

## Plan Review of Surface Water Treatment Plant

This list is used during the Division of Drinking Water (DDW) internal plan review process for surface water treatment plants (WTP).

1. Describe the source (name/source ID/type), water quality concerns, and the historical data that have been reviewed regarding source flow range, turbidity range, and source water bin classification data (if applicable).
2. Identify the treatment facility name and ID (same as the name and ID listed in SDWIS database).
3. Describe treatment type (e.g., conventional, membrane filtration, direct filtration, bag & cartridge filtration), process and technology (e.g., pH adjustment, coagulation, flocculation, sedimentation, disinfection by chlorine/chlorine dioxide/UV/ozone, clear well). Include manufacturer/brand/model info for package plant.
4. If applicable, describe the pre-treatment process (e.g., pre-oxidation by adding chlorine).
5. Describe the disinfection process in detail (e.g., pre-/post-chlorination, other disinfection processes). Include disinfection CT estimates for each treatment process, overall CT through the plant, and parameters used in the CT calculations.
6. If applicable, describe pilot test/bench top test (e.g., procedures, parameters, duration, results). Describe what results were used to determine pre-treatment, optimal dose, and the reason for selecting a specific pre-treatment process.
7. State specific treatment goals for Giardia, Crypto and virus (e.g., a minimum of 4-log virus inactivation/removal). Describe the proposed strategy in meeting these goals.
8. State the treatment credits that are (or are anticipated to be) granted for Giardia, virus, and Crypto. Describe the credits by process in sequence.
9. If the design includes a backwash water supply line and/or a plant utility water supply line, check whether they are connected to finished water. If yes, verify that these water supply lines are designed to prevent backflow and backpressure (i.e., no cross connection; having an approved backflow prevention assembly, an air gap, sufficient elevation difference, acceptable block and bleed manifold, etc.).
10. Describe the number of treatment trains, capacity of each train, and the overall design capacity of the treatment plant. If a surface water WTP is designed with a single train and lacks the redundancy per in R309-525-5, state the justification in the Plan Approval (PA)/Operating Permit (OP) for allowing a single train design. *[The redundant train typically is not counted toward the WTP design capacity.]*
11. Verify that there is no uncontrolled bypass line. *[This is the major difference between the surface water and inorganics/organics WTPs. Untreated surface water is NOT allowed to bypass the treatment processes to be blended with finished water.]*
12. Describe the waste stream(s) (e.g., backwash wastewater, sludge, brine) and how they will be handled. Verify and state whether the water system has a legal means to dispose these waste

types. Include the waste/wastewater authority (e.g., Division of Water Quality, local sewer authority) in the cc list.

13. Describe whether ANSI/NSF 61 certification exists for the proposed treatment process/unit (except conventional and direct filtration plants).
14. Describe all chemicals that will be used for the proposed treatment processes. State whether these chemicals meet the ANSI/NSF 60 standard.
15. Identify the specific rules applicable to this review (e.g., R309-525, R309-530-8). Briefly describe the issues related to specific rule requirements.
16. If applicable, address "simultaneous compliance" concerns. Describe whether the treated water and/or waste stream from the proposed treatment facility may result in unintended consequences in the distribution system or the environment. *[For example, the finished water produced from a reverse osmosis (RO) WTP may cause corrosion or lead/copper MCL exceedance in the distribution system; the brine of RO reject stream may not be legally disposed.]*
17. Plan Approval (PA) letters for surface water WTPs should include the following information:
  - a. Specify "water quality data" that are required to show WTP performance before issuing a WTP OP. Customize the "water quality data" item in the generic Operating Permit (OP) checklist to include the following information:
    - Specific parameters to be sampled (e.g., turbidity, minimum chlorine residual)
    - Sampling locations (e.g., raw water, after filters, after clear well)
    - Frequency of sampling (e.g., the highest turbidity reading at 4-hour intervals, daily turbidity sample at least one day apart for very small water systems)
    - Number of before and after sample sets (e.g., 4 sets of before & after turbidity data, 7 days of 4-hour turbidity readings)
  - b. Obtain the preliminary monitoring and reporting information from the Rules Section. Provide it to PWS (include with PA) for informational purposes. *[The preliminary monitoring and reporting information is important if a WTP project includes PLC and SCADA programming prior to completion of the project or requesting OP.]*
18. The Operating Permit (OP) letter must include the monitoring schedule follow-up paragraph.
19. Consult with the Rules Section staff.
  - Surface water monthly report & customized report template for each WTP
  - Disinfection
  - WQ data review & WTP monitoring schedule
  - If needed, surface water technical assistance and federal regulations