

PART I

DEFINITIONS AND GENERAL PROGRAM REQUIREMENTS

9 VAC 25-740-10 Definitions

The following words and terms, when used in this regulation, shall have the following meaning unless the context clearly indicates otherwise.

“Board” means the Virginia State Water Control Board or State Water Control Board.

“Continuous/self-move sprinkler irrigation system” means a lateral, sprinkler (traveler), or boom that is continuous or self moving while water is being applied. Power for moving the system is typically provided by electric or hydraulic motors or small diesel engines. Such system includes, but is not limited to, center pivots and traveling guns.

“CWA” means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92 - 500, as amended by Public Law 95 - 217, Public Law 95 - 576, Public Law 96 - 483 and Public Law 97 - 117, 33 U.S.C. 1251 et seq.

“Direct potable reuse” means the discharge of reclaimed water directly into a drinking water treatment facility or into a drinking water distribution system.

“Director” means the Director of the Department of Environmental Quality or an authorized representative.

“Disinfection” means the destruction, inactivation, or removal of pathogenic microorganisms by chemical, physical, or biological means. Disinfection may be accomplished by chlorination, ozonation, other chemical disinfectants, UV irradiation, or other processes.

“Disposal” means the discharge of effluent to injection wells, effluent outfalls, subsurface drain systems, or other facilities utilized strictly for the release of effluents into the environment without deriving a direct beneficial use.

“Domestic wastewater” means wastewater deriving from the normal family or household activities, including drinking, laundering, bathing, cooking, heating, cleaning and flushing toilets.

“Drip irrigation” means the slow and even application of water to individual plants using plastic tubing and drip devices (usually called emitters) with a maximum flow rate of 2 gallons per hour.

“Effluent”, unless specifically stated otherwise, means wastewater that is not reused after flowing out of any treatment works.

“End user” means a person who directly uses reclaimed water meeting the requirements of this regulation.

“Field capacity” means the maximum water content at which drainage of water from the root zone of a soil becomes negligible, and equilibrium is attained against gravitational forces operating on soil water.

“Filtration” means the passing of wastewater through a conventional technology such as natural undisturbed soils, sand or anthracite, or a non-conventional technology such as microfiltration, ultrafiltration, nanofiltration or reverse osmosis membrane.

“Fixed/solid-set sprinkler irrigation system” means a system of portable surface or permanently buried laterals totally covering the irrigated area or field. Typically several adjacent laterals or heads are operated at one time. Portable laterals are typically removed from the field at the end of germination, plant establishment, or irrigation season and are replaced the next irrigation season.

“Food crops -commercially processed” means food crops that, prior to sale to the public or others, have undergone chemical or physical processing sufficient to destroy pathogens.

“Food crops –not commercially processed” means food crops that, prior to sale to the public or others, have not undergone chemical or physical processing sufficient to destroy pathogens.

“Gray water” means untreated wastewater from bathtubs, showers, lavatory fixtures, wash basins, washing machines, and laundry tubs. It does not include wastewater from toilets, urinals, kitchen sinks, dishwashers, or laundry water from soiled diapers.

“Ground water” means any water, except capillary moisture, beneath the land surface in the zone of saturation or beneath the bed of any stream, lake, reservoir or other body of surface water wholly or partially within the boundaries of this Commonwealth, whatever the subsurface geologic structure in which such water stands, flows, percolates or otherwise occurs.

“Indirect potable reuse” means the discharge of reclaimed water directly into an aquifer or raw water impoundment used for a drinking water source.

“Industrial wastewater” means liquid resulting from any process of industry, manufacture, trade or business, or from the development of any natural resources.

“Irrigation” means the application of water to land to assist in crop growth.

“Municipal wastewater” means sewage.

“Non-potable water” means any water, including reclaimed water, not meeting the definition of potable water.

“NTU” means nephelometric turbidity units.

“Periodic-move sprinkler irrigation system” means a system of laterals, sprinkler heads (gun types) or booms that are moved between irrigation settings. They remain stationary while applying water.

“Potable water” means water fit for human consumption and domestic use which is sanitary and normally free of minerals, organic substances, and toxic agents in excess of reasonable amounts for domestic usage in the area served and normally adequate in quantity and quality for the minimum health requirements of the persons served.

“Public access area” means an area that is intended to be accessible to the general public, such as golf courses, cemeteries, parks, athletic fields, school yards, and landscape areas. Public access areas include

private property that is not open to the public at large, but is intended for frequent use by many persons.

Public access areas also include residential dwellings. Presence of authorized farm personnel or other authorized treatment plant, utilities system, or reuse system personnel does not constitute public access.

“Reclamation or wastewater reclamation” means the treatment of domestic, municipal or industrial wastewater or sewage to produce reclaimed water for a direct beneficial or controlled use that would not otherwise occur.

“Reclamation system” means a treatment works that treats domestic, municipal or industrial wastewater or sewage to produce reclaimed water for a direct beneficial or controlled use that would not otherwise occur.

“Reclaimed water” means water resulting from the treatment of domestic, municipal or industrial wastewater that is suitable for a direct beneficial use or a controlled use that would not otherwise occur. Specifically excluded from this definition is “gray water”.

“Reclaimed water agent” means a person who holds a permit to distribute reclaimed water to more than one end user.

“Reclaimed water distribution system” means a network of pipes, pumping facilities, storage facilities, and appurtenances designed to convey and distribute reclaimed water from one or more reclamation systems to one or more end users.

“Reuse or water reuse” means the use of reclaimed water for a direct beneficial use or a controlled use in accordance with this regulation.

“Reuse system” means an installation or method of operation that uses reclaimed water for a direct beneficial use or a controlled use in accordance with this regulation.

“Secondary treatment - basic disinfection reclaimed water” means reclaimed water that has undergone a biological treatment process that achieves the minimum level of effluent quality defined by the federal secondary treatment regulation at 40 CFR § 133.102 (2001); and a disinfection process so that the median value of fecal coliform bacteria from the bacteriological results of the last 7 days for which analyses have been completed does not exceed 200/100 ml, any single fecal coliform sample does not exceed 1,000/100 ml, and if chlorine is used, the total residual chlorine is no less than 1 mg/l after a minimum contact time of 30 minutes at maximum daily flow.

“Sewage” means the water-carried human wastes from residences, buildings, industrial establishments or other places together with such industrial wastes and underground, surface, storm, or other water as may be present.

“State waters” means all water, on the surface and under the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction, including wetlands.

“State Water Control Law or Law” means Chapter 3.1 of Title 62.1 (§ 62.1-44.2 et seq.) of the Code of Virginia.

“Subsurface application system” means a network of small diameter, porous or perforated pipes installed horizontally at depth generally less than 12 inches for the purpose of releasing reclaimed water at or near the root zone of the vegetated cover. The release of reclaimed water shall be below the ground surface.

“Supplemental irrigation” means the application of water at a rate that undesirable plant water stress does not occur nor is field capacity exceeded from any specific irrigation event.

“Surface waters” means all waters in the Commonwealth, except ground water as defined in §62.1-255 of the Code of Virginia.

“Tertiary treatment – high-level disinfection reclaimed water” means reclaimed water that has undergone filtration so that the monthly average of 5-day biochemical oxygen demand (BOD₅) is 10 mg/l or less; pH is maintained within the limits of 6.0 and 9.0 standard units; the 24-hour average turbidity is 2 NTU or less and any single sample does not exceed 5 NTU; and a disinfection process immediately following filtration so that the median value of fecal coliform bacteria from the bacteriological results of the last 7 days for which analyses have been completed is not detectable, any single fecal coliform sample does not exceed 14/100 ml, and if chlorine is used, the total residual chlorine is no less than 1 mg/l after a minimum contact time of 30 minutes at maximum daily flow.

“Treatment works” means any devices and systems used for the storage, treatment, recycling and/or reclamation of sewage or liquid industrial waste, or other waste, or that are necessary to recycle or reuse water, including intercepting sewers, outfall sewers, sewage collection systems, individual systems, pumping, power and other equipment and their appurtenances, extensions, improvements, remodeling, additions, or alterations thereof; or any devices and systems, including land that will be an integral part of the treatment process or is used for ultimate disposal of residues resulting from such treatment; or any other method or system used for preventing, abating, reducing, storing, treating, separating, or disposing of municipal waste or industrial waste, including waste in combined sewer water and sanitary sewer systems.

“Virginia Pollution Abatement (VPA) Permit” means a document issued by the Board, pursuant to the Virginia Pollution Abatement Permit Regulation (9 VAC 25-32-10 et seq.), authorizing pollutant management activities under prescribed conditions.

“Virginia Pollutant Discharge Elimination System (VPDES) Permit” means a document issued by the Board, pursuant to the Virginia Pollutant Discharge Elimination System Permit Regulation (9 VAC 25-31-10 et seq.), authorizing, under prescribed conditions the potential or actual discharge of pollutants from a point source to surface waters and the use or disposal of sewage sludge. Under the approved state program, a VPDES permit is equivalent to an NPDES permit.

“Wastewater” means liquid and water carried industrial wastes and domestic sewage from residential dwellings, commercial buildings, industrial and manufacturing facilities and institutions, whether treated or untreated.

9 VAC 25-740-20 Purpose

In accordance with §§ 62.1-44.2 and 62.1-44.15 of the Code of Virginia, it is the policy of the Commonwealth and the purpose of this regulation to promote and encourage the reclamation and reuse of wastewater in a manner protective of the environment and public health. In addition, the purpose of this regulation is to promote and establish requirements for the reclamation and reuse of wastewater and provide greater flexibility and less stringent requirements commensurate with the quality of the reclaimed water and its intended use. Specifically, this regulation establishes design, operation and maintenance standards, and permitting requirements for wastewater reclamation and water reuse that are protective of state waters and public health as an alternative to discharging effluent to state waters.

9 VAC 25-740-30 Applicability

The requirements of this regulation shall apply to the reclamation and reuse systems. Unless specifically excluded under 9 VAC 25-740-40, this regulation shall apply to all new reclamation and reuse systems for which VPA or VPDES permit applications are received after the effective date of this regulation.

This regulation shall also apply to all existing permitted facilities producing, distributing or using reclaimed water when such facilities are to be modified or expanded, but this regulation shall apply only to the expansion or modification thereof, or if treatment processes are altered to produce reclaimed water. The owners of all existing unpermitted reclamation and reuse systems shall submit a complete VPA or VPDES permit application in accordance with this regulation within 120 days of the effective date of this regulation.

9 VAC 25-740-40 Exclusions and prohibitions

A. Exclusions

The following are excluded from the requirements of this regulation:

1. Septic tank drainfield systems and other on-site sewage treatment and disposal systems with subsurface disposal, as permitted by the Virginia Department of Health.

2. Utilization of gray water.

3. Non-potable water produced at a treatment works, when utilized on-site at that treatment works. The treatment works site shall not include property that is not contiguous to the parcel of land upon which the treatment works is located.

4. Irrigation of land with reclaimed water at rates exceeding the supplemental irrigation rate as defined in this regulation.

Exclusion from the requirements of this regulation does not relieve any owner of the above operations of the responsibility to comply with any other applicable federal, state or local statute, ordinance or regulations.

B. Prohibitions

Reclaimed water shall not be used for direct or indirect potable reuse.

9 VAC 25-740-50 Relationship to other regulations

A. Virginia Pollution Abatement (VPA) Permit Regulation (9 VAC 25-32-10 et seq.)

The VPA Permit Regulation delineates the procedures and requirements to be followed in connection with the VPA permits issued by the Board pursuant to the State Water Control Law. While any treatment works treating domestic, municipal or industrial wastewater that produces reclaimed water or a facility that reuses reclaimed water in a manner that does not result in a discharge to surface waters is required to obtain a VPA permit, this regulation (9 VAC 25-740-10 et seq.) prescribes specific design, operation and maintenance standards for wastewater reclamation and water reuse. These specific requirements shall be incorporated into the VPA permit application and the VPA permit when applicable.

B. Virginia Pollutant Discharge Elimination System (VPDES) Permit Regulation (9 VAC 25-31-10 et seq.)

The VPDES Permit Regulation delineates the procedures and requirements to be followed in connection with VPDES permits issued by the Board pursuant to the Clean Water Act and the State Water Control Law. While any treatment works treating domestic, municipal or industrial wastewater that produces reclaimed water or a facility that reuses reclaimed water in a manner that results in a discharge to surface waters is required to obtain a VPDES permit, this regulation (9 VAC 25-740-10 et seq.) prescribes specific design, operation and maintenance standards for wastewater reclamation and water reuse. These specific requirements shall be incorporated into the VPDES permit application and the VPDES permit when applicable.

C. Sewage Collection and Treatment Regulations (12 VAC 5-581-10 et seq.)

The Sewage Collection and Treatment Regulations establish standards for the operation, construction, or modification of a sewerage system or treatment works, including land treatment systems. This regulation (9 VAC 25-740-10 et seq.) prescribes specific design, operation and maintenance standards for wastewater reclamation and water reuse.

9 VAC 25-740-60 Delegation of authority

The Director may perform any act of the Board provided under this regulation, except as limited by § 62.1-44.14 of the Law.

PART II

STANDARDS FOR IRRIGATION WITH RECLAIMED WATER

9 VAC 25-740-70 Reclaimed Water Quality Requirements for Irrigation Uses

A. Reclaimed water used to irrigate the following shall be at least tertiary treatment - high-level disinfection reclaimed water.

1. Food crops – not commercially processed (no reclaimed water used for irrigation, or soil that has been irrigated with reclaimed water, shall come into contact with the edible portion of food crops eaten raw by humans);
2. Orchards, vineyards and container nurseries (spray irrigation);
3. Golf Courses;
4. Parks;
5. Athletic fields;
6. School yards;
7. Cemeteries; and
8. Landscape areas (residential, industrial or commercial)

B. Reclaimed water used to irrigate the following shall be at least secondary treatment – basic disinfection reclaimed water.

1. Non-food crops (fodder, fiber, seed crops);
2. Pasture;
3. Ornamental nursery stock (except container nurseries) and sod farms;

4. Silviculture;
5. Orchards, vineyards and container nurseries (drip irrigation);
6. Food crops – commercially processed; and
7. Highway medians.

9 VAC 25-740-80 System Reliability Requirements

- A. Unless reclaimed water is used in combination with an option to discharge via a VPDES permit, adequate reliability features shall be provided for the reclamation and reuse systems. At a minimum, replicate treatment units and an automatically activated standby power source or other means to prevent improperly treated wastewater from entering the reclaimed water distribution system shall be provided.
- B. Reclaimed water produced at the reclamation system that fails to meet the reclaimed water quality standards shall not be discharged into the storage facility for irrigation or the reclaimed water distribution system. Such substandard reclaimed water (reject water) shall be returned back to the treatment works or be discharged through a VPDES permit.

9 VAC 25-740-90 Use Area Control Requirements

- A. General Standards
 1. The chosen irrigation method(s) shall reasonably preclude human contact with the reclaimed water.
 2. Reclaimed water shall be prevented from standing on public access areas during the public access areas' normal periods of use.

3. Reclaimed water shall be prevented from coming into contact with drinking fountains, water coolers, or eating areas.
4. Any irrigation runoff shall be confined to the reclaimed water use area, unless the runoff does not pose a public health or environmental threat and is authorized by the Board.

B. Notification and advisory signs

1. The end users of reclaimed water shall be informed by the reclamation system or reclaimed water agent about the origin, nature and characteristics of reclaimed water; the manner in which reclaimed water can be safely used; and limitations on the use of reclaimed water. Notification is required at the time of connection to the reclaimed water distribution system and annually after the reuse system is placed into operation.
2. All reclaimed water piping, valves, outlets and other appurtenances shall be colored purple, taped, or otherwise marked to warn the public and employees that the source of the water is reclaimed water and the water is not intended for drinking. Where appropriate, this warning shall inform the public and employees to avoid contact with the water.
3. Tank trucks and other equipment used to transport or distribute reclaimed water shall be clearly identified with advisory signs.
4. All areas where reclaimed water is used that are public access areas shall be posted with signs that include the following word: "CAUTION: RECLAIMED WATER – DO NOT DRINK" together with the equivalent standard international symbol. The size of the sign and lettering used shall be such that it can be easily read by a person with normal vision at a distance of 50 feet. The Board may

accept alternate signage and wording, or an educational program, provided that the alternate approach will assure an equivalent degree of public notification.

5. Similar advisory signs as described above shall be posted adjacent to any storage facilities that are not located at the reclamation system.

C. Cross-connection controls

1. There shall be no direct cross-connection between reclaimed water distribution system and potable water system. The reclaimed water distribution system shall be in compliance with the cross connection control and backflow prevention requirements of the Commonwealth of Virginia Waterworks Regulations (12 VAC 5-590-580 et seq.), the Uniform Statewide Building Code, and local building and plumbing codes.
2. Where potable water is used to supplement a reclaimed water distribution system, there shall be an air gap separation, where practical, between the potable water system and reclaimed water distribution system. If an air gap separation is not practicable, the minimum level of protection shall be a reduced pressure principle backflow preventer.
3. Potable water may not be used as an alternative water supply to an onsite reclaimed water distribution system unless there is an unplanned, short-term interruption of the reclaimed water service. In such cases, a swivel-ell type connection shall be used to preclude connecting both sources of supply to the use area at the same time. In addition, a reduced pressure principle backflow preventer shall be installed on the potable water side of the swivel-ell connection, and must be approved by the water purveyor prior to installation. Use of such an

interchangeable connection must be supervised continuously as long it remains in service.

4. The return of reclaimed water to the reclaimed water distribution system after the reclaimed water has been delivered to an end user is prohibited.

D. Setback distances

1. The following setback distances pertain to supplemental irrigation with the tertiary treatment – high-level disinfection reclaimed water to areas listed under 9 VAC 25-740-70 A. Unless a continuous/self-move sprinkler irrigation system or the wetted radius from a fixed/solid-set sprinkler irrigation system or a periodic-move sprinkler irrigation system, exceeding 75 feet is used, such distances shall be maintained between the site subject to irrigation and the following features:

- | | | |
|----|---|-----------------|
| a. | <u>Water supply wells, springs or public water supply sources</u> | <u>100 feet</u> |
| b. | <u>Surface waters</u> | <u>10 feet</u> |
| c. | <u>Occupied dwellings (not applicable to residential landscape areas)</u> | <u>10 feet</u> |
| d. | <u>Rock outcrops</u> | <u>25 feet</u> |
| e. | <u>Limestone rock outcrops</u> | <u>50 feet</u> |

In cases where a continuous/self-move sprinkler irrigation system or the wetted radius from a fixed/solid-set sprinkler irrigation system or a periodic-move sprinkler irrigation system, exceeding 75 feet is used, depending upon the site-specific features, the distance

to surface waters may be up to 25 feet; the distance to ditches, swales, or other structural conveyances may be up to 10 feet; and the distance to occupied dwellings may be up to 100 feet. The distances to water supply wells, springs or public water supply sources, rock outcrops and limestone rock outcrops shall be the same as above.

2. The following setback distances shall be maintained between the site subject to supplemental irrigation with the secondary treatment – basic disinfection reclaimed water and the following features:

- | | | |
|----|---|-----------------|
| a. | <u>Water supply wells, springs or public water supply sources</u> | <u>100 feet</u> |
| b. | <u>Surface waters</u> | <u>50 feet</u> |
| c. | <u>Ditches, swales, or other structural conveyances</u> | <u>25 feet</u> |
| d. | <u>Improved roadways (not applicable to highway medians)</u> | <u>25 feet</u> |
| e. | <u>Occupied dwellings</u> | <u>100 feet</u> |
| f. | <u>Property lines</u> | <u>50 feet</u> |
| g. | <u>Rock outcrops</u> | <u>25 feet</u> |
| h. | <u>Limestone rock outcrops</u> | <u>50 feet</u> |

3. Written consent of affected landowners is required to reduce setback distances from occupied dwellings or property lines.

4. Depending upon the site-specific features, setback distances to outcrops may be reduced at irrigation sites where the tertiary treatment – high-level disinfection reclaimed water is used.

5. The above setback distances, except for water supply wells, springs or public water supply sources, may be reduced or eliminated if drip or subsurface application systems are employed.

6. In cases where more than one setback distance is involved, the most restrictive distance governs.

E. Access and other controls

1. Public access is not restricted at irrigation sites where tertiary treatment - high-level disinfection reclaimed water is used.
2. Public access shall be restricted at irrigation sites where secondary treatment-basic disinfection reclaimed water is used.
3. Irrigation sites where secondary treatment-basic disinfection reclaimed water is used shall not be used for grazing of milking animals for a period of 15 days from the last day of irrigation with reclaimed water.
4. A minimum of 15 days shall be required between the last day of irrigation with secondary treatment-basic disinfection reclaimed water and utilization of non-food crops.
5. A minimum of 7 days shall be required between the last day of irrigation with secondary treatment-basic disinfection reclaimed water and retail sale or allowing access by the general public for ornamental nursery stock and sod farms.

9 VAC 25-740-100 Application and Distribution System

A. Tank trucks may be used to transport and distribute reclaimed water for land irrigation only if the following requirements are met:

1. The truck is not used to transport potable water that is used for drinking water; and
 2. The truck is not used to transport waters or other fluids that do not meet the requirements of this regulation, unless the tank has been evacuated and properly cleaned prior to the addition of the reclaimed water.
- B. The portions of the reclaimed water distribution system that are in public access areas shall not include any hose bibs. Only quick couplers that differ from those used on the potable water system shall be used on the portions of the reclaimed water distribution system in public access areas.
- C. Above ground hose bibs (spigots or other hand-operated connections) shall not be used in any areas. Hose bibs shall be located in locked, below grade vaults which shall be clearly labeled as being of non-potable quality. As an alternative to the use of locked, below grade vaults with standard hose bib services, hose bibs which can only be operated by a special tool may be placed in nonlockable underground service boxes clearly labeled as non-potable water.
- D. The height of spray nozzles, pressure at the spray nozzles and spacing of the laterals shall be adequate to provide uniform distribution of the reclaimed water over the irrigation site while preventing runoff and ponding.

9 VAC 25-740-110 Storage Requirements

- A. Storage facilities shall not be required when the reclamation and reuse systems have an option to discharge through a VPDES permit or alternative reuse or disposal of the reclaimed water is provided and it receives an approval from the Board.

- B. Unless exempted by subsection A of this section, storage facilities shall be required as follows.
1. Adequate storage period shall be provided to ensure retention of reclaimed water during inclement weather, non-growing season, harvest and planting period, and maintenance of irrigation equipment or other conditions which preclude irrigation. The total volumes of holding required shall be based on the storage necessary to provide for climatic conditions, and the consumptive use of water and nutrient management requirements of selected crops.
 2. Climatic holding periods shall be based on the most adverse conditions of freezing and precipitation, as taken from a minimum of 25 years of historical data that are available for the local area.
 3. The storage facilities shall be designed and operated to prevent point source discharge of pollutants to state waters except in the case of a storm event greater than the 25year-24 hour storm.
 4. A two-foot freeboard shall be maintained at all times.
 5. A minimum two-foot separation distance between the facility bottom and the seasonal high water table shall be provided unless it can be demonstrated by predictive calculations or modeling methods acceptable to the Board, that construction and use of the storage facilities will not result in violation of the Ground Water Standards (9 VAC 25-260, Sections 190 through 240).
 6. The storage facilities shall include a properly designed and installed liner. Such liner shall be either a synthetic liner of at least 20 mils thickness or a compacted soil liner. Liners shall have a maximum coefficient of permeability of 1×10^{-6} cm/sec. The soils used as liners shall be capable of achieving a maximum coefficient of permeability of 1×10^{-7} cm/sec or less. Total compacted soil liner

thickness shall be at least one foot and shall be composed of separate lifts not to exceed 6 inches.

7. The storage facilities shall not be located on a floodplain unless protected from inundation or damage by a 100-year frequency flood event.
8. A 300-foot setback distance shall be provided from the perimeter of the storage facility that contains the tertiary treatment – high-level disinfection reclaimed water to water supply wells, springs or public water supply sources. A 500-foot setback distance shall be provided from the perimeter of the storage facility that contains the secondary treatment – basic disinfection reclaimed water to water supply wells, springs or public water supply sources.

9 VAC 25-740-120 Irrigation Rates and Nutrient Management Plan

- A. The irrigation rates shall be site-specific and shall be in accordance with the recommendations of a soil scientist, agronomist or an individual with knowledge and experience in the comprehensive evaluation of soils and nutrient management. The design loading rates shall be determined by the characteristics of the reclaimed water, climatic conditions, soil characteristics, consumptive use of water and nutrient management requirements of selected crops. Additionally, the quality and use of the underlying ground water may dictate the loading rates to be used. The proposed irrigation rates shall be included in the permit application.
- B. Design precipitation shall be the wettest year for a 10-year period (return frequency of one year in 10). Minimum time period for this analysis should be 25 years. Average monthly distribution (average percentage of the total annual precipitation that occurs in each month) shall be assumed.

- C. Reclaimed water shall not be applied when the ground is saturated or during the periods of rainfall, nor shall it be applied to frozen ground, or ground covered with ice or snow.
- D. A Nutrient Management Plan (NMP) shall be prepared by an individual certified as a nutrient management planner by the Department of Conservation and Recreation (DCR) for golf courses irrigated with the tertiary treatment – high-level disinfection reclaimed water. The NMP shall be implemented and maintained on site for inspection when requested.
- E. A NMP shall be prepared by an individual certified as a nutrient management planner by DCR for sites irrigated with the secondary treatment-basic disinfection reclaimed water, except highway medians. A complete NMP shall be submitted with the permit application. The NMP shall be implemented and maintained on site for inspection when requested.

9 VAC 25-740-130 Operation and Maintenance Manual

An Operation and Maintenance Manual shall be developed for each reclamation and reuse system. The purpose of the manual is to facilitate the operator’s understanding of operational constraints and the monitoring and reporting requirements specified in the permit issued to the reclamation and reuse systems. The scope and content of the manual depends upon the complexity of the reclamation and reuse systems. The manual shall contain a contingency plan which will assure that no untreated or inadequately treated wastewater will be delivered to the use areas.

9 VAC 25-740-140 Monitoring Requirements

- A. Reclaimed water

1. Reclaimed water quality standards shall be met after disinfection and before discharge to storage facilities or reclaimed water distribution systems except that, if applicable, the turbidity standards shall be achieved before disinfection.
2. The tertiary treatment -high-level disinfection reclaimed water shall be continuously sampled for turbidity using a continuous turbidity meter following filtration.
3. Continuous on-line monitoring of total chlorine residual or for residual concentrations of other disinfectants, if used, shall be provided at the compliance monitoring point.
4. Instruments for continuous on-line monitoring of turbidity and disinfectant residuals shall be equipped with an automated data logging or recording device.

B. Ground water

Depending upon the quality of the reclaimed water used and the soil and hydrogeology of the storage facilities and land irrigation sites, ground water monitoring may be required on a case-by-case basis.

PART III

STANDARDS FOR INDUSTRIAL OR OTHER USES OF RECLAIMED WATER

9 VAC 25-740-150 Reclaimed Water Quality Requirements for Industrial or Other Uses

A. Reclaimed water used for the following purposes shall be at least secondary treatment – basic disinfection reclaimed water.

1. Cooling;
2. Boiler feed;
3. Stack scrubbing;
4. Process water;
5. Street washing; and
6. Fleet vehicle washing.

B. Reclaimed water used for the following purposes shall be at least tertiary treatment – high-level disinfection reclaimed water.

1. Fire protection; and
2. Commercial vehicle washing.

C. The Board may prescribe specific reclaimed water quality requirements for any uses not listed in this regulation. The Board shall, using its best professional judgment, determine and require compliance with reclaimed water quality requirements needed to protect public health and the environment. The Board shall consider the following factors when prescribing reclaimed water quality requirements for an unlisted type of reuse:

1. The risk to public health;
2. The degree of public access to the site where the reclaimed water is used and human exposure to the reclaimed water;
3. The level of treatment necessary to ensure that the reclaimed water is aesthetically acceptable;
4. The level of treatment necessary to prevent nuisance conditions;

5. The means of application of the reclaimed water;
6. The degree of treatment necessary to ensure compliance with the Water Quality Standards (9 VAC 25-260-5 et seq.);

7. The potential for improper or unintended use of the reclaimed water;
8. The reuse guidelines, criteria, or standards adopted or recommended by the U.S.

Environmental Protection Agency or other federal or state agencies that would apply to the type of reuse; and

9. Similar wastewater reclamation experience of reclaimed water providers in the United States.

D. Individual industrial activities or users may have water quality needs which may necessitate treatment beyond the minimum requirements established in this regulation. These additional treatment requirements are not subject to this regulation.

9 VAC 25-740-160 System Reliability Requirements

The system reliability requirements shall be in accordance with 9 VAC 25-740-80.

9 VAC 25-740-170 Use Area Control Requirements

A. General Standards

1. There shall be no nuisance conditions resulting from the distribution, the use, or storage of reclaimed water.
2. Aerosols and windblown spray from an open cooling tower shall not reach public access areas. If there is the potential for aerosols or windblown spray to reach

public access areas, a drift eliminator on the cooling tower shall be required, and additional disinfection may be required as determined on a case-by-case basis. This additional disinfection may be accomplished by the industrial facility.

B. Notification and advisory signs

1. The end users of reclaimed water shall be informed by the reclamation system or reclaimed water agent about the origin, nature and characteristics of reclaimed water; the manner in which reclaimed water can be safely used; and limitations on the use of reclaimed water. Notification is required at the time of connection to the reclaimed water distribution system and annually after the reuse system is placed into operation.
2. All reclaimed water piping, valves, outlets and other appurtenances shall be colored purple, taped, or otherwise marked to warn the public or employees that the source of the water is reclaimed water and the water is not intended for drinking. Where appropriate, such warning shall inform the public or employees to avoid contact with the water.
3. Tank trucks and other equipment used to distribute reclaimed water shall be clearly identified with advisory signs.
4. Advisory signs shall be posted around the portion of the industrial site in which reclaimed water is used and at the main entrances to the facility to notify employees and the public of the nature of the reclaimed water used. The sign shall include the following word: “CAUTION: RECLAIMED WATER – DO NOT DRINK” together with the equivalent standard international symbol. The size of the sign and lettering used shall be such that it can be easily read by a person with normal vision at a distance of 50 feet. The Board may accept

alternate signage and wording, or an educational program, provided that the
alternate approach will assure an equivalent degree of public notification.

C. Cross-Connection Controls

The cross-connection control requirements shall be in accordance with 9 VAC 25-740-90 C.

9 VAC 25-740-180 Operation and Maintenance Manual

The operation and maintenance manual requirements shall be in accordance with 9 VAC 25-740-130.

9 VAC 25-740-190 Monitoring Requirements

The monitoring requirements shall be in accordance with 9 VAC 25-740-140.

Appendix

Minimum Reclaimed Water Quality Requirements for Various Reuse Categories

The following information is not all-inclusive and it pertains to the minimum reclaimed water quality requirements for various reuse categories only. Please refer to the full text of the regulation for the complete requirements for the reclamation and reuse of wastewater.

| REUSE CATEGORIES | | RECLAIMED WATER QUALITY REQUIREMENTS |
|-------------------------|--|--|
| Main | Sub | Treatment Processes & Control Parameters |
| Irrigation | Food crops-not commercially processed Orchards, vineyards and container nurseries (spray irrigation) Golf courses Parks Athletic fields School yards Cemeteries Landscape areas | Tertiary treatment – high-level disinfection pH 6.0-9.0 standard units BOD ₅ ≤ 10 mg/l, 30-day avg. Turbidity ≤ 2 NTU , never > 5 NTU Median* fecal coliform bacteria not detectable, never >14/100 ml; if chlorine is used, TRC ≥ 1 mg/l after a min. contact time of 30 mins. |
| Irrigation | Non-food crops (fodder, fiber, seed crops) Pasture Ornamental nursery stock (except container nurseries) and sod farms Silviculture Orchards, vineyards and container nurseries (drip irrigation) Food crops-commercially processed | Secondary treatment – basic disinfection pH 6.0-9.0 standard units BOD ₅ & TSS ≤ 30 mg/l, 30-day avg. Median* fecal coliform bacteria ≤ 200/100 ml, never > 1000/100ml; if chlorine is used, TRC ≥ 1 mg/l after a min. contact time of 30 mins. |

| | | |
|-------------------|---|---|
| | Highway medians | |
| Industrial | Cooling Boiler feed Stack scrubbing Process water | Secondary treatment – basic disinfection pH 6.0-9.0 standard units BOD ₅ & TSS ≤ 30 mg/l, 30-day avg. Median* fecal coliform bacteria ≤ 200/100 ml, never > 1000/100ml; if chlorine is used, TRC ≥ 1 mg/l after a min. contact time of 30 mins. |
| Other | Fire protection (sprinkler and hydrant) Commercial vehicle washing | Tertiary treatment – high-level disinfection pH 6.0-9.0 standard units BOD ₅ ≤ 10 mg/l, 30-day avg. Turbidity ≤ 2 NTU, never > 5 NTU Median* fecal coliform bacteria not detectable, never >14/100 ml; if chlorine is used, TRC ≥ 1 mg/l after a min. contact time of 30 mins. |
| Other | Street washing Fleet vehicle washing | Secondary treatment – basic disinfection pH 6.0-9.0 standard units BOD ₅ & TSS ≤ 30 mg/l, 30-day avg. Median* fecal coliform bacteria ≤ 200/100 ml, never > 1000/100ml; if chlorine is used, TRC ≥ 1 mg/l after a min. contact time of 30 mins. |

* Median values of fecal coliform bacteria from the bacteriological results of the last 7 days for which analyses have been completed.