enterococci bacteria densities in samples taken over a 30 day period shall not exceed 16/100 ml, nor shall any single sample exceed an enterococci density of 75 per 100 milliliters. These limits are calculated as the geometric mean of the collected samples approximately equally spaced over a thirty day period.

(B) Dissolved oxygen—The dissolved oxygen shall exceed 8.0 mg/l.

(C) Total dissolved gas—concentrations shall not exceed 110 percent of the saturation value for gases at the existing atmospheric and hydrostatic pressures at any point of sample collection.

(D) Temperature—shall not exceed 18.0 degrees C due to human activities. Temperature increases shall not, at any time, exceed  $t=28/(T+7)$ .

(1) When natural conditions exceed 18 degrees C no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3 degrees C.

(2) For purposes hereof, "t" represents the permissive temperature change across the dilution zone; and "T" represents the highest existing temperature in this water classification outside of any dilution zone.

(3) Provided that temperature increase resulting from non-point source activities shall not exceed 2.8 degrees C, and the maximum water temperature shall not exceed 18.3 degrees C.

(E) pH shall be within the range of 6.5 to 8.5 with a human-caused variation of less than 0.5 units.

(F) Turbidity shall not exceed 5 NTU over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU.

(G) Toxic, radioactive, nonconventional, or deleterious material concentrations shall be less than those -of public health significance, -or which may cause acute or chronic toxic conditions to the aquatic biota, or which may adversely affect designated water uses.

In the case of bacteria the tribal water adopted but not yet approved quality criteria is:

(A) Fecal coliform organisms - freshwater: Fecal coliform organisms shall not exceed a geometric mean value of 50 organisms/100 mL, with not more than ten (10%) percent of samples exceeding 100 organisms/100 mL.

### ***Reasonable Potential Analysis***

When evaluating the effluent to determine if the pollutant parameters in the effluent are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State and Tribal water quality criterion, the EPA projects the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern. The EPA uses the concentration of the pollutant in the effluent and receiving water and, if appropriate, the dilution available from the receiving water, to project the receiving water concentration. If the projected concentration of the pollutant in the receiving water exceeds the numeric criterion for that specific pollutant, then the discharge has the

reasonable potential to cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it may be appropriate to allow a small area of the receiving water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loadings of the pollutant to the water body and will decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and the concentration of the pollutant in the receiving water is less than the criterion necessary to protect the designated uses of the water body.

### ***Procedure for Deriving Water Quality-based Effluent Limits***

The first step in developing a water quality-based effluent limit is to develop a wasteload allocation (WLA) for the pollutant. A wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. Wasteload allocations are determined in one of the following ways:

#### **1. TMDL-Based Wasteload Allocation**

Where the receiving water quality does not meet water quality standards, the wasteload allocation is generally based on a TMDL developed by the State. A TMDL is a determination of the amount of a pollutant from point, non-point, and natural background sources that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating water quality standards.

To ensure that these waters will come into compliance with water quality standards Section 303(d) of the CWA requires States to develop TMDLs for those water bodies that will not meet water quality standards even after the imposition of technology-based effluent limitations. The first step in establishing a TMDL is to determine the assimilative capacity (the loading of pollutant that a water body can assimilate without exceeding water quality standards). The next step is to divide the assimilative capacity into allocations for non-point sources (load allocations), point sources (wasteload allocations), natural background loadings, and a margin of safety to account for any uncertainties. Permit limitations are then developed for point sources that are consistent with the wasteload allocation for the point source.

#### **2. Mixing zone based WLA**

When a mixing zone is allowed for the discharge, the WLA is calculated by using a simple mass balance equation. The equation takes into account the available dilution provided by the mixing zone, and the background concentrations of the pollutant.

#### **3. Criterion as the Wasteload Allocation**

In some cases a mixing zone cannot be authorized, either because the receiving water is already at, or exceeds, the criterion, the receiving water flow is too low to provide dilution, or the facility can achieve the effluent limit without a mixing zone. In such cases, the criterion becomes the wasteload allocation. Establishing the criterion as the wasteload allocation ensures that the effluent discharge will not contribute to an exceedance of the criteria.

Once the wasteload allocation has been developed, the EPA applies the statistical permit limit derivation approach described in Chapter 5 of the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991, hereafter referred to as the TSD) to obtain monthly average, and weekly average or daily maximum permit limits. This approach takes into account effluent variability, sampling frequency, and water quality standards.

### ***Summary - Water Quality-based Effluent Limits***

The water quality based effluent limits in the draft permit, developed as disclosed above, are summarized below.

#### pH

The water quality standards at 40 CFR 131.35(f)(2)(ii)(E) require pH values of the river to be within the range of 6.5 to 8.5. Mixing zones are generally not granted for pH, therefore the most stringent water quality criterion must be met before the effluent is discharged to the receiving water. Coulee Dam has achieved this level of control therefore no mixing zone is necessary for this discharge.

#### Enterococci Bacteria

The water quality standards at 40 CFR 131.35(f)(2)(ii)(A) contains a standard for Enterococci bacteria of 16 counts per 100 ml and is based on a geometric mean of samples equally spaced over 30 days. The standard also prohibits any one sample from greater than 75 counts per 100 ml.

#### Fecal Coliform Bacteria

The Colville Business Council adopted water quality standards for fecal coliform. Section 402(a)(1) of the federal Clean Water Act, 40 CFR Part 122.44(a)(1) requires technology based effluent limitations based on case by case determinations.

The highest fecal coliform discharge measured over the last five years is 40 #/100 ml. EPA determines that best practicable control technology (BPT) and best conventional control technology (BCT) for fecal coliform is 50 #/100 ml. Approval of the 50 #/100 ml Colville tribal water quality standard may be within the term of the term of the permit. Therefore 50#/100 ml is established as an effluent limitation.

Regulations at 40 CFR 122.45(d)(2) require that effluent limitations for continuous discharges from POTWs be expressed as average monthly and average weekly limits, unless impracticable.

Additionally, the terms "average monthly limit" and "average weekly limit" are defined in 40 CFR 122.2 as being arithmetic (as opposed to geometric) averages. It is impracticable to properly implement a 30-day geometric mean criterion in a permit using monthly and weekly arithmetic average limits. The geometric mean of a given data set is equal to the arithmetic mean of that data set if and only if all of the values in that data set are equal. Otherwise, the geometric mean is always less than the arithmetic mean. In order to ensure that the effluent limits are "derived from and comply with" the geometric mean water quality criterion, as required by 40 CFR 122.44(d)(1)(vii)(A), it is necessary to express the effluent limits as a monthly geometric mean. The averaging period for the fecal coliform limit is therefore monthly.

**Ammonia**

No data exists for a reasonable potential analysis for ammonia. The EPA assumes no reasonable potential exists for the facility to violate the water quality standards for ammonia.

**Chlorine**

A reasonable potential calculation showed that the Coulee Dam discharge would not have the reasonable potential to cause or contribute to a violation of the water quality criteria for chlorine. Therefore, the draft permit does not contain a water quality-based effluent limit for chlorine. See Appendix D for the reasonable potential calculation.

**Narrative limitations to protect the aesthetic qualities of water within the Reservation**

The permit prohibits discharges that:

- (i) Settle to form objectionable deposits;
- (ii) Float as debris, scum, oil, or other matter forming nuisances;
- (iii) Produce objectionable color, odor, taste, or turbidity;
- (iv) Cause injury to, are toxic to, or produce adverse physiological responses in humans, animals, or plants; or
- (v) produce undesirable or nuisance aquatic life.

**C. Anti-backsliding Provisions****Basis for Less Stringent Effluent Limits**

Section 402(o) of the Clean Water Act and federal regulations at 40 CFR §122.44 (l) generally prohibit the renewal, reissuance or modification of an existing NPDES permit that contains effluent limits, permit conditions or standards that are less stringent than those established in the previous permit (i.e., anti-backsliding) but provides limited exceptions. Section 402(o)(1) of the CWA states that a permit may not be reissued with less-stringent limits established based on Sections 301(b)(1)(C), 303(d) or 303(e) (i.e. water quality-based limits or limits established in accordance with State treatment standards) except in compliance with Section 303(d)(4).

Section 402(o)(1) also prohibits backsliding on technology-based effluent limits established using best professional judgment (i.e. based on Section 402(a)(1)(B)), but in this case, the effluent limits being revised are water quality-based effluent limits (WQBELs).

Section 303(d)(4) of the CWA states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, WQBELs may be revised as long as the revision is consistent with the State's and Tribe's antidegradation policy. Additionally, Section 402(o)(2) contains exceptions to the general prohibition on backsliding in 402(o)(1). According to the EPA NPDES Permit Writers' Manual (EPA-833-K-10-001) the 402(o)(2) exceptions are applicable to WQBELs (except for 402(o)(2)(B)(ii) and 402(o)(2)(D)) and are independent of the requirements of 303(d)(4). Therefore, WQBELs may be relaxed as long as either the 402(o)(2) exceptions or the requirements of 303(d)(4) are satisfied.

Even if the requirements of Sections 303(d)(4) or 402(o)(2) are satisfied, Section 402(o)(3) prohibits backsliding which would result in violations of water quality standards or effluent limit guidelines.

The limits in the permit do not backslide for any parameter.

## Appendix D: Reasonable Potential and Water Quality-Based Effluent Limit Calculations

The following discussion explains in more detail the statutory and regulatory basis for the technology and water quality-based effluent limits in the draft permit. Part A discusses Water Quality Criteria Summary; Part B discusses technology-based effluent limits, Part C discusses water quality-based effluent limits in general, Part D discusses facility specific water quality-based effluent limits, and Part E discusses anti-degradation.

### **Water Quality Criteria Summary**

EPA considered the Federal Secondary Treatment Standards, the federally promulgated water quality standards found in 40 CFR §131.35 and the Colville Water Quality Standards to protect designated beneficial uses.

### **A. Reasonable Potential Analysis**

The EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, the EPA compares the maximum projected receiving water concentration to the water quality criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit. This following section discusses how the maximum projected receiving water concentration is determined

#### **Mass Balance**

For discharges to flowing water bodies, the maximum projected receiving water concentration is determined using the following mass balance equation:

$$C_d Q_d = C_e Q_e + C_u Q_u \quad \text{Equation 1}$$

where,

- $C_d$  = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)
- $C_e$  = Maximum projected effluent concentration
- $C_u$  = 95th percentile measured receiving water upstream concentration
- $Q_d$  = Receiving water flow rate downstream of the effluent discharge =  $Q_e + Q_u$
- $Q_e$  = Effluent flow rate (set equal to the design flow of the WWTP)
- $Q_u$  = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10 or 30B3)

When the mass balance equation is solved for  $C_d$ , it becomes:

$$C_d = \frac{C_e \times Q_e + C_u \times Q_u}{Q_e + Q_u} \quad \text{Equation 2}$$

The above form of the equation is based on the assumption that the discharge is rapidly and completely mixed with 100% of the receiving stream.

If the mixing zone is based on less than complete mixing with the receiving water, the equation becomes:

$$C_d = \frac{C_e \times Q_e + C_u \times (Q_u \times \%MZ)}{Q_e + (Q_u \times \%MZ)} \quad \text{Equation 3}$$

Where:

% MZ = the percentage of the receiving water flow available for mixing.

If a mixing zone is not allowed, dilution is not considered when projecting the receiving water concentration and,

$$C_d = C_e \quad \text{Equation 4}$$

A dilution factor (D) can be introduced to describe the allowable mixing. Where the dilution factor is expressed as:

$$D = \frac{Q_e + Q_u \times \%MZ}{Q_e} \quad \text{Equation 5}$$

After the dilution factor simplification, the mass balance equation becomes:

$$C_d = \frac{C_e - C_u}{D} + C_u \quad \text{Equation 6}$$

If the criterion is expressed as dissolved metal, the effluent concentrations are measured in total recoverable metal and must be converted to dissolved metal as follows:

$$C_d = \frac{CF \times C_e - C_u}{D} + C_u \quad \text{Equation 7}$$

Where  $C_e$  is expressed as total recoverable metal,  $C_u$  and  $C_d$  are expressed as dissolved metal, and CF is a conversion factor used to convert between dissolved and total recoverable metal.

The above equations for  $C_d$  are the forms of the mass balance equation which were used to determine reasonable potential and calculate wasteload allocations.

### ***Maximum Projected Effluent Concentration***

When determining the projected receiving water concentration downstream of the effluent discharge, the EPA's Technical Support Document for Water Quality-based Toxics Controls (TSD, 1991) recommends using the maximum projected effluent concentration ( $C_e$ ) in the mass balance calculation (see equation 3, page C-5). To determine the maximum projected effluent concentration ( $C_e$ ) the EPA has developed a statistical approach to better characterize the effects of effluent variability. The approach combines knowledge of effluent variability as estimated by a coefficient of variation (CV) with the uncertainty due to a limited number of data to project an estimated maximum concentration for the effluent. Once the CV for each pollutant parameter has been calculated, the reasonable potential multiplier (RPM) used to derive the maximum projected effluent concentration ( $C_e$ ) can be calculated using the following equations:

First, the percentile represented by the highest reported concentration is calculated.

$$p_n = (1 - \text{confidence level})^{1/n} \quad \text{Equation 8}$$

where,

$p_n$  = the percentile represented by the highest reported concentration  
 $n$  = the number of samples  
 confidence level = 99% = 0.99

and

$$\text{RPM} = \frac{C_{99}}{C_{P_n}} = \frac{e^{Z_{99} \times \sigma - 0.5 \times \sigma^2}}{e^{Z_{P_n} \times \sigma - 0.5 \times \sigma^2}} \quad \text{Equation 9}$$

Where,

$\sigma^2$  =  $\ln(CV^2 + 1)$   
 $Z_{99}$  = 2.326 (z-score for the 99<sup>th</sup> percentile)  
 $Z_{P_n}$  = z-score for the  $P_n$  percentile (inverse of the normal cumulative distribution function at a given percentile)  
 CV = coefficient of variation (standard deviation ÷ mean)

The maximum projected effluent concentration is determined by simply multiplying the maximum reported effluent concentration by the RPM:

$$C_e = (\text{RPM})(\text{MRC}) \quad \text{Equation 10}$$

where MRC = Maximum Reported Concentration

### **Maximum Projected Effluent Concentration at the Edge of the Mixing Zone**

Once the maximum projected effluent concentration is calculated, the maximum projected effluent concentration at the edge of the acute and chronic mixing zones is calculated using the mass balance equations presented previously.

### **Reasonable Potential**

The discharge has reasonable potential to cause or contribute to an exceedance of water quality criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the most stringent criterion for that pollutant.

### **Results of Reasonable Potential Calculations**

It was determined that total residual chlorine does not have a reasonable potential to cause or contribute to an exceedance of water quality criteria at the edge of the mixing zone. The results of the calculations are presented below.

Reasonable Potential Calculation									
		Dilution Factors:							
Facility	Town of Coulee Dam <th>Aquatic Life</th> <td>31.8</td> <th>Acute</th> <td>31.8</td> <th>Chronic</th> <td>55.0</td> <th></th> <th></th>	Aquatic Life	31.8	Acute	31.8	Chronic	55.0		
Water Body Type	Freshwater	Human Health Carcinogenic			1.0				
Rec. Water Hardness	** Enter Hardness on DFCalc Tab **		Human Health Non-Carcinogenic		16775.4				
<b>Pollutant, CAS No. &amp; NPDES Application Ref. No.</b>		<b>CHLORINE (Total Residual)</b>							
		7782505							
<b>Effluent Data</b>	# of Samples (n)	60							
	Coeff of Variation (Cv)	0.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Effluent Concentration, ug/L (Max. or 95th Percentile)	600							
	Calculated 50th percentile Effluent Conc. (when n>10)								
<b>Receiving Water Data</b>	90th Percentile Conc., ug/L	0							
	Geo Mean, ug/L								
<b>Water Quality Criteria</b>	Aquatic Life Criteria, ug/L	19	Acute						
		11	Chronic						
	WQ Criteria for Protection of Human Health, ug/L	-							
	Metal Criteria	-	Acute						
	Translator, decimal	-	Chronic						
Carcinogen?		N							

#### **Aquatic Life Reasonable Potential**

Effluent percentile value	99%	0.99
s	s <sup>2</sup> =ln(CV <sup>2</sup> +1)	0.198
Pn=(1-confidence level) <sup>1/n</sup>	99%	0.926
Multiplier		1.00
Max concentration (ug/L) at edge of...	Acute	18.841
	Chronic	10.907
Reasonable Potential? Limit Required?	NO	

## Appendix E: Antidegradation Analysis

The antidegradation policy is established in Title 40 CFR 131.35(e)(2).

(2) *Antidegradation policy.* This antidegradation policy shall be applicable to all surface waters of the Reservation.

(i) Existing in-stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

(ii) Where the quality of the waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the Regional Administrator finds, after full satisfaction of the inter-governmental coordination and public participation provisions of the Tribes' continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the Regional Administrator shall assure water quality adequate to protect existing uses fully. Further, the Regional Administrator shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

The EPA is employing a water body by water body approach in conducting the antidegradation analysis. The most recent federally approved Integrated Report and supporting data was used to determine support status of the receiving water.

According to the Washington State Department of Ecology Integrated Report the Columbia River in the vicinity of the discharge is listed on the 303(d) list for not fully supporting beneficial uses because of dissolved oxygen, total dissolved gas and temperature. However, the Town of Coulee Dam is not a significant discharger of these pollutants. Therefore, existing in-stream water uses and the level of water quality necessary to protect the existing uses is maintained and protected.

### ***Pollutants with Limits in the Current and Proposed Permit***

The quality of the water exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water for the pollutants with limits in the current and proposed permit. For these the current discharge quality is based on the limits in the current permit and the future discharge quality is based on the proposed permit limits. For the Town of Coulee Dam permit, this means determining the permit's effect on water quality based upon the limits for BOD<sub>5</sub>, TSS, Enterococci, fecal coliform bacteria, total residual chlorine and pH in the current and proposed permits. Table E-1 provides a summary of the current permit limits and the proposed reissued permit limits.

**Table E-1. Comparison of Current and Proposed Permit Limits**

Pollutant	Units	Existing Permit			Proposed Reissued Permit		
		Average Monthly	Average Weekly	Max Daily	Average Monthly	Average Weekly	Max Daily
BOD <sub>5</sub>	mg/l	30	45	---	30	45	---
	lbs/day	---	---	---	48.8	73.1	---
TSS	mg/l	30	45	---	30	45	---
	lbs/day	---	---	---	48.8	73.1	---
Enterococci	#/100 ml	16	---	---	16	---	---
Fecal Coliform Bacteria	#/100 ml	200	400	---	50	---	---
Total Residual Chlorine	µg/L	0.50	0.75	---	0.50	0.75	---
	lbs/day	---	---	---	2.1	3.1	---
pH	s.u.	6.5 – 9.0			6.5 – 9.0		

The proposed permit limits in Table 4 for BOD<sub>5</sub>, TSS, enterococci, total residual chlorine and pH are the same as those in the previous permit except for the addition of mass loadings limits for TSS, BOD<sub>5</sub> and total residual chlorine. The addition of these mass loadings make the permit more stringent. The fecal coliform bacteria standard is more stringent. Therefore, no adverse change in water quality and no degradation will result from the discharge of these pollutants in the reissued permit and the quality of the receiving water is maintained and protected.

In sum, the EPA concludes that this discharge permit complies with the provisions of the Colville Tribe's standards set forth in 40 CFR 131.35(e)(2)(ii) and "levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water" is maintained and protected.