

King County | Wastewater Treatment

Brightwater Wastewater Treatment Plant

22502 SR 9 SE
Woodinville, WA 98072

June 27, 2025

Sean Wilson, P.E.
Washington Department of Ecology
NWRO, Water Quality Program
PO Box 330316
Shoreline, WA 98133-9716

Dear Mr. Wilson:

This letter is the 2024 Annual Wet Weather Bypass Report submittal required by Section S9.B of the Brightwater Treatment Plant NPDES permit (WA0032247). This submittal includes a Net Environmental Benefit (NEB) analysis per Section S9.D.

NEB performance is defined as the additional percent reductions in BOD/TSS from the actual discharge from the Brightwater WWTP when compared to the theoretical effluent quality expected from a conventional activated sludge (CAS) process. Table 1 presents the NEB percent reductions for BOD and TSS in 2024, (as well as 2018-2023), and compares them to the minimum NEB required based on CAS conditions, (see Table 16 on the 2018 Fact Sheet). Table 2 presents average monthly and annual flows and bypass volumes, plus the average- monthly and annual influent and effluent BOD and TSS concentrations and loads in 2024.

Brightwater Treatment Plant achieved all NEB performance standards in 2024. In 2024, all effluent received secondary membrane filtration treatment. Chemically enhanced primary treatment (CEPT) system was not operated in 2024.

Please feel free to contact me at 206-477-3347 with any questions or concerns.

Sincerely,

Signed by:

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Chapin Brackett
Process and Environmental Compliance Manager

Attachments

cc: Tom Bauer, Acting Operations Manager, Wastewater Treatment Division (WTD), Department of Natural Resources and Parks (DNRP)
Matt Nolan, Brightwater Treatment Plant Manager, WTD, DNRP
Jeff Lafer, Project/Program Manager IV WTD, DNRP

Table 1. Net Environmental Benefit (NEB) Performance
Brightwater Treatment Plant: 2018-2024¹

NEB Condition	NEB %Removal	MBR/CEPC Blended Flow Loading (lb/d)	Calculated CAS Loading (lb/d) ²
BOD ₅			
Required Removal for Maximum Year	46%	1,910	3,562
Annual - 2018	90%	202	2,050
Annual - 2019	92%	158	2,042
Annual - 2020	92%	172	2,126
Annual - 2021	92%	187	2,344
Annual - 2022	91%	193	2,178
Annual - 2023	92%	188	2,314
Annual - 2024	92%	180	2,220
Average of Annuals	92%	183	2,196
Required Removal for Maximum	8%	7,298	7,922
January 2021 (Max Month)	96%	218	5,180
TSS			
Required Removal for Maximum Year	61%	1,378	3,562
Annual - 2018	87%	274	2,050
Annual - 2019	87%	274	2,042
Annual - 2020	87%	285	2,126
Annual - 2021	87%	313	2,344
Annual - 2022	87%	291	2,178
Annual - 2023	87%	310	2,314
Annual - 2024	87%	310	2,307
Average of Annuals	87%	294	2,221
Required Removal for Maximum	45%	4,340	7,923
January 2021 (Max Month)	92%	414	5,180

¹ NEB requirements based on Fact Sheet for 2018 NPDES, Table 16.

² Calculated CAS (Conventional Activated Sludge) Load is based on effluent TSS and BOD concentrations of 15-mg/L and 25-mg/L for maximum annual and month condition, respectively.

Table 2. 2024 Brightwater Monthly Influent and Effluent Flows, BOD and TSS Concentrations, Mass Loads and Bypass Volumes

	Influent					Effluent ¹					
	Flow ¹	BOD5		TSS		Flow	BOD5		TSS		Bypass Vol.
	MGD	mg/L	lbs/day	mg/L	lbs/day	MGD	mg/L	lbs/day	mg/L	lbs/day	MG
Jan-24	23.9	238	47,479	229	45,684	23.9	1.0	197	2.0	398	0
Feb-24	21.5	271	48,525	247	44,228	21.4	1.0	177	2.0	357	0
Mar-24	20.7	278	47,970	250	43,139	20.5	1.2	197	2.0	348	0
Apr-24	18.9	294	46,268	267	42,019	18.8	1.1	164	2.0	313	0
May-24	18.4	310	47,520	302	46,293	18.0	1.2	173	2.0	301	0
Jun-24	18.5	315	48,549	288	44,387	17.9	1.3	196	2.0	299	0
Jul-24	13.4	347	38,635	330	36,742	12.6	1.5	156	2.0	210	0
Aug-24	15.3	346	44,150	335	42,747	14.7	1.5	189	2.0	246	0
Sep-24	16.3	346	47,007	339	46,056	15.9	1.1	151	2.0	266	0
Oct-24	16.9	341	48,006	316	44,486	16.9	1.2	168	2.0	283	0
Nov-24	19.8	297	48,920	289	47,603	19.8	1.2	201	2.0	330	0
Dec-24	21.5	262	47,023	249	44,690	21.5	1.1	194	2.1	368	0
Average	18.7	299	46,650	282	43,994	18.5	1.2	180	2.0	310	0

¹Influent flow was greater than effluent flow due to use of process water and distribution of Class A Reclaimed Water, and flushing RW to sewer structures that do not return to Brightwater.