

 **King County** | Wastewater Treatment

Brightwater Treatment Plant

22505 State Route 9
Woodinville, WA 98072

June 26, 2025

Sean Wilson, P.E.
Washington State Department of Ecology
Northwest Regional Office
PO Box 330316
Shoreline, WA 98133-9716

Re: Brightwater Loss of Disinfection, June 18, 2025

Dear Mr. Wilson

On June 18, 2025, an estimated 200,000 gallons of non-disinfected membrane effluent were discharged into the outfall conveyance system. This event was reported to the Department of Ecology and was assigned ERTS number 739572.

Sodium hypochlorite was not applied to membrane effluent for 29 minutes, from 2:57 a.m. to 3:26 a.m. The root cause is believed to be air binding of the chemical feed pumps. Brightwater's disinfection system consists of three chemical feed pumps that operate in a lead-follow configuration. Should the lead pump fail, the follow pump will start, and so on. When the disinfection pump first starts, the pump speed is increased to 100% to clear air bubbles from the piping, before gradually slowing down to the intended speed.

Over the course of the evening, the lead pump registered zero flow during its normal operation, which caused the pump to fail. The follow pump was called to service and performed the programmed startup sequence, before also registering zero flow and failing. The secondary follow pump failed when it registered zero flow while performing the same cycle. An operator manually restored flow of sodium hypochlorite, including increasing the dose for a short period of time to help disinfect the water already in the pipe.

The time in which effluent from Brightwater reaches the Influent Pump Station (IPS) and the outfall at Point Wells can vary depending on the discharge flow rate. The residual chlorine meter at IPS was monitored to estimate when the non-disinfected flow would pass through the station. Samples were collected during the estimated period and analyzed for fecal coliforms at the South Plant lab. No colonies were present on any plate, but as the largest sample assessed was 10 mL, the concentration of fecal coliform must be reported as <10 / 100 mL. At no time did the residual chlorine meter detect zero residual.

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Sample Collection

| Date / Time | CFU / 100 mL |
|----------------------|--------------|
| June 18 - 12:50 p.m. | <10 |
| June 18 - 1:15 p.m. | <10 |
| June 18 - 1:35 p.m. | <10 |
| June 18 - 1:55 p.m. | <10 |
| June 18 - 2:20 p.m. | <10 |

As an immediate corrective action, Brightwater staff have increased the minimum pumping rate of sodium hypochlorite. Fine-tuning the control logic to reduce the likelihood of pump failure during the ramp-down sequence is also being considered.

In the long term, staff will investigate new chemical dosing pump options. During a Chemically Enhanced Primary Clarifier (CEPC) treatment event, sodium hypochlorite dosing can be over 300% greater than that required for disinfection of normal membrane effluent. Staff will consider the feasibility of replacing the existing pumps with units that have a better turn-down and could better accommodate both CEPC and normal membrane effluent treatment. Additionally, staff will review the option of having separate chemical dosing pumps for CEPC treatment and normal membrane effluent treatment.

If you have questions concerning this event, please contact me at 206-263-0610, or email me at h.bauer@kingcounty.gov.

Sincerely,

Signed by:

 65EA04C45516428...

Tom Bauer
 Acting Operations Manager

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision, in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

- cc: Kamuron Gurol, Director, Wastewater Treatment Division (WTD), Department of Natural Resources and Parks (DNRP)
- Bruce Kessler, Deputy Director, WTD, DNRP
- Jeff Lafer, Project/Program Manager IV, WTD, DNRP
- Matt Nolan, Brightwater Treatment Plant Manager, WTD, DNRP
- Chapin Brackett, Process and Environmental Compliance Manager, WTD, DNRP