CA

60320.302 Advanced Treatment Criteria

A SWSAP WRA shall ensure the continuous treatment, with full advanced treatment meeting the criteria in this section, of the entire recycled municipal wastewater stream prior to its delivery to an augmented reservoir. Full advanced treatment is the treatment of an oxidized wastewater, as defined in section 60301.650 , using a reverse osmosis and an oxidation treatment process that, at a minimum, meets the criteria of this section.

(a)

A SWSAP WRA shall select for use a reverse osmosis membrane such that: (1) each membrane element used in the SWSAP has achieved a minimum rejection of sodium chloride of no less than 99.0 percent (99.0%) and an average (nominal) rejection of sodium chloride of no less than 99.2 percent (99.2%), as demonstrated through Method A of ASTM International's method D4194-03 (2014), hereby incorporated by reference, using the following substitute test conditions:(A) a recovery of permeate of no less than 15 percent (15%); (B) sodium chloride rejection is based on three or more successive measurements, after flushing and following at least 30 minutes of operation having demonstrated that rejection has stabilized; (C) an influent pH no less than 6.5 and no greater than 8.0; (D) an influent sodium chloride concentration of no greater than 2,000 mg/L, to be verified prior to the start of testing; and (E) an applied pressure no greater than 225 pounds per square inch (psi); and (2) during the first twenty

weeks of full-scale operation the membrane produces a permeate with no more than five percent (5%) of the sample results having TOC concentrations greater than 0.25 mg/L (or an alternative surrogate parameter and corresponding limit approved by the State Board), as verified through monitoring no less frequent than weekly.

(1)

each membrane element used in the SWSAP has achieved a minimum rejection of sodium chloride of no less than 99.0 percent (99.0%) and an average (nominal) rejection of sodium chloride of no less than 99.2 percent (99.2%), as demonstrated through Method A of ASTM International's method D4194-03 (2014), hereby incorporated by reference, using the following substitute test conditions:(A) a recovery of permeate of no less than 15 percent (15%); (B) sodium chloride rejection is based on three or more successive measurements, after flushing and following at least 30 minutes of operation having demonstrated that rejection has stabilized; (C) an influent pH no less than 6.5 and no greater than 8.0; (D) an influent sodium chloride concentration of no greater than 2,000 mg/L, to be verified prior to the start of testing; and (E) an applied pressure no greater than 225 pounds per square inch (psi); and

(A)

a recovery of permeate of no less than 15 percent (15%);

(B)

sodium chloride rejection is based on three or more successive measurements, after flushing and following at least 30 minutes of operation having demonstrated that rejection has stabilized;

(C)

an influent pH no less than 6.5 and no greater than 8.0;

(D)

an influent sodium chloride concentration of no greater than 2,000 mg/L, to be verified prior to the start of testing; and

(E)

an applied pressure no greater than 225 pounds per square inch (psi); and

(2)

during the first twenty weeks of full-scale operation the membrane produces a permeate with no more than five percent (5%) of the sample results having TOC concentrations greater than 0.25 mg/L (or an alternative surrogate parameter and corresponding limit approved by the State Board), as verified through monitoring no less frequent than weekly.

(b)

For the reverse osmosis treatment process, a SWSAP WRA shall propose, for State Board review and written approval, on-going performance monitoring (e.g., conductivity, TOC, etc.) that indicates when the integrity of the process has been compromised. The proposal shall include at least one form of continuous monitoring, as well as the associated surrogate and/or operational parameter limits and alarm settings that indicate when the integrity has been compromised.

(c)

To demonstrate a sufficient oxidation treatment process has been designed for implementation, the SWSAP WRA shall conduct testing demonstrating that an oxidation treatment process will provide no less than 0.5-log10 (69 percent) reduction of 1,4-dioxane.(1) A SWSAP WRA shall submit a testing protocol, as well as the subsequent results, to the State Board for review and written approval. The testing shall include challenge or spiking tests, using 1,4-dioxane, to demonstrate the proposed oxidation treatment process will achieve the minimum 0.5-log10 reduction under the proposed oxidation treatment process's normal full-scale

operating conditions. (2) A SWSAP WRA shall establish, and submit to the State Board for review and written approval, surrogate and/or operational parameters that indicate whether the minimum 0.5-log10 1,4-dioxane reduction design criterion is being met. At least one surrogate or operational parameter shall be capable of being monitored continuously, recorded, and have associated alarms that indicate when the process is not operating as designed.

(1)

A SWSAP WRA shall submit a testing protocol, as well as the subsequent results, to the State Board for review and written approval. The testing shall include challenge or spiking tests, using 1,4-dioxane, to demonstrate the proposed oxidation treatment process will achieve the minimum 0.5-log10 reduction under the proposed oxidation treatment process's normal full-scale operating conditions.

(2)

A SWSAP WRA shall establish, and submit to the State Board for review and written approval, surrogate and/or operational parameters that indicate whether the minimum 0.5-log10 1,4-dioxane reduction design criterion is being met. At least one surrogate or operational parameter shall be capable of being monitored continuously, recorded, and have associated alarms that indicate when the process is not operating as designed.

(d)

During full-scale operation of the oxidation treatment process designed pursuant to subsection (c), a SWSAP WRA shall continuously monitor the surrogate and/or operational parameters established pursuant to subsection (c)(2). A SWSAP WRA shall implement, in full-scale operation, the oxidation treatment process as designed pursuant to subsection (c).

(e)

Within sixty (60) days after completing the first 12-months of full-scale operational

monitoring pursuant to subsection (d), a SWSAP WRA shall submit a report to the State Board and Regional Board that includes: (1) results of surrogate and/or operational parameter monitoring conducted pursuant to subsection (d); (2) a description of the efficacy of the surrogate and/or operational parameters to reflect the reduction criterion for 1,4-dioxane; and (3) a description of actions taken, or yet to be taken, if any of the following occurred during the first 12 months of operation:(A) the 1,4-dioxane reduction did not meet the associated design criteria in subsection (c), as indicated by the on-going continuous operational surrogate and/or operational parameter monitoring; (B) if 1,4-dioxane was present, the continuous surrogate and/or operational parameter monitoring failed to correspond to the reduction criterion for 1,4-dioxane; and (C) any failure, interruption, or other incident that may have resulted in insufficient oxidation treatment having occurred.

(1)

results of surrogate and/or operational parameter monitoring conducted pursuant to subsection (d);

(2)

a description of the efficacy of the surrogate and/or operational parameters to reflect the reduction criterion for 1,4-dioxane; and

(3)

a description of actions taken, or yet to be taken, if any of the following occurred during the first 12 months of operation:(A) the 1,4-dioxane reduction did not meet the associated design criteria in subsection (c), as indicated by the on-going continuous operational surrogate and/or operational parameter monitoring; (B) if 1,4-dioxane was present, the continuous surrogate and/or operational parameter monitoring failed to correspond to the reduction criterion for 1,4-dioxane; and (C) any failure, interruption, or

other incident that may have resulted in insufficient oxidation treatment having occurred.

(A)

the 1,4-dioxane reduction did not meet the associated design criteria in subsection (c), as indicated by the on-going continuous operational surrogate and/or operational parameter monitoring;

(B)

if 1,4-dioxane was present, the continuous surrogate and/or operational parameter monitoring failed to correspond to the reduction criterion for 1,4-dioxane; and

(C)

any failure, interruption, or other incident that may have resulted in insufficient oxidation treatment having occurred.

(f)

Within sixty (60) days after completing the initial 12 months of operation of the reverse osmosis process (or alternative process approved pursuant to 60320.330), a SWSAP WRA shall submit a report to the State Board and Regional Board describing the effectiveness of the treatment, process failures that occurred, and actions taken in the event the on-going monitoring, conducted pursuant to subsection (b), indicated that process integrity was compromised.

(g)

Each quarter, a SWSAP WRA shall calculate what percent of results of the quarter's monitoring, conducted pursuant to subsections (b) and (d), did not meet the surrogate and/or operational parameter limits established to assure proper on-going performance of the reverse osmosis and oxidation processes. If the percent is greater than ten, within forty-five (45) days after the end of the quarter a SWSAP WRA shall:(1) submit a report to the State Board and Regional Board

that identifies the reason(s) for the failure, if known, and describes the corrective actions planned or taken to reduce the percent to ten percent (10%) or less; and (2) consult with the State Board and Regional Board and, if directed by the State Board or Regional Board, comply with an alternative monitoring plan approved by the State Board and Regional Board.

(1)

submit a report to the State Board and Regional Board that identifies the reason(s) for the failure, if known, and describes the corrective actions planned or taken to reduce the percent to ten percent (10%) or less; and

(2)

consult with the State Board and Regional Board and, if directed by the State Board or Regional Board, comply with an alternative monitoring plan approved by the State Board and Regional Board.

(h)

Each month a SWSAP WRA shall collect samples representative of the effluent of the advanced treatment process under normal operating conditions and have the samples analyzed for contaminants having MCLs and notification levels (NLs). After 12 consecutive months with no results exceeding an MCL or NL, a SWSAP WRA may apply to the State Board and Regional Board for a reduced monitoring frequency. The reduced monitoring frequency for a contaminant with an MCL shall be no less than quarterly. With State Board and Regional Board approval, monitoring conducted pursuant to this subsection may be used in lieu of the monitoring (for the same contaminants) required pursuant to sections 60320.312 and 60320.320. If an MCL or NL is exceeded, the SWSAP WRA shall take the follow-up actions for MCL and NL exceedances required pursuant to section 60320.312 and section 60320.320(b), respectively.