

APPENDIX D: TITLE 22 REQUIREMENTS

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APPENDIX D

Table D-1 summarizes the water quality criteria for the four types of recycled water as defined by the Title 22 Code of Regulations. These water types are: disinfected tertiary; disinfected secondary 2.2; disinfected secondary 23; and un-disinfected secondary. Table D-2 summarizes the minimal allowable non-potable uses for each recycled water type. All information contained in this appendix is adapted from, “California Department of Public Health – Regulations Related to Recycled Water January 2009.”

Table D-1. Water Quality Standards for Various Water Recycling Sites

Water Type ^{1,2}	Parameter	Quality Criteria ^{4,5}
Disinfected Tertiary ^{3,6} (recycled water that has been oxidized, filtered and disinfected)	Total Coliform	<ul style="list-style-type: none"> • Median concentration must not exceed 2.2 MPN/100 mL using the last 7 days analyses were completed • Must not exceed 23 MPN/100 mL in more than one sample in any 30 day period • Must not exceed 240 MPN/100 mL at any time
	Turbidity for Filtration Using Natural Undisturbed Soils or a Filter Bed	<ul style="list-style-type: none"> • Must not exceed average turbidity of 2 NTU within a 24-hour period • Must not exceed 5 NTU more than 5 percent of the time within a 24-hour period • Must not exceed 10 NTU at any time
	Turbidity for Filtration Using Microfiltration, Ultrafiltration, Nanofiltration or Revere Osmosis	<ul style="list-style-type: none"> • Must not exceed 0.2 NTU more than 5 percent of the time within a 24-hour period • Must not exceed 0.5 NTU at any time
Disinfected Secondary – 2.2 (recycled water that has been oxidized and disinfected)	Total Coliform	<ul style="list-style-type: none"> • Median concentration must not exceed 2.2 MPN/100 mL using the last 7 days analyses were completed • Must not exceed 23 MPN/100 mL in more than one sample in any 30 day period
Disinfected Secondary – 23 (recycled water that has been oxidized and disinfected)	Total Coliform	<ul style="list-style-type: none"> • Median concentration must not exceed 23 MPN/100 mL using the last 7 days analyses were completed • Must not exceed 240 MPN/100 mL in more than one sample in any 30 day period
Un-disinfected Secondary (recycled water that has been oxidized but not disinfected)	---	---

Notes:

¹Water type based on requirements for recycled water as defined by the State of California Department of Public and Title 22 of the California Administrative Code.

²“Oxidized” refers to a wastewater in which the organic matter has been stabilized, is nonputrescible and contains dissolved oxygen.

³The filtered wastewater must be disinfected using:

a. A process that provided a CT (product of total chlorine residual and modal contact time measured at the same point) or not less than 450 mg-min/L at all times with a modal contact time of at least 90 minutes based on peak dry weather flow; or

b. A process that, when combined with filtration, has been demonstrated to inactivate and/or remove 99.999 percent of plaque forming units of F-specific bacteriophage MS2, or polio virus in the wastewater. A virus that is at least as resistant to disinfection as polio virus may be used for demonstration

⁴MPN/100 mL is a bacterial count in most probable number per 100 milliliters.

⁵NTU is Nephelometric turbidity units.

⁶Disinfected Tertiary effluent is sometimes referred to as “Title 22 Unrestricted” or “Title 22 Unrestricted Access.”

Table D-2. Allowable Non-Potable Uses based on Title 22 Treatment Level

Type of Recycled Water Use	Recycled Water Treatment Level			
	Disinfected Tertiary	Disinfected Secondary-2.2	Disinfected Secondary-23	Undisinfected Secondary
Agricultural Irrigation Uses				
Food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop	√			
Food crops where the edible portion is produced above ground and not contacted by the recycled water	√	√		
Food crops that must undergo commercial pathogen-destroying processing before being consumed by humans	√	√	√	√
Orchards where the recycled water does not come into contact with the edible portion of the crop	√	√	√	√
Vineyards where the recycled water does not come into contact with the edible portion of the crop	√	√	√	√
Non-food bearing trees (Christmas trees are included provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting or allowing access to the general public	√	√	√	√
Fodder and fiber crops and pasture animals not producing milk for human consumption	√	√	√	√
Seed crops not eaten by humans	√	√	√	√
Ornamental nursery stock and sod farms where access by the general public is not restricted	√	√	√	
Pasture for animals producing milk for human consumption	√	√	√	
Any nonedible vegetation where access is controlled so that the irrigated area cannot be used as if it were part of a park, playground or school yard	√	√	√	
Ornamental nursery stock and sod farms provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access to the general public	√	√	√	√

Table D-2. Allowable Non-Potable Uses based on Title 22 Treatment Level (continued)				
Type of recycled Water Use	Recycled Water Treatment Level			
	Disinfected Tertiary	Disinfected Secondary-2.2	Disinfected Secondary-23	Undisinfected Secondary
Urban Irrigation Uses				
Parks and playgrounds	√			
School yards	√			
Residential landscaping	√			
Unrestricted access golf courses	√			
Cemeteries	√	√	√	
Freeway landscaping	√	√	√	
Restricted access golf courses	√	√	√	
Impoundment Uses				
Source of water supply for nonrestricted recreational impoundments	√ ¹			
Source of water supply for restricted recreational impoundments	√	√		
Publicly accessible impoundments at fish hatcheries	√	√		
Landscape impoundments that do no utilize decorative fountains	√	√	√	
Cooling Water Uses				
Industrial or commercial cooling or air conditioning that involves the use of a cooling tower, evaporative condenser, spraying or any mechanism that creates a mist	√ ²			
Industrial or commercial cooling or air conditioning that does not involve the use of a cooling tower, evaporative condenser, spraying or any mechanism that creates a mist	√	√	√	

Table D-2. Allowable Non-Potable Uses based on Title 22 Treatment Level (continued)

Type of recycled Water Use	Recycled Water Treatment Level			
	Disinfected Tertiary	Disinfected Secondary-2.2	Disinfected Secondary-23	Undisinfected Secondary
Other Uses				
Flushing toilets and urinals	√			
Priming drain traps	√			
Industrial process water that may come into contact with workers	√			
Structural fire fighting	√			
Decorative fountains	√			
Commercial laundries	√			
Consolidation of back fill around potable water pipelines	√			
Artificial snow making for commercial outdoor use	√			
Commercial car washes including hand washes if recycled water is not heated, where the general public is excluded from the washing process	√			
Industrial boiler feed	√	√	√	
Nonstructural fire fighting	√	√	√	
Backfill consolidation around nonpotable piping	√	√	√	
Soil compaction	√	√	√	
Mixing concrete	√	√	√	
Dust control on roads and streets	√	√	√	
Cleaning roads, sidewalks and outdoor work areas	√	√	√	
Industrial process water that will not come into contact with workers	√	√	√	
Flushing water for sanitary sewers	√	√	√	√

Notes:

¹Requires conventional treatment where conventional treatment utilizes a sedimentation unit between coagulation and filtration and produces an effluent that meets the definition of disinfected tertiary recycle. If conventional treatment is not used, the recycled water must be monitored for pathogens in accordance with section 60305(b) of Title 22.

²If a cooling tower is used or if a mist is created that could into contact with employees or the public, the cooling system shall have a drift eliminator whenever the cooling system is in operation and a chlorine or other biocide shall be used to treat the cooling tower recirculation water to minimize the growth of Legionella and other microorganisms.