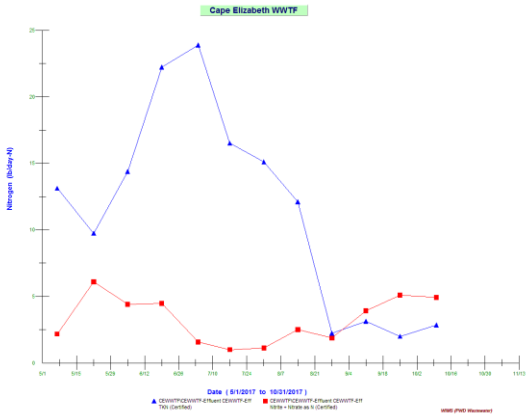
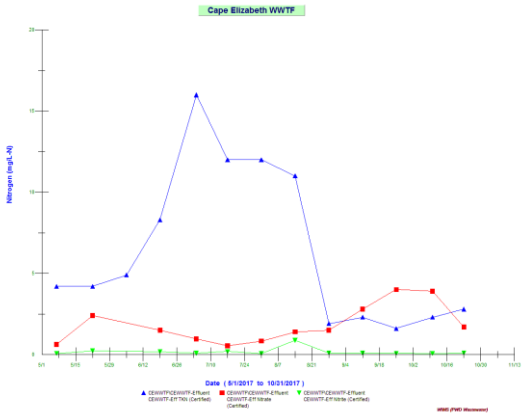
Cape Elizabeth WWTF – Effluent Nitrogen Monitoring for May – October 2017





The 2016 permit renewal for the Cape Elizabeth WWTF required effluent monitoring for nitrogen. Specifically, effluent monitoring for TKN, nitrite, and nitrate was required twice per month from May to October. PWD was required to report both the concentration and the effluent nitrogen loadings from the facility.

At the beginning of the summer season, the plant was nitrifying and denitrifying. As the season progressed, the plant seemed to stop nitrifying. Plant staff utilized our operational tools and knowledge to determine that there was likely insufficient dissolved oxygen to nitrify. Only one of two oxidation ditches are normally operated. To address the dissolved oxygen limitations, staff cleaned the second oxidation ditch and placed it into service.

Following the second oxidation ditch being placed into service, nitrification resumed. The aerators are cycled on/off intermittently to encourage denitrification.

From a peak effluent loading of nearly 30 lb/d of total N when the plant was not nitrifying, the effluent loadings had dropped to below 7 lb/d by the end of the season.

Plant staff did experience some disinfection system instability, likely caused by very low effluent ammonia. We will continue to attempt to nitrify and denitrify next season and will work to optimize disinfection. The option of UV disinfection is being evaluated as this method of disinfection is not as affected by effluent nitrogen concentrations.