

2.1 exceed a most probable number (MPN) of 23 per 100 milliliters using the bacteriological
2.2 results of the last seven days for which analyses have been completed, and the number of
2.3 total coliform bacteria does not exceed an MPN of 240 per 100 milliliters in more than
2.4 one sample in any 30-day period.

2.5 Subd. 6. **Disinfected tertiary recycled water.** "Disinfected tertiary recycled water"
2.6 means a filtered and subsequently disinfected wastewater that meets the following criteria:

2.7 (1) the filtered wastewater has been disinfected by:

2.8 (i) a chlorine disinfection process following filtration that provides a CT value (the
2.9 product of total chlorine residual and modal contact time measured at the same point) of
2.10 not less than 450 milligram-minutes per liter at all times with a modal contact time of at
2.11 least 90 minutes, based on peak dry weather design flow; or

2.12 (ii) a disinfection process that, when combined with the filtration process, has been
2.13 demonstrated to inactivate or remove 99.999 percent of the plaque-forming units of
2.14 F-specific bacteriophage MS-2 or polio virus in the wastewater. A virus that is at least as
2.15 resistant to disinfection as polio virus may be used for purposes of the demonstration; and

2.16 (2) the median concentration of total coliform bacteria measured in the disinfected
2.17 effluent does not exceed a most probable number (MPN) of 2.2 per 100 milliliters using
2.18 the bacteriological results of the last seven days for which analyses have been completed
2.19 and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters
2.20 in more than one sample in any 30-day period. No sample shall exceed an MPN of 240
2.21 total coliform bacteria per 100 milliliters.

2.22 Subd. 7. **Drift.** "Drift" means the water that escapes to the atmosphere as water
2.23 droplets from a cooling system.

2.24 Subd. 8. **Drift eliminator.** "Drift eliminator" means a feature of a cooling system
2.25 that reduces to a minimum the generation of drift from the system.

2.26 Subd. 9. **F-specific bacteriophage MS-2.** "F-specific bacteriophage MS-2" means
2.27 a strain of a specific type of virus that infects coliform bacteria that is traceable to the
2.28 American Type Culture Collection (ATCC 15597B1) and is grown on lawns of E. coli
2.29 (ATCC 15597).

2.30 Subd. 10. **Facility.** "Facility" means any type of building or structure or a defined
2.31 area of specific use that receives water for domestic use from a public water supply as
2.32 defined in section 144.382.

2.33 Subd. 11. **Filtered wastewater.** "Filtered wastewater" means an oxidized
2.34 wastewater that:

2.35 (1) has been coagulated and passed through natural undisturbed soils or a bed of
2.36 filter media:

3.1 (i) at a rate that does not exceed five gallons per minute per square foot of surface
3.2 area in mono, dual, or mixed media gravity, upflow, or pressure filtration systems or does
3.3 not exceed two gallons per minute per square foot of surface area in traveling bridge
3.4 automatic backwash filters; and

3.5 (ii) so that the turbidity of the filtered wastewater does not exceed an average of
3.6 two NTU within a 24-hour period; five NTU more than five percent of the time within a
3.7 24-hour period; and 10 NTU at any time; or

3.8 (2) has been passed through a microfiltration, ultrafiltration, nanofiltration, or reverse
3.9 osmosis membrane so that the turbidity of the filtered wastewater does not exceed 0.2
3.10 NTU more than five percent of the time within a 24-hour period and does not exceed 0.5
3.11 NTU at any time.

3.12 Subd. 12. **Food crops.** "Food crops" means any crops intended for human
3.13 consumption.

3.14 Subd. 13. **Hose bibb.** "Hose bibb" means a faucet or similar device to which a
3.15 common garden hose can be readily attached.

3.16 Subd. 14. **Landscape impoundment.** "Landscape impoundment" means an
3.17 impoundment in which recycled water is stored or used for aesthetic enjoyment or
3.18 landscape irrigation or that otherwise serves a similar function and is not intended to
3.19 include public contact.

3.20 Subd. 15. **Modal contact time.** "Modal contact time" means the amount of time
3.21 elapsed between the time that a tracer, such as salt or dye, is injected into the influent at
3.22 the entrance to a chamber and the time that the highest concentration of the tracer is
3.23 observed in the effluent from the chamber.

3.24 Subd. 16. **Nonrestricted recreational impoundment.** "Nonrestricted recreational
3.25 impoundment" means an impoundment of recycled water for which no limitations are
3.26 imposed on body-contact water recreational activities.

3.27 Subd. 17. **NTU.** "NTU" means nephelometric turbidity unit, which is a measurement
3.28 of turbidity as determined by the ratio of the intensity of light scattered by the sample to
3.29 the intensity of incident light as measured by method 2130 B in Standard Methods for the
3.30 Examination of Water and Wastewater, Eaton, A. D., Clesceri, L. S., and Greenberg, A. E.,
3.31 eds., (Washington, DC: American Public Health Association, 1998).

3.32 Subd. 18. **Oxidized wastewater.** "Oxidized wastewater" means wastewater in which
3.33 the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen.

3.34 Subd. 19. **Peak dry weather design flow.** "Peak dry weather design flow" means
3.35 the arithmetic mean of the maximum peak flow rates sustained over a specific period of

4.1 time during the maximum 24-hour dry weather period. "Dry weather period" means
4.2 periods of little or no rainfall.

4.3 Subd. 20. **Recycling plant.** "Recycling plant" means an arrangement of devices,
4.4 structures, equipment, processes, and controls that produce recycled water.

4.5 Subd. 21. **Restricted access golf course.** "Restricted access golf course" means
4.6 a golf course where public access is controlled so that areas irrigated with recycled
4.7 water cannot be used as if they were part of a park, playground, or school yard and
4.8 where irrigation is conducted only in areas and during periods when the golf course is
4.9 not being used by golfers.

4.10 Subd. 22. **Restricted recreational impoundment.** "Restricted recreational
4.11 impoundment" means an impoundment of recycled water for which recreation is limited
4.12 to fishing, boating, and other non-body-contact water recreational activities.

4.13 Subd. 23. **Spray irrigation.** "Spray irrigation" means the application of recycled
4.14 water to crops to maintain vegetation or support growth of vegetation by applying it
4.15 from sprinklers.

4.16 Subd. 24. **Undisinfected secondary recycled water.** "Undisinfected secondary
4.17 recycled water" means oxidized wastewater.

4.18 Subd. 25. **Use area.** "Use area" means an area of recycled water use with defined
4.19 boundaries. A use area may contain one or more facilities.

4.20 **Sec. 2. [103G.9015] USES OF RECYCLED WATER.**

4.21 Subdivision 1. **Scope.** (a) This section applies only to recycled water from sources
4.22 that contain domestic waste, in whole or in part.

4.23 (b) This section does not apply to the use of recycled water on-site at a water
4.24 recycling plant or wastewater treatment plant if access by the public to the area of on-site
4.25 recycled water use is restricted.

4.26 Subd. 2. **Irrigation.** (a) Recycled water used for surface irrigation of the areas
4.27 specified in this paragraph must be disinfected tertiary recycled water, except that for
4.28 filtration according to section 103G.901, subdivision 11, clause (1), coagulation need not
4.29 be used as part of the treatment process if the filter effluent turbidity does not exceed two
4.30 NTU, the turbidity of the influent to the filters is continuously measured, the influent
4.31 turbidity does not exceed five NTU for more than 15 minutes and never exceeds ten
4.32 NTU, and there is the capability to automatically activate chemical addition or divert the
4.33 wastewater should the filter influent turbidity exceed five NTU for more than 15 minutes:

4.34 (1) food crops, including all edible root crops, where the recycled water comes into
4.35 contact with the edible portion of the crop;

- 5.1 (2) parks and playgrounds;
- 5.2 (3) school yards;
- 5.3 (4) residential landscaping;
- 5.4 (5) unrestricted access golf courses; and
- 5.5 (6) any other irrigation use not specified in this section and not prohibited by other
- 5.6 law.

5.7 (b) Recycled water used for surface irrigation of food crops where the edible portion
5.8 is produced above ground and not contacted by the recycled water must be at least
5.9 disinfected secondary-2.2 recycled water.

5.10 (c) Recycled water used for surface irrigation of the following must be at least
5.11 disinfected secondary-23 recycled water:

- 5.12 (1) cemeteries;
- 5.13 (2) freeway landscaping;
- 5.14 (3) restricted access golf courses;
- 5.15 (4) ornamental nursery stock and sod farms where access by the general public is
- 5.16 not restricted;
- 5.17 (5) pasture for animals producing milk for human consumption; and
- 5.18 (6) any nonedible vegetation when access is controlled so that the irrigated area
- 5.19 cannot be used as if it were part of a park, playground, or school yard.

5.20 (d) Recycled wastewater used for surface irrigation of the following must be at least
5.21 undisinfected secondary recycled water:

5.22 (1) orchards where the recycled water does not come into contact with the edible
5.23 portion of the crop;

5.24 (2) vineyards where the recycled water does not come into contact with the edible
5.25 portion of the crop;

5.26 (3) non-food-bearing trees. Christmas tree farms are included in this category if no
5.27 irrigation with recycled water occurs for a period of 14 days before harvesting or allowing
5.28 access by the general public;

5.29 (4) fodder and fiber crops and pasture for animals not producing milk for human
5.30 consumption;

5.31 (5) seed crops not eaten by humans;

5.32 (6) food crops that must undergo commercial pathogen-destroying processing before
5.33 being consumed by humans; and

5.34 (7) ornamental nursery stock and sod farms if no irrigation with recycled water
5.35 occurs for a period of 14 days before harvesting, retail sale, or allowing access by the
5.36 general public.

6.1 (e) No recycled water used for irrigation, or soil that has been irrigated with recycled
6.2 water, shall come into contact with the edible portion of food crops eaten raw by humans
6.3 unless the recycled water complies with paragraph (a).

6.4 Subd. 3. **Impoundments.** (a) Except as provided in paragraph (b), recycled water
6.5 used as a source of water supply for nonrestricted recreational impoundments must be
6.6 disinfected tertiary recycled water that has been subjected to conventional treatment.

6.7 (b) Disinfected tertiary recycled water that has not received conventional treatment
6.8 may be used for nonrestricted recreational impoundments if the recycled water is
6.9 monitored for the presence of pathogenic organisms as follows:

6.10 (1) during the first 12 months of operation and use, the recycled water must be
6.11 sampled and analyzed monthly for Giardia, enteric viruses, and Cryptosporidium.
6.12 Following the first 12 months of use, the recycled water must be sampled and analyzed
6.13 quarterly for Giardia, enteric viruses, and Cryptosporidium. The ongoing monitoring
6.14 may be discontinued after the first two years of operation with the approval of the
6.15 commissioner of health; and

6.16 (2) the samples must be taken at a point after disinfection and before the point where
6.17 the recycled water enters the use impoundment. The samples must be analyzed by an
6.18 approved laboratory and the results submitted quarterly to the commissioner of health.

6.19 (c) The total coliform bacteria concentrations in recycled water used for nonrestricted
6.20 recreational impoundments, measured at a point between the disinfection process and the
6.21 point of entry to the use impoundment, must comply with the criteria specified in section
6.22 103G.901, subdivision 6, clause (2), for disinfected tertiary recycled water.

6.23 (d) Recycled water used as a source of supply for restricted recreational
6.24 impoundments and for any publicly accessible impoundments at fish hatcheries must be at
6.25 least disinfected secondary-2.2 recycled water.

6.26 (e) Recycled water used as a source of supply for landscape impoundments that do
6.27 not use decorative fountains must be at least disinfected secondary-23 recycled water.

6.28 Subd. 4. **Cooling.** (a) Recycled water used for industrial or commercial cooling or
6.29 air conditioning that involves the use of a cooling tower, evaporative condenser, spraying,
6.30 or any mechanism that creates a mist must be disinfected tertiary recycled water.

6.31 (b) Use of recycled water for industrial or commercial cooling or air conditioning
6.32 that does not involve the use of a cooling tower, evaporative condenser, spraying, or any
6.33 mechanism that creates a mist must be at least disinfected secondary-23 recycled water.

6.34 (c) Whenever a cooling system, using recycled water in conjunction with an air
6.35 conditioning facility, uses a cooling tower or otherwise creates a mist that could come

7.1 into contact with employees or members of the public, the cooling system must comply
7.2 with the following:

7.3 (1) a drift eliminator must be used whenever the cooling system is in operation; and

7.4 (2) a chlorine or other biocide must be used to treat the cooling system recirculating
7.5 water to minimize the growth of Legionella and other microorganisms.

7.6 Subd. 5. **Other purposes.** (a) Recycled water used for the purposes specified in
7.7 this paragraph must be disinfected tertiary recycled water, except that for filtration being
7.8 provided according to section 103G.901, subdivision 11, clause (1), coagulation need not
7.9 be used as part of the treatment process if the filter effluent turbidity does not exceed two
7.10 NTU, the turbidity of the influent to the filters is continuously measured, the influent
7.11 turbidity does not exceed five NTU for more than 15 minutes and never exceeds ten
7.12 NTU, and there is the capability to automatically activate chemical addition or divert the
7.13 wastewater should the filter influent turbidity exceed five NTU for more than 15 minutes:

7.14 (1) flushing toilets and urinals;

7.15 (2) priming drain traps;

7.16 (3) industrial process water that may come into contact with workers;

7.17 (4) structural fire fighting;

7.18 (5) decorative fountains;

7.19 (6) commercial laundries;

7.20 (7) consolidation of backfill around potable water pipelines;

7.21 (8) artificial snowmaking for commercial outdoor use; and

7.22 (9) commercial car washes, including hand washes if the recycled water is not
7.23 heated, where the general public is excluded from the washing process.

7.24 (b) Recycled water used for the following uses must be at least disinfected
7.25 secondary-23 recycled water:

7.26 (1) industrial boiler feed;

7.27 (2) nonstructural fire fighting;

7.28 (3) backfill consolidation around nonpotable piping;

7.29 (4) soil compaction;

7.30 (5) mixing concrete;

7.31 (6) dust control on roads and streets;

7.32 (7) cleaning roads, sidewalks, and outdoor work areas; and

7.33 (8) industrial process water that will not come into contact with workers.

7.34 (c) Recycled water used for flushing sanitary sewers must be at least undisinfected
7.35 secondary recycled water.

8.1 Sec. 3. [103G.9017] RECYCLED WATER; USE AREA REQUIREMENTS.

8.2 (a) No irrigation with disinfected tertiary recycled water shall take place within 50
8.3 feet of any domestic water supply well unless:

8.4 (1) a geological investigation demonstrates that an aquitard exists at the well
8.5 between the uppermost aquifer being drawn from and the ground surface;

8.6 (2) the well contains an annular seal that extends from the surface into the aquitard;

8.7 (3) the well is housed to prevent any recycled water spray from coming into contact
8.8 with the wellhead facilities;

8.9 (4) the ground surface immediately around the wellhead is contoured to allow
8.10 surface water to drain away from the well; and

8.11 (5) the owner of the well approves of the elimination of the buffer zone requirement.

8.12 (b) No impoundment of disinfected tertiary recycled water shall occur within 100
8.13 feet of any domestic water supply well.

8.14 (c) No irrigation with, or impoundment of, disinfected secondary-2.2 or disinfected
8.15 secondary-23 recycled water shall take place within 100 feet of any domestic water supply
8.16 well.

8.17 (d) No irrigation with, or impoundment of, undisinfected secondary recycled water
8.18 shall take place within 150 feet of any domestic water supply well.

8.19 (e) Any use of recycled water shall comply with the following:

8.20 (1) any irrigation runoff shall be confined to the recycled water use area, unless the
8.21 runoff does not pose a public health threat and is authorized by the commissioner of health;

8.22 (2) spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas,
8.23 or food handling facilities; and

8.24 (3) drinking water fountains shall be protected against contact with recycled water
8.25 spray, mist, or runoff.

8.26 (f) No spray irrigation of any recycled water, other than disinfected tertiary recycled
8.27 water, shall take place within 100 feet of a residence or a place where public exposure
8.28 could be similar to that of a park, playground, or school yard.

8.29 (g) All use areas that are accessible to the public shall be posted with signs that
8.30 are visible to the public, in a size no less than four inches high by eight inches wide,
8.31 that include the following wording: "RECYCLED WATER - DO NOT DRINK." The
8.32 commissioner of health may accept alternative signage and wording, or an educational
8.33 program, provided the applicant demonstrates to the commissioner of health that the
8.34 alternative approach will ensure an equivalent degree of public notification.

8.35 (h) No physical connection shall be made or allowed to exist between any recycled
8.36 water system and any separate system conveying potable water.

9.1 (i) The portions of the recycled water piping system that are in areas subject to
9.2 access by the general public shall not include hose bibbs. Only quick couplers that differ
9.3 from those used on the potable water system shall be used on the portions of the recycled
9.4 water piping system in areas subject to public access.

9.5 Sec. 4. **[103G.9019] NATURAL TREATMENT PROCESS; NATURAL POOLS.**

9.6 Notwithstanding Minnesota Rules, chapter 4717, or other law to the contrary, a
9.7 public pool may utilize natural treatment processes for filtration and purification. Section
9.8 103G.9015, subdivision 3, paragraph (b), applies to natural pools under this section.