Summary of *E. coli* Sample Collection under LT2ESWTR

- PWSs monitoring for *E. coli* enumeration under the LT2ESWTR Rule collect *E. coli* samples from the raw water, prior to any treatment, in sterile, non-toxic, plastic, or glass containers with a leak-proof lid. The capacity of sample containers should be at least 120 mL (4 oz.) or 250 mL (8 oz.) to allow for sufficient sample volume and at least a 1-inch head space to facilitate mixing of the sample by shaking prior to analysis.
    - See figures 1-5 below for LT2 Sample Collection Location Schematics. More details are provided in Appendix E in in *EPA's Source Water Monitoring Guidance Manual for Public Water Systems: For the Final Long Term 2 Enhanced Surface Water Treatment Rule, (EPA 815-R06-005, February 2006.* https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=2000CZCJ.txt

- *E. coli* samples to be analyzed for enumeration should be maintained between 0° Celsius and 10° Celsius (32-50 °F)by storing in a refrigerator or in a cooler with wet ice, blue ice, or gel packs, etc. [40 CFR § 141.704(b)(3)]. Additional guidance on monitoring sample temperature is available in Section 4.2 of the manual referenced above.

- Ship samples on the day of collection using a reliable next-day shipping service with the following information include:

    - PWS name
    - PWS address
    - Sampler name
    - PWS identification number
    - PWS facility number
    - Facility name
    - Sample collection point ID
    - Sample collection point name
    - Sample collection date
    - Source water type [reservoir/lake (RL), flowing stream (FS), GWUDI-RL, GWUDI-FS]
    - Requested analysis (*E.coli* enumeration)

        - A detailed protocol for collecting source water samples for *E. coli* analysis, as well as packing and shipping guidance for utilities that transport samples offsite for analysis, is provided as **Appendix J** in the above referenced EPA document.

- Contact the laboratory to notify them of the sample shipment and request they contact you if the sample was not received. If it was not received contact the shipping company.

- *E. coli* samples must be analyzed within 30 hours of sample collection [40 CFR § 141.704(b)(1)].

- If the State determines that it is not feasible for the sample to analyze the sample within the 30-hour holding time, the State may authorize the holding time to be extended to 48 hours but only for the Colilert method.

- The holding time can be extended to 48 hours only when authorized by the State, and is done on a case-by-case basis [40 CFR § 141.704(b)(2)]. ***Note:*** This is a longer time period than currently permitted for analysis of samples under the Surface Water Treatment Rule.

- If spillage or leakage occurs during shipment, the sample may have become contaminated, and the sample should not be analyzed.

The following data elements must be reported to DEQ for each LT2ESWTR raw water *E. coli* sample analysis:

1. PWS ID.
2. Facility ID.
3. Sample collection date.
4. Analytical method number.
5. Method type.
6. Source type (flowing stream (FS), lake/reservoir (LR), GWUDI-FS, GWUDI-LR)
7. *E. coli*/100 mL.
8. Turbidity.[1]

[1]Systems serving fewer than 10,000 people that are not required to monitor for turbidity under §141.701 are not required to report turbidity with their *E. coli* results. [40 CFR 141.705(e)(2)]

Figure 1. Sample Tap before Chemical Treatment and Backwash Water Recycle (if applicable)

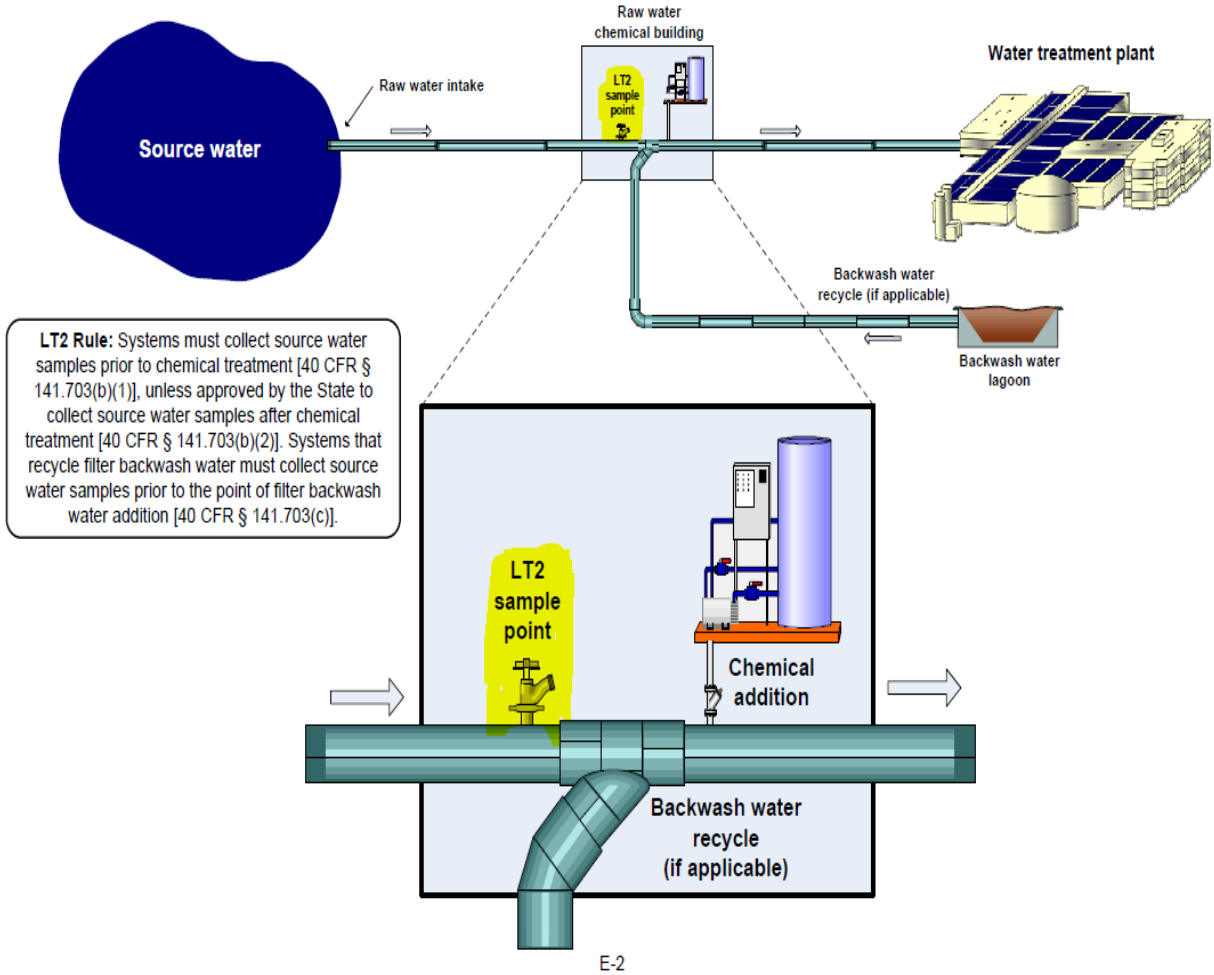
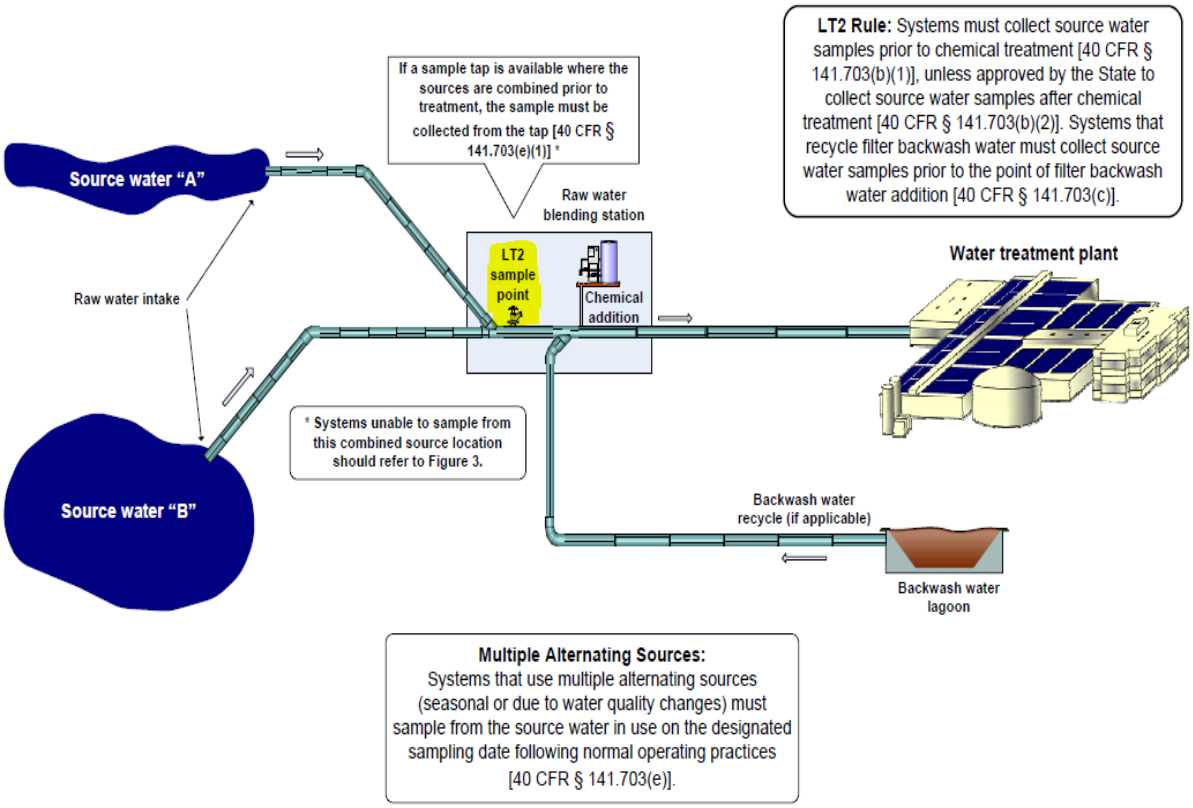


Figure 2. Multiple Sources: Sample Tap after Two Combined Sources



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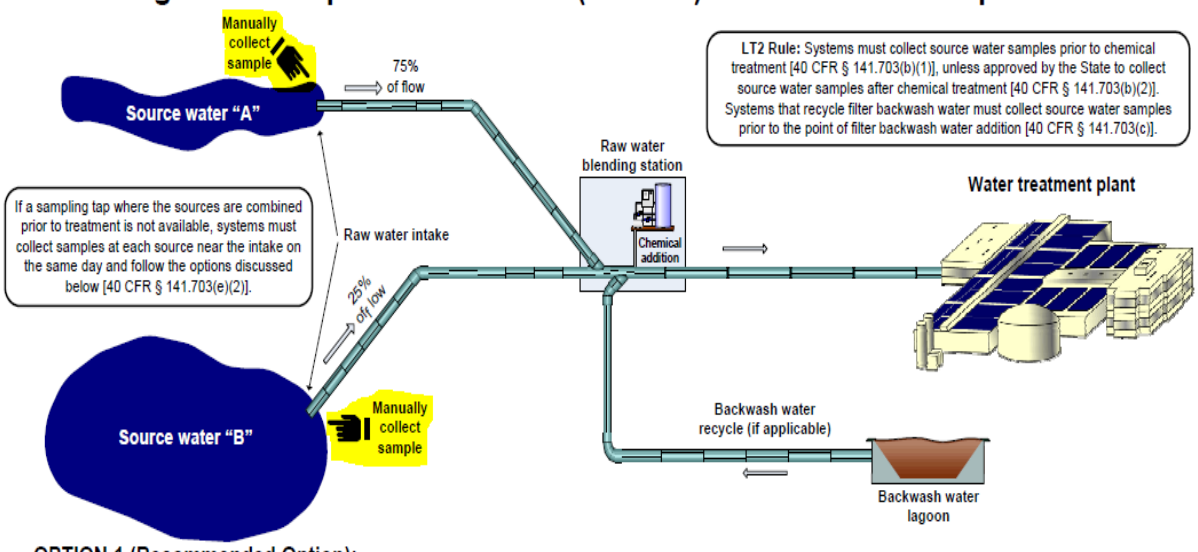
* Multiple Sources
    * Systems with plants that use multiple water sources, including multiple surface water sources and blended surface water and ground water sources, must collect samples as specified in paragraph (e)(1) or (2) of this section. The use of multiple sources during monitoring must be consistent with routine operational practice.
        * (1) If a sampling tap is available where the sources are combined prior to treatment, systems must collect samples from the tap.
        * (2) If a sampling tap where the sources are combined prior to treatment is not available, systems must collect samples at each source near the intake on the same day and must follow either paragraph (e)(2)(i) or (ii) of this section for sample analysis.
            * (i) Systems may composite samples from each source into one sample prior to analysis. The volume of sample from each source must be

weighted according to the proportion of the source in the total plant flow at the time the sample is collected.

- (ii) Systems may analyze samples from each source separately and calculate a weighted average of the analysis results for each sampling date. The weighted average must be calculated by multiplying the analysis result for each source by the fraction the source contributed to total plant flow at the time the sample was collected and then summing these values.

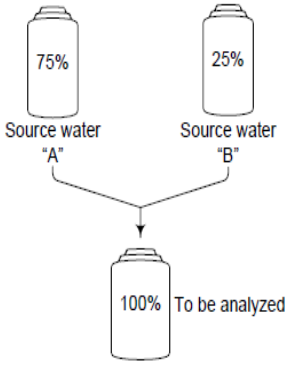
- Additional Requirements. Systems must submit a description of their sampling location(s) to the State at the same time as the sampling schedule required under §141.702. This description must address the position of the sampling location in relation to the system's water source(s) and treatment processes, including pretreatment, points of chemical treatment, and filter backwash recycle. If the State does not respond to a system regarding sampling location(s), the system must sample at the reported location(s).

Figure 3. Multiple Sources: Two (or More) Sources to be Composited



OPTION 1 (Recommended Option):

Collect samples manually at each source near the intake on the same day and composite them into one sample to be analyzed. The volume of sample from each source must reflect its proportion of the total plant flow at the time the samples were collected [40 CFR § 141.703(e)(2)(i)].



OPTION 2:

Collect samples manually at each source near the intake on the same day and analyze each independently, then calculate a weighted average of the analysis results. This is done by multiplying the result for each source by the percentage of its contribution to the total plant flow at the time the samples were collected, and then summing these values [40 CFR § 141.703(e)(2)(ii)].

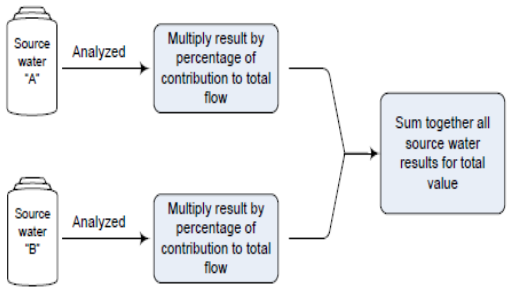


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Figure 4. Multiple Plants with the Same Influent

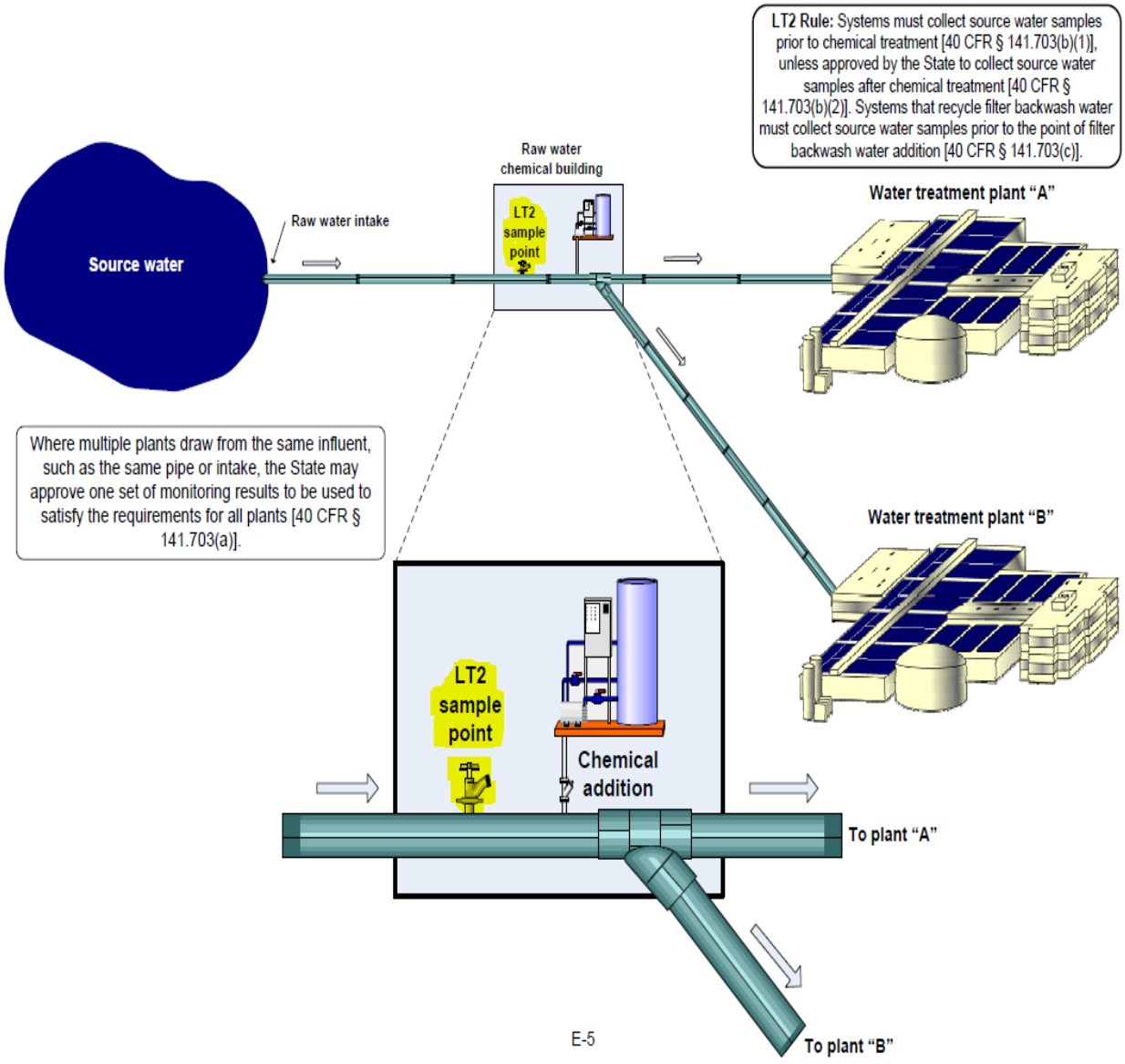

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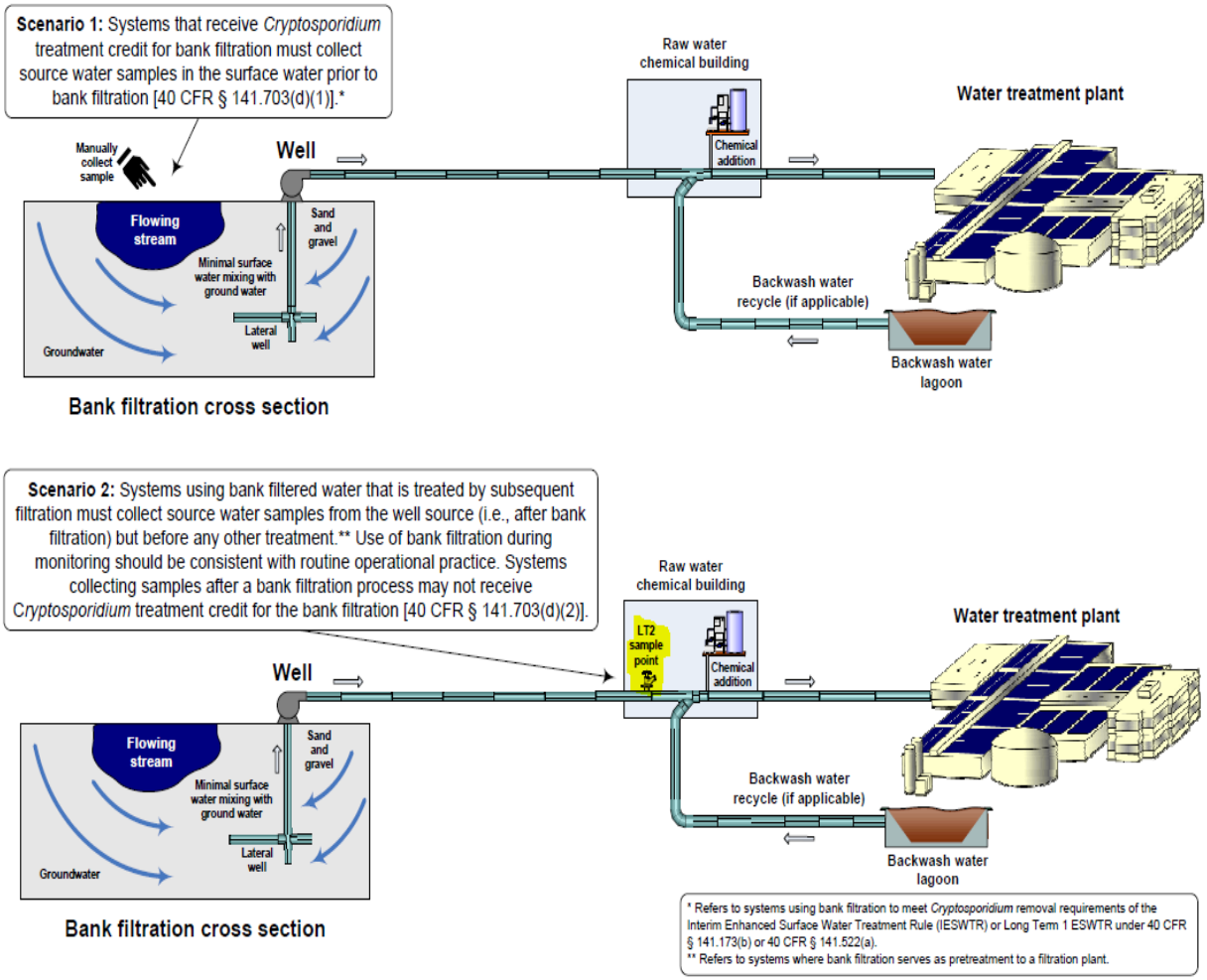
Figure 5. Bank Filtration

The correct sampling location for systems using bank filtration differs depending on whether the bank filtered water is treated by subsequent filtration:



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