

LIST CONDITIONS:

COMPARISON OF EFFLUENT LIMITS FOR DISCHARGES TO THE SNOQUALMIE RIVER WITH THE EXISTING PERMIT ISSUED IN NOVEMBER 1994.

Parameters	Existing Limits			Proposed Limits		
	Monthly Average	Daily Maximum	Weekly Average	Monthly Average	Daily Maximum	Weekly Average
BOD ₅	30 mg/L, 58 lbs./day	N/A	45 mg/L, 87 lbs./day	30 mg/L, 538 lbs./day (Nov.-July)	15 mg/L, (TMDL, August, Sept., October)	45 mg/L, 807 lbs./day (Nov.-July)
TSS	60 mg/L, 115 lbs./day	N/A	90 mg/L, 173 lbs./day	30 mg/L, 538 lbs./day (Nov.-July) 450 lbs./day (Aug.-Oct.)	N/A	45 mg/L, 807 lbs./day (Nov.-July) 676 lbs./day (Aug.-Oct.)
Fecal Coliform	200/100 mL		400/100 mL	200/100 mL	400/100 mL (TMDL, August, Sept., October)	400/100 mL
Chlorine	65 µg/L, 0.12 lbs./day	190 µg/L	N/A	N/A	N/A	N/A
Ammonia	8.7 mg/L, 16.7 lbs./day	15 mg/L	N/A	N/A	5 mg/L (TMDL, August, Sept., October)	N/A
Copper	20 µg/L, 0.038 lbs./day	35 µg/L		N/A	N/A	N/A
Flow	N/A	N/A	N/A	N/A	1.8 MGD	N/A

The determination of the reasonable potential for these toxic chemicals to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The reasonable potential calculations indicated that there is no reasonable potential to exceed the water quality criteria at the critical condition. However, ammonia was limited based on a TMDL study that called for ammonia daily maximum limit of 5 mg/L.

BOD₅—Under critical conditions there was a prediction of a violation of the dissolved oxygen criterion for the receiving water. A BOD₅ effluent limit of 15 mg/L or 269 lbs./day was found to be protective of the dissolved oxygen criterion and therefore was imposed instead of the technology-based limitation.

The impact of BOD on the receiving water was modeled at critical condition and with the technology-based effluent limitation for BOD₅ described under "Technology-Based Effluent Limitations" above and described in the "Snoqualmie River TMDL Study" by the Department of Ecology in May 1994.

Fecal Coliform—The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 7:1.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

K. Effluent Limit Summary

Table 12 summarizes the effluent limits that will be placed in the new permit for discharges through outfall #001. The table also provides a comparison with the limits placed in the previous permit.

Table 12. Comparison of Effluent Limits

Parameter	Previous Effluent Limits: Outfall # 001			Proposed Effluent Limits: Outfall # 001		
	Monthly Average	Weekly Average	Daily Maximum	Monthly Average	Weekly Average	Daily Maximum
<i>Seasonal limits applicable November through July</i>						
Biochemical Oxygen Demand (5-day)	30 mg/L, 538 lbs./day 85% removal	45 mg/L, 807 lbs./day	N/A	N/A	N/A	N/A
CBOD	Not Used in Previous Permit			25 mg/L, 259 lbs./day 85% removal	40 mg/L, 414 lbs./day	N/A
Total Suspended Solids	30 mg/L, 538 lbs./day 85% removal	45 mg/L, 807 lbs./day	N/A	30 mg/L, 310 lbs./day 85% removal	45 mg/L, 465 lbs./day	N/A
Fecal Coliform Bacteria	200/100mL	400/100mL	N/A	200/100mL	400/100mL	N/A
pH	Between 6.0 and 9.0			Between 6.0 and 9.0		
<i>Seasonal limits applicable August through October</i>						
Biochemical Oxygen Demand (5-day)	85% removal	N/A	15 mg/L	N/A	N/A	N/A
CBOD	Not Used in Previous Permit			25 mg/L, 259 lbs./day 85% removal	40 mg/L, 414 lbs./day	206 lbs/day
Total Suspended Solids	30 mg/L, 450 lbs./day 85% removal	45 mg/L, 676 lbs./day	N/A	30 mg/L, 310 lbs./day 85% removal	45 mg/L, 465 lbs./day	N/A
Fecal Coliform Bacteria	N/A	N/A	400/100mL	200/100mL	400/100mL	N/A
pH	Between 6.0 and 9.0			Between 6.0 and 9.0		
Total Ammonia (as NH ₃ -N)	N/A	N/A	5 mg/L	N/A	N/A	68.7 lbs/day
Flow	N/A	N/A	1.8 MGD	No discharge limit, only facility loading limit.		

A review of the 1994 Snoqualmie River Total Maximum Daily Load Study (Publication Number 94-71) indicates that the TMDL-based limits (August through October) in the previous permit were misstated. The actual waste load allocations for the City are "Mass-based," not "Concentration-based," and there was also no enforceable limit on flow. In addition, the Biochemical Oxygen Demand parameter stated in the TMDL was intended as a limit on only the carbonaceous portion of the total biochemical oxygen demand; the nitrogenous portion was covered by the ammonia limit. The new permit will correct these errors by removing the flow limit, include seasonal mass-based limits and will change BOD monitoring to CBOD.

Table 10. TMDL-Based Waste Load Allocations

Parameter	Waste Load Allocation
Critical Period for Waste Load Allocations	August 1 st through October 31 st Annually
CBOD	206 lbs/day
Ammonia-N	68.7 lbs/day (as N)
Soluble Reactive Phosphorus (benchmark)*	14 lbs/day
Fecal Coliform	Meet technology-based limits

* The TMDL does not contain an enforceable limit for Soluble Reactive Phosphorus; the WLA is a desired "goal" for the discharger. The permit does not include this value as an enforceable limit and will only require monitoring.

K. Comparison of effluent limits with the last permit, modified on July 1, 2011

Table 17. Comparison of Previous and Proposed Effluent Limits, Outfall 001

Parameter	Previous Effluent Limits:		Proposed Effluent Limits:	
	Average Monthly	Average Weekly	Average Monthly	Average Weekly
CBOD ₅ Concentration Limits	25 mg/L	40 mg/L	25 mg/L	40 mg/L
CBOD ₅ Mass Limits Effective Nov.-July Only	85% Removal	717 lbs/day	85% Removal	717 lbs/day
Total Suspended Solids	30 mg/L, 538 lbs./day 85% Removal	45 mg/L, 807 lbs./day	30 mg/L, 538 lbs./day 85% Removal	45 mg/L, 807 lbs./day
Parameter	Monthly Geometric Mean Limit	Weekly Geometric Mean Limit	Monthly Geometric Mean Limit	Weekly Geometric Mean Limit
Fecal Coliform Bacteria	200/100 ml	400/100 ml	200/100 ml	400/100 ml
Parameter	Limit		Limit	
pH	Within the range of 6.0 to 9.0		Within the range of 6.3 to 9.0	
Parameter	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Total Residual Chlorine	37 µg/L	70 µg/L	20 µg/L	52 µg/L
Parameter	Previous Effluent Limits:		Proposed Effluent Limits:	
Parameter	Average Monthly	Average Weekly	Average Monthly	MAXIMUM DAILY
CBOD ₅ , Seasonal mass limit Effective Aug-Oct. Only	N/A	206 lbs/day	51.6 lbs/day	206 lbs/day
Total Ammonia (as N), Seasonal mass limit Effective July-Oct. Only	N/A	68.7 lbs/day	21.9 lbs/day	68.7 lbs/day
Temperature, 7DADMAX Effective June – Sept. Only	N/A	N/A	N/A	24.7° C

The 1994 Snoqualmie River Total Maximum Daily Load Study established waste load allocations (WLAs) for CBOD₅ and ammonia for discharges occurring during the August – October critical season. Waste load allocations for the Snoqualmie WWTWRF are:

- 206 lbs/day CBOD₅
- 68.7 lbs/day Ammonia (as N)

The WLA listed above are the maximum daily limits (MDL) for those parameters. According to federal NPDES regulations, all permit limits must be expressed as both average monthly and maximum daily limits. The average monthly limit (AML) is calculated according to the method in EPA's Technical Support Document for Water Quality-based Toxics Control (1991). See Appendix E for detailed calculations. The AML calculation is affected by effluent variability and number of samples per month. Ecology calculated the average monthly limit based on 12 sampling events per month (3 per week) for CBOD₅ and 4 sampling events per month (1 per week) for ammonia. The calculated coefficients of variation (CV) used are 1.77 and 2.29 for CBOD₅ and ammonia, respectively. Average monthly limits (AML) for the proposed permit are:

- 51.6 lbs/day CBOD₅
- 21.9 lbs/day Ammonia (as N)

The proposed permit will include water quality-based mass limits for CBOD₅ and total ammonia during the critical season and technology-based mass limits for CBOD₅ only during the non-critical season. CBOD₅ concentration limits apply throughout the year.

Table 15. TMDL-Based Waste Load Allocations

Parameter	Waste Load Allocation	Critical Period for WLA
Temperature	24.7 °C	June 1 st – September 30 th
CBOD	206 lbs/day	August 1 st – October 31 st
Ammonia-N	68.7 lbs/day (as N)	August 1 st – October 31 st
Soluble Reactive Phosphorus ¹	14 lbs/day (as P)	August 1 st – October 31 st
Fecal Coliform	Meet technology-based limits	August 1 st – October 31 st

¹ The TMDL does not include required WLAs for Soluble Reactive Phosphorus (Orthophosphate), but it does include "recommended goals" for dischargers. The value listed above reflects this recommended goal for the Snoqualmie WWTWRF. Ecology does not enforce recommended WLA goals as permit limits and only includes it in this fact sheet for informational purposes.