

History of coliform events and investigation of the Olympic Water and Sewer Inc. water system from November 2017 to present.

On November 28, 2017, Olympic Water and Sewer Inc. (OWSI) hired a contractor to clean the Teal Lake Reservoir. A diving contractor was used as the reservoir is critical to the water supply and cannot be taken off line except for a short period of time.

After the cleaning, OWSI received an unsatisfactory total coliform test result in one of our ongoing routine monitoring at the Crestview Drive sample station in Teal Lake Village. Per State Department of Health (DOH) requirements, an unsatisfactory test result initiates a process of retesting at the site to verify the result. The repeat sample at the site confirmed the unsatisfactory test result. It was unknown whether or not the reservoir cleaning was the cause of the unsatisfactory result.

In January 2018, OWSI chlorinated the service zone "B" area of the water system. It was chlorinated for one week at a low dose of 0.5 mg/l free chlorine residual. Additional total coliform test samples were taken during chlorination and found to be were satisfactory so chlorination ended.

Additional samples were taken five days after ending the chlorination, again as part of OWSI's continuous ongoing routine monitoring program, and a Teal Lake Reservoir sample was found to be unsatisfactory. The trend of satisfactory and unsatisfactory test results continued so OWSI contacted HDR Engineering to take over the lead on the investigation.

The investigation continued but the unsatisfactory coliform samples ended in March 2018. HDR had OWSI continue to sample for heterotrophic plate counts (HPC). Those tests take a broader look at bacterial counts in the water that include coliform and non-coliform bacteria.

HPC results initially were higher moving to lower levels as the year went on with no definitive conclusion as to the source.

In July 2018, a routine maintenance procedure was completed on Well 16 to clean the source meter. After the cleaning of the meter, unsatisfactory total coliform test results returned to service zone "B" with the similar pattern as in December.

In August 2018, OWSI chlorinated service zone "B" for two weeks at the same dosing as in January. The total coliform test results were satisfactory and the chlorination ended.

In September 2018, another series of unsatisfactory test results lead to another temporary chlorination of service zone "B" in October 2018. At that time, conversation began between OWSI and DOH over the possible requirement to chlorinate. DOH indicated that if OWSI continued with the cycle of unsatisfactory total coliform results, the temporary chlorination was no longer an option. Another unsatisfactory coliform result would lead to continuous chlorination. Continuous chlorination would cause color issues due to the manganese in the groundwater that would be unacceptable to the customers.

The DOH required OWSI to complete a Level 2 assessment of the water system as required by the Revised Total Coliform Rule. At that time, the connection of the cleaning of the meter to the total coliform test results confirmed what was suspected as the manganese related biological growth was the cause of the coliform. This event gave us the connection to the reservoir cleaning with unsatisfactory coliform results in December – January.

HDR provided OWSI with a report of possible treatment options that examined manganese control, stopping the biological growth, and minimizing chlorine usage. OWSI and HDR met with DOH to discuss the options report. The preferred option for all parties was to remove the manganese but that constant chlorination would be required due to the ongoing biological detections.

The HDR report identified filtration as the method that would be the most effective for the OWSI water system. The initial report identified treatment and chlorination of service zone "B". Service zone "A" and service zone "B" are physically connected at four points. Although it is not normal operation, there is the possibility of the water from both zones mixing. That possibility made chlorinating service zone "B" without chlorinating service zone "A" unacceptable to DOH. If unchlorinated water from zone "A" mixed with chlorinated water from zone "B" it would dilute the zone "B" waters chlorine residual to below drinking water standards. The result is that OWSI is being required also chlorinate the water in service zone "A" as part of this project.