Updated OTNWS Treatment Trains Draft Criteria

March 2024

CALIFORNIA
Water Boards

Division of Drinking Water, Technical Operations Section

UPDATED MARCH 2024

Proposed pathogen log reduction targets

Untreated Alternate Water Source	Use Type	Enteric Virus	Giardia	Cryptosporidium
Onsite wastewater	Outdoor use	7.5	5.5	5.0
Onsite wastewater	Indoor use	8.0	6.5	5.5
Graywater[1]	Outdoor use	5.5	3.5	3.0
Graywater	Indoor use	6.0	4.5	**3.5**
Stormwater	Outdoor use	6.5	4.5	4.0
Stormwater	Indoor use	7.0	5.5	4.5
Roof runoff[2]	Outdoor use	Not applicable	1.0	Not applicable
Roof runoff	Indoor use	Not applicable	1.5	Not applicable

[1] These targets are not applicable to untreated graywater used exclusively for subsurface irrigation that are regulated by Chapter 15 (commencing with Section 1501.0) of the California Plumbing Code (Part 5 of Title 24 of the CCR).
[2] These targets are not applicable to untreated rainwater used exclusively for surface, subsurface, or drip irrigation that are regulated by Chapter 16 (commencing with Section 1601.0) of the California Plumbing Code (Part 5 of Title 24 of the CCR).

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Pathogen control treatment train options

Pathogen Control Treatment Train	Allowable Alternate Water Source
Train A: MBR - UV - Free Cl2	Onsite wastewater, stormwater, graywater, roof runoff
Train B: MBR - UV - Free Cl2	Stormwater, graywater, roof runoff
Train C: MBR - UV - Free Cl2	Graywater, roof runoff
Train D: MBR - UV	Graywater, roof runoff
Train E: Membrane filtration - UV - Free Cl2	Graywater, roof runoff
Train F: UV	Roof runoff

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Proposed Critical Control Limits for Pathogen Control Treatment Trains A – C

Pathogen Control Treatment Train	Treatment Process	Critical Control Limits*
Train A: MBR - UV - Free Cl2	MBR	Turbidity <0.2 NTU 95% of the time within 24 hrs, <0.5 NTU at any time
	UV	Dose >160 mJ/cm^2
	Free Cl2	CT >12 mg-min/L
Train B: MBR - UV - Free Cl2	MBR	Turbidity <0.2 NTU 95% of the time within 24 hrs, <0.5 NTU at any time
	UV	Dose >120 mJ/cm^2
	Free Cl2	CT >16 mg-min/L
Train C: MBR - UV - Free Cl2	MBR	Turbidity <0.2 NTU 95% of the time within 24 hrs, <0.5 NTU at any time
	UV	Dose >160 mJ/cm^2
	Free Cl2	CT >7 mg-min/L

*Not comprehensive. Draft regulations may include other CCLs.

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Proposed Critical Control Limits for Pathogen Control Treatment Trains D – H

Pathogen Control Treatment Train	Treatment Process	Critical Control Limits*
Train D: MBR - UV	MBR	Turbidity <0.2 NTU 95% of the time within 24 hrs, <0.5 NTU at any time
	UV	Dose >240 mJ/cm^2
Train E: Membrane filtration - UV - Free Cl2	Membrane filtration	Turbidity <0.2 NTU 95% of the time within 24 hrs, <0.5 NTU at any time
	UV	Dose >160 mJ/cm^2
	Free Cl2	CT >10 mg-min/L
Train F: UV	UV	Dose >40 mJ/cm^2

*Not comprehensive. Draft regulations may include other CCLs.