3745-81-74 **Turbidity and disinfection monitoring requirements for surface water systems.**

A public water system that uses a surface water source, in whole or in part, shall conduct turbidity and disinfection monitoring in accordance with this rule.

(A) Turbidity measurements to ensure compliance with rule 3745-81-73 of the Administrative Code shall be performed on representative samples of filtered water at least every four hours that the water treatment plant is in operation. If using grab sampling for turbidity monitoring, samples shall be obtained within the first and last hours of filter operation and at least every four hours in between. Systems using grab sampling and monitoring at the clearwell effluent, the plant effluent, or immediately prior to entry into the distribution system shall monitor turbidity at least every four hours unless the high service pumps are locked out for a portion of the day. If the pumps are locked out for a portion of the day, samples shall be taken during the first and last hours of pump operations, and every four hours in-between. A public water system may substitute continuous turbidity monitoring (a reading at least every fifteen minutes) for grab sample monitoring if the public water system validates the continuous measurement for accuracy on a regular basis using a protocol acceptable to the director. ~~Turbidity~~Any of the following locations are acceptable for monitoring turbidity of filtered water ~~may be~~:

(1) At the combined filter effluent prior to entry into the clearwell~~; or~~

(2) The average of turbidity measurements from each individual filter effluent if each filter has essentially the same loading rate~~; or~~

(3) At the clearwell effluent~~; or~~

(4) At the plant effluent or immediately prior to entry into the distribution system.

(B) A public water system using conventional filtration treatment or direct filtration treatment, shall also conduct individual filter turbidity monitoring as follows:

(1) A public water system that provides conventional filtration treatment or direct filtration treatment shall conduct continuous monitoring of turbidity for each individual filter effluent. The public water system shall validate the continuous measurement for accuracy on a regular basis using the protocol acceptable to the director. The public water system shall record the results of individual filter monitoring every fifteen minutes. A public water system serving a combined population of less than ten thousand and which has two filters may conduct continuous monitoring of turbidity of the combined filter effluent, prior to entry into the clearwell, in lieu of individual filter effluent turbidity monitoring. The public water system shall record the results of the

combined filter monitoring every fifteen minutes.

(2) If there is a failure in the continuous turbidity monitoring equipment, the public water system shall conduct grab sampling every four hours in lieu of continuous monitoring until the continuous turbidity monitoring equipment is repaired and placed back online. A public water system serving a combined population of at least ten thousand has no more than five working days after the failure of the equipment to repair the continuous turbidity monitoring equipment and to place it back online. A public water system serving a combined population of less than ten thousand has no more than fourteen days after the failure of the equipment to repair the continuous turbidity monitoring equipment and to place it back online.

(C) Turbidity analysis shall be conducted as specified in paragraph (C) of rule 3745-81-27 of the Administrative Code.

(D) The residual disinfectant concentration of the water entering the distribution system shall be monitored continuously, and the lowest value must be recorded each day, except ~~that~~under the following conditions:

(1) If there is a failure in the continuous disinfection monitoring equipment, the public water system shall conduct grab sampling every four hours in lieu of continuous monitoring until the continuous monitoring equipment is repaired and placed back online. A public water system has no more than five working days after failure of the equipment to repair the continuous monitoring equipment and place it back online~~; and~~.

(2) Public water systems serving three thousand three hundred or fewer persons may, with prior acceptance by the director, take grab samples in lieu of providing continuous monitoring. Grab sample monitoring shall require at least one sample every four hours that the water treatment plant is in operation. Systems shall monitor disinfectant residual at least every four hours unless the high service pumps are locked out for a portion of the day. If the pumps are locked out for a portion of the day, samples shall be taken during the first and last hours of pump operations, and every four hours in-between.

(E) ~~The~~Until March 31, 2016, the residual disinfectant concentration shall be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in rule 3745-81-21 of the Administrative Code.

(F) Beginning April 1, 2016, the residual disinfectant concentration shall be measured at least at the sample points in the distribution system and at the same time as total

coliforms are sampled, as specified in rules 3745-81-51 and 3745-81-52 of the Administrative Code.

~~(F)~~(G) Parameters necessary to determine the sufficiency of disinfection prior to the first customer as required in rule 3745-81-72 of the Administrative Code shall be measured and recorded at the peak hourly flow rate each day the public water system is in operation. Public water systems which do not record any or all of the parameters set forth in paragraphs ~~(F)(1)~~(G)(1) to ~~(F)(3)~~(G)(3) of this rule on continuously recording devices, may estimate the period at which peak hourly flow will occur from records of flow rates from previous days for that water plant. The parameters necessary to calculate the actual CT value may then be those measured during this estimated peak hourly flow period. Temperature, pH, and residual disinfection concentration shall be analyzed in accordance with the methods specified in rule 3745-81-27 of the Administrative Code. The parameters necessary to calculate the actual CT value include all of the following:

(1) The temperature of the disinfected water at each residual disinfectant concentration sampling point.

(2) The pH of the disinfected water at each residual disinfectant concentration sampling point.

(3) The kind of disinfectant used and the residual disinfectant concentration at each sampling point before or at the first customer.

(4) The flow rate, clearwell used volume or depth, approved effective volume factor, and any other parameters needed to calculate the disinfectant contact time for each sampling point during each day's peak hourly flow.

(5) The actual CT value as determined for each day in the month, calculated from the above water temperature, pH, residual disinfectant concentration, disinfectant contact ~~time(s)~~time, and other characteristics of the water treatment plant as it was operating at peak hourly flow rate for that day.

(6) The required CT value for each day of the month, determined from the water temperature, the water pH, the disinfectant in use, and other information referred to in rule 3745-81-72 of the Administrative Code.

(7) The number of days, if any, for which the required CT value was greater than the actual CT value.

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