

City of Portland DEQ Enforcement Action, April 2014

Summary

The Portland Water Bureau (PWB) has an excellent compliance history under its DEQ discharge permit. It has had no permit violations for more than 10 years and has never had a Class I violation under this DEQ permit. PWB's most recent permit violation was a Class II permit violation more than 10 years ago. Upon discovery of improper discharges of drinking water into Johnson Creek by its contractor on the Powell Butte Reservoir Project, PWB reported the non-compliance to DEQ. The incidents occurred last year and the causes of the non-compliance were resolved in 2013. PWB was not in direct control of the drinking water discharges, which were the result of a third party's actions. PWB promptly and voluntarily adopted more stringent controls in response to the incidents, ultimately installing a new pump system to prevent future non-compliance. For the remainder of the project, the Water Bureau will instruct its contractors and staff to avoid discharging water from the new reservoir into Johnson Creek except in the case of emergency, if unusually heavy rainfall makes infiltration impossible, or if the volume of water is too great to successfully use infiltration as a disposal method. In the event that discharges must be made, the bureau and its contractors will be diligent in ensuring that all work done is in compliance with its NPDES permit.

At the time of the discharges, the flow of water already in Johnson Creek was far greater than the water flowing to the creek from Powell Butte. No environmental harm has been observed. There are no outstanding compliance items, as the City voluntarily corrected the causes of non-compliance at the time they were discovered. DEQ is not requiring any additional actions.

Background

PWB holds a National Pollutant Discharge Elimination System (NPDES) permit from DEQ, allowing the City to discharge treated drinking water into Oregon waters, including Johnson Creek. PWB's NPDES permit requires all discharges to a stream or river to have a chlorine residual of less than 0.1 milligrams per liter (mg/l or parts-per-million) and a pH of between 6.0 and 9.0. Chlorine and pH measurements are required at least once per day during a discharge event.

PWB is finishing construction of a new 50 million gallon reservoir at Powell Butte. One of the final stages of construction required that the new reservoir be partially filled and then emptied of treated drinking water from Bull Run. After it left the reservoir, the water either soaked into the ground or was discharged into Johnson Creek by the City's contractor.

There were three incidents in the fall of 2013 where the residual chlorine level in drinking water sent to Johnson Creek exceeded the NPDES permit level of 0.1 mg/l. Upon discovery, PWB reported these incidents to DEQ and voluntarily implemented corrective actions in response to each incident at the time they occurred.

PWB also installed a new pump system on Dec. 19, 2013 to prevent future discharges to Johnson Creek. Since then, all drinking water discharges from the new reservoir have been sent to an

infiltration basin at the northern base of Powell Butte. This allows the drinking water to soak into the ground without the possibility of overflowing to Johnson Creek.

Incident Details

Incident #1 – Wrong Testing Method

Approximately 25 million gallons of treated drinking water were sent to Johnson Creek from the new reservoir at Powell Butte between Oct. 31 and Nov. 13, 2013. Daily pH and chlorine readings were taken by the contractor conducting the discharges and PWB staff also made daily visual inspections of the outfall to Johnson Creek. On Nov. 13, PWB learned that the contractor was using the wrong chlorine testing method and had therefore discharged water with chlorine residual exceeding 0.1 mg/l. The flow rate of the discharge did not exceed 2,900 gallons per minute (gpm). The average daily flow rate of Johnson Creek at the Powell Butte outfall over the same period of time was 14,800 gpm.

Incident #1 Follow-up

PWB made three changes in response to this incident: PWB improved the de-chlorination process to bring residual chlorine levels into compliance; the contractor began using the correct testing equipment; and PWB project inspectors began taking independent chlorine and pH readings at the outfall to Johnson Creek to verify the contractor's measurements.

Incident #2 – Unintended Discharge via Under-Drain

A maximum of 100,000 gallons of treated drinking water were unintentionally sent to Johnson Creek on Nov. 22, 2013. This occurred when Bull Run water was pumped from the new reservoir onto the land surface at the top of Powell Butte to allow the water to soak into the ground instead of discharging to Johnson Creek. Unfortunately, some water seeping into the ground moved sideways and entered the reservoir's under-drain system. The under-drain is designed to move natural groundwater away from the outside of the buried reservoir and ultimately flows to Johnson Creek.

Incident #2 Follow-up

PWB quickly detected residual chlorine at the Johnson Creek outfall because of the improved inspection and sampling procedures put in place after the Nov. 13 incident. The duration of the drinking water flow to Johnson Creek was a maximum of 2.5 hours at a rate of approximately 450 gpm. The flow rate of Johnson Creek at the Powell Butte outfall over the same period was 14,350 gpm.

Incident #3 – Suds Downstream of Outfall

A maximum of 50,000 gallons of treated drinking water entered Johnson Creek on Dec. 17, 2013. That water was being de-chlorinated with Vitamin C, a non-hazardous, environmentally-safe method of de-chlorinating water. Vitamin C can occasionally produce suds in the water. When a neighbor voiced concern about the suds, staff adjusted the level of Vitamin C. Adjusting the Vitamin C level resulted in one measurement of chlorine above 0.1 mg/l. The other four chlorine measurements that day were below 0.1 mg/l. Drinking water flow from the outfall at the time of the non-compliant sample was approximately 130 gpm and flow in Johnson Creek was approximately 6,000 gpm.