Permit Modification #3 Fact Sheet

Oregon Department of Environmental Quality
Eastern Region Office
800 SE Emigrant, #330
Pendleton, OR 97801

Contact: Megan Poskaitis

Permittee:	Klamath Falls Wastewater Treatment Plant and Reclamation Facility 1200 S. Spring Street Klamath Falls, OR 97601
Existing Permit Information:	File Number: 46763 Permit Number: 100701 Expiration Date: 09/30/2025 EPA Reference Number: OR0026301
Source Contact:	Christopher Claymore, (541) 883-5386 Wastewater Division Manager
Facility Location:	1200 S. Spring Street Klamath Falls, OR 97601 Klamath County
LLID: **NHD:**	1221913420005 – RM 253 18010204011523 – 63.73%
Receiving Stream/Basin:	Klamath River Klamath Lost
Proposed Action:	Major Permit Modification #3 Modification in response to requests received August 8, 2023 and July 11, 2024.
Source Category:	NPDES Major – Domestic
Sources Covered:	Treated Domestic Wastewater
Permit Type:	NPDES-DOM-Ba
Permit Writer:	Megan Poskaitis July 2024

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1.0 Introduction

The Oregon Department of Environmental Quality (DEQ) proposes to modify the National Pollutant Discharge Elimination System (NPDES) wastewater permit for the City of Klamath Falls located at 1200 S. Spring Street, Klamath Falls, OR 97601. This permit allows and regulates the discharge of domestic wastewater and non-contact cooling water to the Klamath River.

DEQ received a request on October 10, 2020, to modify Schedule C (compliance schedule) of this permit. Subsequent updates to the request were sent on November 16, 2020, and March 7, 2022 to correct inconsistencies and errors in schedule A and B of the permit. DEQ modified Table C1 of Schedule C as well as Schedules A and B and issued the major permit modification to the City of Klamath Falls on August 4, 2022.

DEQ received a second request on November 17, 2023, to modify Schedule C (compliance schedule) of this permit. DEQ modified Table C2 of Schedule C and issued a second major permit modification to the City of Klamath Falls on February 6, 2024.

DEQ received two new requests on August 8, 2023 and July 11, 2024 to modify Schedule A (waste discharge limitations) and Schedule C (compliance schedule) of this permit. In accordance with 40 CFR 122.62 DEQ has determined this to be a major permit modification, and as such, subject to the public comment process. The purpose of this fact sheet is to explain and provide justification for the proposed modifications to the existing permit.

2.0 Proposed Permit Modification

This permit modification is based on a request from the city (submitted August 8, 2023) to replace five-day biochemical oxygen demand (BOD_5) effluent limits with five-day carbonaceous biochemical oxygen demand ($CBOD_5$) effluent limits. DEQ reviewed the request letter and agrees that a permit modification to replace BOD_5 with $CBOD_5$ limits is justified for the limits based on federal secondary treatment standards and Klamath Basin standards (OAR 340-041-0180). To ensure the permit limits remain consistent with the applicable Total Maximum Daily Load (TMDL), the permit retains the semi-annual BOD_5 effluent limits that are based on the TMDL wasteload allocations.

The winter BOD_5 concentration limits are based on the federal secondary treatment standards. Under 40 CFR 133.102, DEQ, at its discretion, may substitute $CBOD_5$ limits for BOD_5 limits to meet federal secondary treatment standards. The BOD_5 concentration limits will be substituted with the following $CBOD_5$ concentration limits:

- 25 mg/L as a monthly average
- 40 mg/L as a weekly average
- 85% removal as a monthly average

The summer BOD_5 concentration limits are based on the Klamath Basin standards (OAR 340-041-0180). It is DEQ policy that permit writers may substitute $CBOD_5$ for BOD_5 when including permit limits to implement Oregon's Minimum Design Criteria. A default conversion factor that is based on the ratios of the $CBOD_5$ to BOD_5 concentrations used in the implementation of federal secondary standards will be applied to the existing BOD_5 concentrations to determine the $CBOD_5$ concentration limits. The % removal requirement will remain at 85% removal as a monthly average. The following $CBOD_5$ concentration limits will be substituted:

- 20 mg/L BOD_5 x 0.8 (default conversion factor) = 16 mg/L $CBOD_5$ as a monthly average
- 30 mg/L BOD_5 x 0.9 (default conversion factor) = 27 mg/L $CBOD_5$ as a weekly average
- 85% removal as a monthly average

The mass load limits for $CBOD_5$ are based on the above concentration limits and are calculated as follows:

The winter calculations are:

Monthly Average: 6.0 MGD x 25 mg/L x 8.34 = 1,251 lbs/day rounded off to 1,300 lbs/day (two significant figures)

Weekly Average: 6.0 MGD x 40 mg/L x 8.34 = 2,001.6 lbs/day rounded off to 2,000 lbs/day (two significant figures)

Daily Maximum: 1300 lbs/day monthly x 2 = 2,600 lbs/day

The summer calculations are:

Monthly Average: 3.5 MGD x 16 mg/L x 8.34 = 467 lbs/day rounded off to 470 lbs/day (two significant figures)

Weekly Average: 3.5 MGD x 27 mg/L x 8.34 = 788.13 lbs/day rounded off to 790 lbs/day (two significant figures)

Daily Maximum: 470 lbs/day monthly x 2 = 940 lbs/day

Schedule B (minimum monitoring and reporting requirements) will be modified to reflect the changes in Schedule A (waste discharge limitations).

The second part of this permit modification is based on a request from the city (submitted July 11, 2024) for another year to submit a preliminary design report and evaluate and obtain financing for the improvements to the treatment facility to comply with mercury, ammonia, and phosophrous final effluent limits. The reasoning for this is because the technology the city had originally planned to use for chemical phosphorus removal created issues in the plant water system at one utility due to the carry over of magnetite to the secondary clarifier weirs and thus the city has decided to not proceed further with this planned technology. The city is now evaluating other processes and since none of the process alternatives have been taken to the preliminary design level, the city is requesting more time to perform this work. This modification does not change the final compliance schedule deadline of December 1, 2030 to meet mercury, ammonia, and phosphorus final effluent limitations, nor does it increase any pollution in quantity or duration.

3.0 Changes to the Permit

The changed section pertaining to this modification will be in red text and strikethrough for omissions, and red text and underline for additions.

Changes to the permit from modification 1 will be in blue text and strikethrough for omissions, and blue text and underline for additions. Changes to the permit from modification 2 will be in green text and strikethrough for omissions, and green text and underline for additions.

3.1 Revisions to Schedule A:

Table A1: Permit Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum	Semi-annual Average
~~BOD_5 (May 1 – October 31)~~	~~mg/L~~	~~20~~	~~30~~	~~N/A~~	~~N/A~~
	~~lbs/day~~	~~580~~	~~870~~	~~1,160~~	~~N/A~~
	~~% removal~~	~~85~~	~~N/A~~	~~N/A~~	~~N/A~~
$CBOD_5$ (May 1 – October 31)	mg/L	16	27	N/A	N/A
	lbs/day	470	790	940	N/A
	% removal	85	N/A	N/A	N/A
TSS (May 1–October 31)	mg/L	20	30	N/A	N/A
	lbs/day	580	870	1,160	N/A
	% removal	85	N/A	N/A	N/A
~~BOD_5 (November 1 – April 30)~~	~~mg/L~~	~~30~~	~~45~~	~~N/A~~	~~N/A~~
	~~lbs/day~~	~~1500~~	~~2,250~~	~~3,000~~	~~N/A~~
	~~%~~	~~85~~	~~N/A~~	~~N/A~~	~~N/A~~
$CBOD_5$ (November 1–April 30)	mg/L	25	40	N/A	N/A
	lbs/day	1,300	2,000	2,600	N/A
	%	85	N/A	N/A	N/A
TSS (November 1–April 30)	mg/L	30	45	N/A	N/A
	lbs/day	1500	2,250	3,000	N/A
	%	85	N/A	N/A	N/A
BOD_5 (May 15–October 15)	lbs/day	N/A	N/A	N/A	439
BOD_5 (October 16–May 14)	lbs/day	N/A	N/A	N/A	549
Nitrogen as N, Total (May 15–October 15)	lbs/day	N/A	N/A	N/A	556
Nitrogen as N, Total (October 16–May 14)	lbs/day	N/A	N/A	N/A	671
pH See note b	SU	Instantaneous limit between a daily minimum of 6.5 and a daily maximum of 9.0			
E. coli See note c	#/100 mL	Must not exceed a monthly geometric mean of 126, no single sample may exceed 406			
Mercury, Total (final, see note d)	µg/L	~~0.001~~0.01	N/A	0.02	N/A
Total Ammonia as N (May 15 – Oct 15, final, see note d)	mg/L	2.2	N/A	5.5	N/A
Total Ammonia as N (Oct 16 – May 14, final, see note d)	mg/L	2.4	N/A	5.7	N/A
Chlorine, Total Residual (final, see notes a and d)	mg/L	0.0068	N/A	0.019	N/A

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum	Semi-annual Average
Temperature (Oct 1 – May 31)	degrees Celsius	N/A	N/A	32	N/A
Temperature (June 1 – Sept 30; see note e)	degrees Celsius	N/A	N/A	28	N/A
Excess Thermal Load (final, see note d.)	million kcal/day	Calculated as a Daily Maximum (see note f.)			
Phosphorus as P, Total (final, see note d; May 15–October 15)	lbs/day	N/A	N/A	N/A	8.6
Phosphorus as P, Total (final, see note d; October 16 – May 14)	lbs/day	N/A	N/A	N/A	54

Notes:

a. DEQ has established a minimum Quantitation Limit of 0.05 mg/L for Total Residual Chlorine. In cases where the average monthly or maximum daily limit for Total Residual Chlorine is lower than the Quantitation Limit, DEQ will use the reported Quantitation Limit as the compliance evaluation level.

b. May not be outside the range of 6.0 to 9.0 for more than a total of 7 hours and 26 minutes in any calendar month, and no individual excursion from this range may exceed 60 minutes. pH values may not fall outside the range of 6.5-9.0.

c. If a single sample exceeds 406 organisms/100 mL, the permittee may take at least 5 consecutive re-samples at 4-hour intervals beginning within 28 hours after the original sample was taken. A geometric mean of the 5 re-samples that is less than or equal to 126 E. coli organisms/100 mL demonstrates compliance with the limit.

~~The permittee may take at least 5 consecutive re-samples at 4 hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample was taken and the geometric mean of the 5 re-samples is less than or equal to 126 E. coli organisms/100 mL to demonstrate compliance with the limit.~~

d. The final limits for total residual chlorine, total mercury, ammonia, phosphorus, and ETL are effective upon completion of the compliance schedules in Schedule C.

e. Maximum effluent temperature applies when daily river temperatures are greater than 28°C.

f. Use this equation to determine the daily ETL limit:

$$ETL = \Delta T \times [(Q_E \times 1.5472) + Q_R] \times 2.4467$$

Where,

ETL = Excess thermal load limit (million kilocalories/day).

Q_E = The daily mean effluent flow (MGD).

Q_R = The daily mean river flow rate, upstream (cfs). When river flow is <= 104 cfs, Q_R = 104 cfs. When river flow > 104 cfs, Q_R is equal to the mean daily river flow, upstream.

ΔT = The maximum allowable temperature increase (ºC) after mixing with 100% of river flow: 0.03 ºC for the October 1 – May 31 period and 0.05 ºC for the June 1 – September 30 period.

3.2 Revisions to Schedule B:

Table B2: Influent Monitoring Requirements

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type / Required Action See note b.	Report Statistic See note a.
Flow (50050)	MGD	Year-round	1/Day	Metered	Monthly Average Daily Maximum
~~BOD_5~~ $CBOD_5$ ~~(00310)~~ (80082)	mg/L	Year-round	2/Week	24-hour composite	Monthly Average
TSS (00530)	mg/L	Year-round	2/Week	24-hour composite	Monthly Average
pH (00400)	SU	Year-round	3/Week	Grab	Daily Minimum Daily Maximum

Notes:

g. The permittee must submit all data used to determine summary statistics in a DEQ-approved format as an attachment in NetDMR unless otherwise directed by DEQ

h. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must monitor grab measurements daily between 10 am and 5 pm until monitoring equipment is redeployed.

Table B3: Outfall 001 Effluent Monitoring Requirements

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action See note b.	Report Statistic See note a.
Flow (50050) See note d.	MGD	Year-round	Daily	Calculation	Monthly Average Daily Maximum
BOD_5 (00310)	mg/L	Year-round	2/week	24-hour composite	Monthly Average Weekly Average
BOD_5 (00310)	lbs/day	Year-round	2/week	Calculation	~~Daily Maximum~~ ~~Weekly Average~~ ~~Monthly Average~~ Semiannual Average
$CBOD_5$ (80082)	mg/L	Year-round	2/week	24-hour composite	Monthly Average Weekly Average
$CBOD_5$ (80082)	lbs/day	Year-round	2/week	Calculation	Daily Maximum Weekly Average Monthly Average
~~BOD_5~~ $CBOD_5$ Percent Removal ~~(81010)~~ (81383) See note c.	%	Year-round	1/Month	Calculation based on monthly average ~~BOD_5~~ $CBOD_5$ concentration values	Monthly Average
TSS (00530)	mg/L	Year-round	2/Week	24-hour composite	Monthly Average Weekly Average
TSS (00530)	lbs/day	Year-round	2/Week	Calculation	Daily Maximum Monthly Average Weekly Average

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action See note b.	Report Statistic See note a.
TSS Percent Removal (81011) See note c.	%	Year-round	1/Month	Calculation based on monthly average TSS concentration values	Monthly Average
Chlorine, Total Residual (50060)	mg/L	Year-round	1/Day	Grab	Daily Maximum Monthly Average
pH (00400)	SU	Year-round	1/Hour	Continuous	Daily Maximum Daily Minimum
E. coli (51040)	#/100 mL	Year-round	2/Week	Grab	Daily Maximum Monthly Geometric Mean
Temperature (00010)	ºC	Year-round	1/Hour	Continuous	Daily Maximum
Nitrogen, Total (00600)	lbs/day	Year-round	1/Week	Calculation	Semiannual Average
Nitrogen, Total (00600)	mg/L	Year-round	1/Week	Grab	Semiannual Average
Phosphorus, Total (00665)	lbs/day	Year-round	1/Week	Calculation	Semiannual Average
Phosphorus, Total (00665)	mg/L	Year-round	1/Week	Grab	Semiannual Average
Excess Thermal Load Limit	Million kcal/day	Year-round	1/Day	Calculation (see Table A1, note f.)	Daily Maximum
Excess Thermal Load (51405)	Million kcal/day	Year-round	1/Day	Calculation (see note e.)	Daily Maximum
Copper, Total (01042)	µg/L	Year-round	1/Month	Grab	Monthly Maximum
Copper, Dissolved (01040)	µg/L	Year-round	1/Month	Grab	Monthly Maximum
Total Recoverable Mercury (71900)	µg/L	Year-round	1/Month	Grab	Daily Maximum Monthly Average
Total Ammonia (as N) (00610)	mg/L	Year-round	1/Week	24-hour composite	Monthly Average Daily Maximum
Hardness (00900)	mg/L	Year-round	1/Month	24-hour composite	Monthly Maximum
Chlorine Used (81400)	lbs/day	Year-round	1/Day	Scale reading	Daily Maximum
Dissolved Oxygen (00300)	mg/L	Third year of permit cycle 2023	Quarterly	Grab	Quarterly Minimum
Total Kjeldahl Nitrogen (TKN) (00625)	mg/L	Third year of permit cycle 2023	Quarterly	Grab	Quarterly Maximum
Nitrogen, Nitrate Total (as N) (NO_3) (00620)	mg/L	Third year of permit cycle 2023	Quarterly	Grab	Quarterly Maximum

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action See note b.	Report Statistic See note a.
Total Dissolved Solids (70295)	mg/L	Third year of permit cycle 2023	Quarterly	Grab	Quarterly Maximum

Notes:

a. The permittee must submit all data used to determine summary statistics in a DEQ-approved format as an attachment in NetDMR unless otherwise directed by DEQ.

b. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must monitor grab measurements daily between 11 am and 5 pm until monitoring equipment is redeployed.

c. Percent Removal must be calculated on a monthly basis using the following formula:

$$Percent\ Removal = \frac{[Influent\ Concentration] - [Effluent\ Concentration]}{[Influent\ Concentration]} \times 100$$

Where:
Influent Concentration = Corresponding monthly average influent concentration based on the analytical results of the reporting period.
Effluent Concentration = Corresponding monthly average effluent concentration based on the analytical results of the reporting period.

d. Outfall flow will be calculated as follows: Outfall 001 Flow = Secondary effluent flow – (reclaimed water flow – makeup water flow) + Blowdown flow from cogeneration facility.

e. The daily excess thermal load (ETL) discharged must be calculated using the daily average effluent temperature and the corresponding daily average effluent flow using the formula below. If the calculation results in an ETL value less than zero, the results must be recorded as zero.

The daily ETL discharged is calculated as follows: $ETL = (T_E - T_R) * Q_E * 3.785$
Where:

ETL = Excess Thermal Load (million kcal/day) discharged
Q_E = Daily average effluent flow (MGD)
T_E = The daily average effluent temperature (degrees Celcius)
T_R = The applicable river temperature criterion (degrees Celcius), which is the daily average river temperature from the USGS Link River monitoring station (USGS 11507500).

3.3 Revisions to Schedule C:

Table C1: Total Mercury, Total Ammonia as N, and Total Phosphorus as P Compliance Schedule

Complete By	Requirement
February 15, 2021 and annually thereafter until all of the requirements are met in this compliance schedule or by December 31, 2030	Submit to DEQ a written Progress Report outlining the progress made towards achieving the final effluent limitations.
October 31, 2024	Complete a Facility Plan that selects options for improvements to the treatment facility to comply with the mercury, ammonia, and phosphorus final effluent limits and submit the Facility Plan to DEQ for review and approval.
October 31, ~~2023~~~~2024~~2025	Evaluate and obtain financing for wastewater facility improvements that are recommended in the Facility Plan as acceptable.
October 31, ~~2024~~2025	Complete Preliminary Design Report and submit to DEQ for review and approval.
April 30, 2026	Complete Final Design and submit to DEQ for review and approval.
October 31, 2029	Complete construction of wastewater facility improvements to comply with the mercury, ammonia, and phosphorus final effluent limits.
December 1, 2030	The permittee must achieve compliance with the final effluent limits and provide DEQ with written notice of compliance with the mercury, ammonia, and phosphorus final effluent limits in Schedule A.