

**TITLE 252. DEPARTMENT OF ENVIRONMENTAL QUALITY
CHAPTER 656. WATER POLLUTION CONTROL FACILITY
CONSTRUCTION STANDARDS**

SUBCHAPTER 3. PERMIT PROCEDURES

252:656-3-1. Permitting process

(a) This ~~subchapter~~ Subchapter implements the permitting process of Part 4, ~~Water Wastewater~~ and Wastewater Treatment Systems, 27A O.S. § 2-6-401 et seq., and the Oklahoma Uniform Environmental Permitting Act, Title 27A O.S. § 2-14-101 et seq. ~~and the rules promulgated pursuant thereto.~~

(b) Permits are required for the construction or modification of non-industrial wastewater and water reuse systems.

(c) The permit application is a two-step process:

(1) The first step is the submission of an engineering report (as described in ~~OC~~ 252:656-3-4); and

(2) The second step is the submission of the final design report along with the required application forms and fees. The final design report shall:

(A) ~~include two (2) sets of plans and specifications, with at least one set of plans printed on 11" x 17" paper and at least one set of specifications loosely bound and suitable for scanning,~~ and

(B) reflect any changes from the approved engineering report.

(d) Unless an extension is granted, a construction permit expires if construction does not begin within one ~~(1)~~ year from the date the permit is issued.

(e) Permits to construct or modify non-industrial wastewater and water reuse systems shall only be issued to public entities unless all components of the proposed systems, including all service lines, are located on property:

(1) owned by the applicant, or

(2) dedicated to the applicant through a recorded easement for the installation and operation of the system.

SUBCHAPTER 5. SANITARY SEWER STANDARDS

252:656-5-4. Construction standards

(a) **Sewer.** Lay sewers in straight alignment with uniform grade between manholes. Protect all pipe from traffic load damage. Install metal tracer wire on all non-ferrous piping. ~~and color code all pipe constructed.~~

(b) **Trench.** The width of the trench ~~must~~ shall be ample to allow the pipe to be laid and joined properly and to allow the backfill to be placed and compacted as needed.

(1) Trench sides ~~must~~ shall be kept as nearly vertical as possible. When wider trenches are dug, appropriate bedding class and pipe strength ~~must~~ shall be used.

(2) Provide a minimum clearance of 4 inches between all pipe and any large stones, ledge rock, or boulders.

(3) Except for ductile iron pipe, provide 30 inches of soil cover as protection from traffic load damage to the pipe. Specify the applicable ASTM standards for ductile iron pipe.

(c) **Separation.** Sanitary sewers located in the street right-of-way ~~must~~ shall be located on opposite sides of the streets from potable water lines. Sewer service lines crossing water lines ~~must~~ shall comply with ~~subsections (2) or (3).~~ the following:

(1) **Horizontal separation.** Sanitary sewers must be at least:

(A) 50 feet from petroleum product tanks unless constructed of ductile iron pipe which shall be no closer than 10 feet (joint material shall be resistant to petroleum products);

(B) 300 feet from a public water supply well; ~~and~~

(C) 50 feet from a private water well;

(D) 10 feet from any existing or proposed water main; and

(E) 5 feet from electrical lines and petroleum lines. (See paragraph (3) below).

(2) **Vertical separation (crossings).** Sanitary sewers must cross at least 24 inches above or below water mains, and the crossing section centered so that the joints will be as far as possible from the water mains.

(3) **Special conditions.** When it is impossible to obtain proper horizontal and vertical separation as stipulated ~~above~~ in (1) and (2) of this subsection, design and construct the sewer line equal to water pipe, and pressure test it to assure water tightness of joints adjacent to the water line prior to backfilling. Sewer lines shall not be laid in water line trenches. See OAC ~~252:626-19-2(8)(C)~~ 252:626-19-2(h)(3).

(d) **Stream crossings - aerial.** Support all joints in aerial crossings. Design crossing supports to prevent frost heave, overturning and settlement. Use concrete encasement (except around PVC pipe) or riprap where the pipe enters stream banks. Use expansion joints between above-ground and below-ground sewers and force mains, and protect them from freezing. Protect pipes that cross streams from the impact of flood waters and debris.

(e) **Stream crossings - below-grade.** The top(s) of all sewers entering or crossing stream beds ~~must~~ shall be at least ~~three~~ 3 feet below the natural bottom of the stream bed. Construct or encase the crossing with ductile iron pipe using mechanical joints. Sewers must remain watertight and free from changes in alignment or grade. Trench backfill must be stone, coarse aggregate, washed gravel or other material that will not cause siltation. Specify construction methods to minimize siltation and bank erosion.

(f) **Flood plain structures.** Protect sewer outfalls, headwalls, manholes, gate boxes and other structures located in flood plains from stream erosion. Locate structures so they do not interfere with the free discharge of flood flows.

(g) **Manholes.** Manholes shall be installed at the end of each line; at all changes in grade, size, or alignment; at all intersections; and at distances not greater than 400 feet apart for sewers 15 inches in diameter or less, and 500 feet for sewers 18 to 30 inches in diameter. Greater spacing may be permitted in larger lines, those carrying a settled effluent or where adequate modern cleaning equipment for such spacing is provided. Lampholes and cleanouts shall not be substituted for manholes nor installed at the end of laterals longer than 250 feet. ~~See OAC 252:656-5-2(c)(4), Small diameter gravity sewers, for other uses of cleanouts.~~ [See 252:656-27-2(b) (relating to separation distance requirements).]

(1) **Drop manhole.** A drop pipe is required for all sewer lines entering a manhole at an elevation of 24 inches or more above the manhole invert. Where the difference in elevation between the incoming sewer and the manhole invert is less than 24 inches, the invert must be filleted to prevent solids deposition. For drop pipes constructed outside the manhole, the entire outside drop connection must be encased in concrete. Drop pipes constructed inside the manhole, ~~must~~ shall be secured to the interior wall of the manhole and provide access for cleaning.

(2) **Diameter.** The minimum inside diameter of manholes shall be 48 inches with a conical section at top to receive a standard manhole ring and cover.

(3) **Flow channels.** The flow channels through manholes shall conform in shape and slope to that of the sewer lines.

(4) **Inlet and outlet pipes.** Join inlet and outlet pipes to the manhole with a gasket or other flexible watertight connection that allows for differential settlement of the pipe and manhole wall.

(5) **Watertight covers.** Use watertight covers on manholes that may become submerged.

(6) **Bases.** Manhole bases ~~must~~ shall be at least 8 inches thick, with a diameter 8 inches more than the largest outside diameter of the manhole. Construct with leakproof joints between the base and manhole.

(7) **Leakage Testing.** Specify the applicable ASTM standard for the test to be used.

(h) **Inverted siphons.** Inverted siphons must have at least two barrels with a pipe size at least 6 inches in diameter. Provide necessary appurtenances for convenient flushing and maintenance. Construct manholes with adequate clearance for rodding the pipes. Provide sufficient head and

select a pipe size for a velocity of at least 3.0 fps for average flows. Arrange the inlet and outlet details so normal flow is diverted to one barrel and either barrel may be taken out of service for cleaning. The vertical alignment must permit cleaning and maintenance.

SUBCHAPTER 11. LAGOON STANDARDS

252:656-11-1. Lagoon siting

- (a) **Winds.** Locate lagoons to minimize wind obstructions.
- (b) **Surface runoff.** Do not locate lagoons in floodways, ~~and avoid~~ or flood plains. Divert storm water runoff around lagoons and protect embankments from erosion.
- (c) **Hydrology.** Use sound sanitary and engineering practices to protect groundwater aquifers and public water supplies from pollution from lagoons. Maintain a 4-foot separation between the lagoon bottom and the highest known groundwater elevation.
- (d) **Geology.** ~~Areas which may be subjected~~ Lagoons shall not be located in areas that are subject to karstification (i.e., sink holes or underground streams generally occurring in areas underlain by limestone, gypsum or dolomite) are not suitable lagoon sites. Maintain There shall be a 4-foot separation between the lagoon bottom and any bedrock formation.

252:656-11-3. Lagoon construction details

- (a) **Soil borings.** ~~Accurately represent the soil characteristics. Provide soil boring data conducted by an independent soil-testing laboratory. Borings shall extend at least 5 feet below the proposed lagoon bottom and at least one boring shall be at least 25 feet deep or into bedrock. Borings shall be conducted during the time of highest groundwater level. Provide enough borings to~~ be accurately representative represent the soil characteristics of the entire lagoon site. If bedrock is encountered, describe its general characteristics and identification, and the corresponding geological formation(s). Include a map showing the location of each boring, a log of soil types encountered at each boring, the elevation of the water table where encountered and the permeability of soil samples taken from the same elevation as the proposed lagoon bottom. Fill and seal all borings after testing.
- (b) **Dikes.**
 - (1) **Material.** Construct dikes of relatively impervious material and compact them to at least ~~90 percent~~ 90% Standard Proctor Density to form a stable structure. Remove vegetation and other unsuitable materials before construction.
 - (2) **Top width.** The top of the dike must be at least ~~eight~~ 8 feet wide for maintenance vehicles.
 - (3) **Slope.** Inner and outer dike slopes shall not be steeper than 1 vertical to 3 horizontal (1:3). Steeper slopes will only be considered where surface construction is of soil cement or other material that will prohibit vegetation growth. Inner dikes shall not be flatter than 1 vertical to 4 horizontal (1:4).
 - (4) **Freeboard.** Design the lagoon to maintain at least 3 feet of freeboard above the design maximum water depth at all times.
 - (5) **Lagoon shape.** Round, square or rectangular lagoons with rounded corners, with a length not more than three times the width constructed without islands, peninsulas or coves.
 - (6) **Erosion control.** Protect inner dikes from wave action and outer dikes from runoff and floodwaters.
 - (A) **Seeding.** Where riprap is not used, apply at least 4 inches of fertile top soil to dikes to establish an adequate vegetative cover. Before prefilling, establish vegetation on dikes from the outside toe to 2 ~~ft~~ feet above the lagoon bottom on the interior as measured on the slope. Specify perennial, low-growing grasses that spread rapidly. Do not use alfalfa or other long-rooted vegetation for seeding since the roots of this type are apt to impair the water holding efficiency of the dikes.
 - (B) **Additional protection.** Provide extra protection where inner dikes may be subjected to severe wind action, such as lagoons larger than 5 acres and where the lagoon surface will often be exposed to strong winds. Also, protect areas of turbulence in aerated

cells and all pipe penetrations. Install riprap, soil cement or other recognized material. Protect the inner dikes from 1 foot vertically above the high water elevation to 2 feet vertically below the minimum operating elevation. Place riprap on a filter bed at least 6 inches thick, and use material that will stay in place and resist erosion.

(c) **Lagoon seal.** The seepage rate through the lagoon bottom and inside dike shall not exceed 500 gal/day/acre (5.4×10^{-7} cm/s) at a ~~water depth~~ hydraulic head of 6 feet for soil and bentonite seal. Synthetic seals shall have no measurable leakage. Construct a soil seal as specified below. If native soils exceed this seepage rate, then a bentonite seal or synthetic liner must be specified. Written certification to the effect that the seal was provided and applied in accordance with specifications and that the hydraulic conductivity is equal to or less than 5.4×10^{-7} cm/s shall be furnished by the project engineer. Use ASTM Method 5084. Analysis of soil must include how soil will be applied.

(1) **Soil seal.**

(A) The soil used for sealing ~~must~~ shall have a high, uniform content of fine material (clay and silt). Soil containing rock or a high gravel content is not acceptable for a soil seal or for mixing with bentonite.

(B) Soil used to construct the lagoon seal and dike cores shall be relatively incompressible and compacted at a water content up to 4% above the optimum to at least 90% Standard Proctor Density.

(C) The soil used for sealing shall be at least 12 inches thick with the coefficient of permeability (K) no greater than 10^{-7} cm/s. The soil seal shall be applied in lifts no greater than 6 inches.

(D) Written certification to the effect that the seal was provided and applied in accordance with specifications and that the coefficient of permeability is equal to or less than 10^{-7} cm/s ~~must~~ shall be furnished by the project engineer and independent soils laboratory. The written certification shall include:

(i) the number of samples taken;

(ii) a map of the location of the samples taken; and

(iii) a demonstration that the location and number of samples taken are representative of the seal of the lagoon, for both the bottom of the lagoon and all sides of the lagoon dike walls.

(2) **Bentonite seal.**

(A) The application rate shall be at least 125% of the minimum rate that is determined to be adequate by laboratory tests.

(B) The water content of the soil-bentonite mixture shall be up to 4% above the optimum for maximum compaction. Bentonite shall be applied to soil that is free of all vegetation, trash, roots, frozen soil, snow or ice, stones over 2 inches in diameter or other objectionable material.

(C) Split the material in half and apply in ~~two~~ 2 perpendicular 3-inch lifts for a finished compacted blanket thickness of at least 6 inches.

(D) After mixing and compacting, analyze a sample of the soil/bentonite mixture for permeability. If the coefficient of permeability exceeds 10^{-7} cm/s, the depth of the mixture or content of bentonite must be increased as necessary to obtain the required seal.

(E) Compact the mixture at the proper water content to at least 90% Standard Proctor Density (specifically excluding use of a sheepsfoot roller).

(F) Cover the completed seal with at least 4 inches of soil in addition to necessary erosion control.

(G) Hydrate with fresh water and keep at or above the optimum water content until the pond is prefilled.

(H) Written certification to the effect that the seal was provided and applied in accordance with specifications and that the coefficient of permeability is equal to or less than 10^{-7} cm/s shall be furnished by the project engineer and independent soils laboratory. The written certification shall include:

(i) the number of samples taken;

- (ii) a map of the location of the samples taken; and
 - (iii) a demonstration that the location and number of samples taken are representative of the seal of the lagoon, for both the bottom of the lagoon and all sides of the lagoon dike walls.
- (3) **Synthetic liner.**
- (A) The synthetic liner shall be at least 30 ~~mil~~mils (0.030 inch) thick, unless the lagoon is subject to heavy traffic, ~~then in which case~~ the liner shall be at least 60 ~~mil~~mils (0.060 inch) thick.
 - (B) Remove or cover sharp objects in the subsoil with a bedding of 2 to 4 inches of clean soil or sand.
 - (C) Use 4-inch perforated pipe to allow venting and draining of the soil to reduce gas and hydrostatic pressures and facilitate monitoring for leakage.
 - (D) ~~Seal~~The synthetic liner panels shall be laid out in a longitudinal direction and sealed with an overlap of 4 to 6 inches.
 - (E) The anchor trench shall be a 6-inch minimum depth and placed at least 9 to 12 inches beyond the slope break of the dike.
 - (F) Take adequate measures to protect the integrity of the liner. On dike slopes, backfill shall consist of at least a 3-inch layer of sand or finely textured soil and covered with at least a 3-inch layer of heavier cobble, coarse gravel or small riprap.
- (4) **Uniformity.** The bottom shall be as level as possible. Finished elevations shall not deviate more than 3 inches from the average elevation.
- (5) **Prefilling.** Protect the integrity of the liner by hydrating with fresh water until the lagoon is used.
- (d) **Influent lines.** Influent lines shall terminate in a flow distribution manhole or control structure with the invert at least 6 inches above the maximum design high water elevation of the lagoon. Design the control structure to proportionally split the flow to the primary cells.
- (1) **Placement.** Raw sewage distribution lines may be placed on the surface of the lagoon bottom. Anchor pipe to prevent floating or settling. Soil shall not be mounded over the distribution lines. The method of construction shall not alter the integrity of the lagoon seal.
 - (2) **Point of discharge.** To minimize short-circuiting in primary cells, terminate influent lines at the lesser of either the center of the cell or a point at least 100 feet from the inside toe of any dike. Install multiple inlets when the distance from any inlet to the toe of an adjacent dike exceeds 250 feet. Terminate influent lines for aerated cells within the mixing zone of the aeration equipment.
 - (3) **Discharge apron.** To control erosion of the lagoon bottom, influent lines must discharge horizontally into shallow, saucer-shaped depressions and terminate on a concrete apron. The apron shall be at least 2 feet square or 2 feet in diameter. Provide additional energy dissipating devices where influent will enter the lagoon at a high velocity.
- (e) **Miscellaneous construction standards.** All pipes entering and exiting the seal shall be constructed with a seepage collar.
- (f) **Control structures and interconnecting piping.**
- (1) **Structure.** Provide structures to control water depth in cells, route water through the system, and measure flow at discharging facilities. Control structures in primary cells ~~must~~ shall be capable of controlling the operating depth between a minimum of 3 feet and the maximum design operating depth. For suspended solids control, the discharge structure should allow the withdrawal point to vary below the surface to obtain the best quality effluent. Valves, slide tubes, dual slide gates or removable interlocking boards are recommended, and they shall:
 - (A) ~~Be~~ be accessible for maintenance and adjustment of controls;
 - (B) ~~Control~~ control water level and flow rate, and complete shutoff;
 - (C) ~~Be~~ be constructed of non-corrosive materials; and
 - (D) ~~Be~~ be located to minimize short-circuiting within the cell.
 - (2) **Discharge piping.** Pipe meeting ASTM standards for sanitary sewers shall be adequately anchored but not interrupt the integrity of the seal.

- (A) **Hydraulic capacity.** The hydraulic capacity for continuous discharge structures and piping must allow for a minimum of 250% percent of the design flow of the system.
- (B) **Minimum pipe size.** All piping within the lagoon shall be at least 12 inches in diameter for facilities serving 100 PE or more and at least 8 inches for facilities serving less than 100 PE. Design influent pipe for rodding. Protect all piping between the lagoon cells from the entrance of turtles.

SUBCHAPTER 21. DISINFECTION STANDARDS

252:656-21-1. ~~Disinfection~~ General disinfection criteria

- (a) **Applicability.** The requirements in this section apply to all disinfection systems.
- ~~(a)~~ (b) **Design considerations.** The standards in this section apply to all disinfection systems.
~~Disinfection-~~ A disinfection system used to comply with the disinfection requirements:
 - (1) in an OPDES permit shall be ~~required~~ designed, constructed and operated to meet coliform bacteria limits in the Water Quality Standards and the OPDES permit.
 - (2) for reclaimed water system shall be designed, constructed and operated to meet the bacteria limits in the water reuse permit and Appendix A of OAC 252:627.Other disinfectants may be individually approved, such as chlorine dioxide, ozone or bromine.
- ~~(b)~~ (c) **Piping.** Show the piping is shall be:
 - (1) appropriate and compatible for the ~~disinfectant~~ type of disinfection to be used. Support and protect piping from temperature extremes. Steel is suitable for use with dry chlorine when the correct thickness or weight is specified. Low-pressure lines made of hard rubber, saran-lined, rubber-lined, polyethylene, polyvinyl chloride (PVC), or Uscolite materials are satisfactory for liquid chlorine. Unplasticized PVC, Type I, may be used in submerged piping if the gas pressure is low and the temperature is below 140 degrees Fahrenheit °F; and
 - (2) supported and protected from temperature extremes.
- ~~(c)~~ (d) **Alarms.** Provide alarms to warn of equipment failures and leaks.
- ~~(d)~~ (e) **Backups-Redundancy.** Provide- All disinfection systems shall have the following available:
 - (1) standby equipment to replace the largest unit based on peak hourly flow.;
 - (2) a separate backup power supply; and
 - (3) Provide spares for all parts that may break or wear.
- ~~(e)~~ **Chlorine mixing.**
 - ~~(1) **Mixing.** Mix the disinfectant as rapidly as possible, mixing completely in three seconds or less.~~
 - ~~(2) **Contact period.** For chlorination systems, provide a minimum contact period of 15 minutes at peak hourly wastewater flow or maximum pumping rate after mixing.~~
 - ~~(3) **Contact tank.** Construct chlorine contact tanks to minimize short-circuiting. "Over-and-under" or "end-around" baffling shall be provided to reduce short-circuiting. Design the tanks for easy maintenance and cleaning without reducing the effectiveness of disinfection. Provide duplicate tanks, mechanical scrapers or portable deck-level vacuum cleaning equipment. Provide skimming devices on all contact tanks, and provide for draining the tanks.~~
- ~~(f)~~ **Gas chlorine equipment rooms.**
 - ~~(1) **Separation.** If the building is used for other purposes, provide a gas-tight room to separate gas chlorination equipment, chlorine cylinders and ozone generation equipment from other parts of the building. Do not connect floor drains from the chlorine room to floor drains from other rooms. Doors to this room must open only to the outside of the building, with panic hardware, at ground level and allow easy access to all equipment. For one (1) ton chlorine cylinders separate the storage area from the feed area. Locate chlorination equipment as close to the application point as is reasonably possible. Certify the installation will meet OSHA standards, and that the doors and emergency equipment are compatible with chlorine.~~
 - ~~(2) **Inspection window.** Install a shatter resistant, clear glass, gas-tight window in an~~

exterior door or interior wall of the chlorinator room so the units can be viewed without entering the room.

- ~~—(3) **Heating.** Heat disinfection equipment rooms to maintain at least 60 degrees Fahrenheit. Protect from excess heat, and maintain cylinders at essentially room temperature.~~
- ~~—(4) **Ventilation.** Provide mechanical ventilation capable of one air change per minute for chlorine. The entrance to the room exhaust duct shall be near the floor, and the point of discharge shall not contaminate inhabited areas or the air inlet to any buildings. Locate fresh air inlets to provide cross ventilation with air and at a temperature that will not adversely affect the chlorination equipment. Discharge the chlorinator vent hose above-grade to the outside atmosphere.~~
- ~~—(5) **Electrical controls.** Locate fan and light switches outside, at the room entrance. A labeled signal light indicating fan operation shall be provided at each entrance if the fan can be controlled from more than one point.~~

252:656-21-2. Chlorine disinfection systems

(a) **Equipment capacity.** The following requirements are for the chlorination of domestic sewage non-industrial wastewater. The equipment ~~must~~ shall be capable of supplying the following dosage as applicable:

- (1) Trickling filter plant effluent - 10 mg/l;
- (2) Activated sludge plant effluent - 8 mg/l;
- (3) Tertiary filtration effluent - 6 mg/l;
- (4) Nitrified effluent - 6 mg/l; and
- (5) Category 2 water reuse chlorination systems - 12 mg/l or a dose sufficient to achieve high level disinfection for water reuse requirements.

(b) Chlorine mixing.

(1) **Mixing.** The disinfectant shall be mixed as rapidly as possible to ensure complete mixing.

(2) **Contact period.** Provide the following contact periods:

(A) For OPDES permit compliance or Categories 3 and 4 water reuse chlorination systems, provide a minimum contact period of 15 minutes at peak hourly wastewater flow or maximum pumping rate after mixing.

(B) For Category 2 water reuse chlorination systems, alone or in combination with UV, provide sufficient free chlorine residual concentration at the end of the contact tank and modal contact time sized using the anticipated design flow after mixing at a design temperature of 5 °C (41 °F) and a pH of 8.0 to meet the micro-organism log removal requirements in 252:656-27-3(a)(6).

(3) **Contact tank.** Construct chlorine contact tanks to minimize short-circuiting. "Over-and-under" or "end-around" baffling shall be provided to reduce short-circuiting. Design the tanks for easy maintenance and cleaning without reducing the effectiveness of disinfection. Provide duplicate tanks, mechanical scrapers or portable deck-level vacuum cleaning equipment. Provide skimming devices on all contact tanks, and provide for draining the tanks.

(c) Gas chlorine equipment rooms.

(1) **Separation.** If the building that houses the gas chlorine equipment is used for other purposes, a gas-tight room shall be provided to separate the gas chlorination equipment and chlorine cylinders from other parts of the building. Do not connect floor drains from the chlorine room to floor drains from other rooms. Doors to this room shall open only to the outside of the building, with panic hardware, at ground level and allow easy access to all equipment. For one-ton chlorine cylinders, separate the storage area from the feed area. Locate chlorination equipment as close to the application point as is reasonably possible. Certify the installation will meet OSHA standards, and that the doors and emergency equipment are compatible with chlorine.

(2) **Inspection window.** Install a shatter resistant, clear glass, gas-tight window in an exterior door or interior wall of the chlorinator room so the units can be viewed without

entering the room.

(3) Heating. Heat disinfection equipment rooms to maintain at least 60 °F. Protect the gas chlorine cylinders from excess heat, and maintain the cylinders at essentially room temperature.

(4) Ventilation. Provide mechanical ventilation capable of one air change per minute for chlorine. The entrance to the room exhaust duct shall be near the floor. The point of discharge shall not contaminate inhabited areas or the air inlet to any buildings. Locate fresh air inlets to provide cross ventilation with air and at a temperature that will not adversely affect the chlorination equipment. Discharge the chlorinator vent hose above-grade to the outside atmosphere.

(5) Electrical controls. Locate fan and light switches outside the room near the entrance. A labeled signal light indicating fan operation shall be provided at each entrance when the fan can be controlled from more than one point.

~~(b)~~(d) Water supply. Provide an ample supply of water to operate the chlorinator; and protect it according to ~~ΘAC~~252:656-9-2(b). Back up any booster pumps; according to the power requirements of ~~ΘAC~~252:656-9-2(a).

~~(c)~~(e) Scales. Provide corrosion-resistant scales to weigh chlorine gas cylinders. Provide at least a platform scale. Provide a recording device for the weight of the chlorine gas cylinders for installation where one-ton cylinders or larger are used.

~~(d)~~(f) Containers. One-ton containers or larger are required if more than 150 pounds of chlorine per day is needed. Limit the withdrawal rate to 40 pounds per day per cylinder for cylinders up to 150 pounds, and to 400 pounds per day for one-ton cylinders.

~~(e)~~(g) Handling equipment. For cylinders up to 150 pounds, provide securing restraints and a hand-truck designed for the cylinders. For one-ton cylinders, provide:

- (1) ~~Hoist~~ a hoist with 4,000-pound lb. capacity;
- (2) ~~Cylinder~~ a cylinder lifting bar;
- (3) ~~Monorail~~ a monorail or hoist with sufficient lifting height to pass one cylinder over another; and
- (4) ~~Cylinder~~ a cylinder ~~trunnions~~ trunnion(s) to allow exchanging the cylinders for proper connection.

~~(f)~~(h) Manifolds. Gaseous chlorine cylinders may be connected to a manifold, if only when all cylinders are maintained at the same temperature or the system is designed for gas transfer from a warm container to a cooler one. Do not connect liquid chlorine cylinders to a manifold.

~~(g)~~(i) Leak detection and controls. Provide an emergency response plan for chlorine leaks. Provide a bottle of 56% ammonium hydroxide solution for detecting chlorine leaks. Where one-ton containers are used, provide a leak repair kit approved by the Chlorine Institute, include caustic soda solution reaction tanks to absorb leaks. Provide automatic gas detection and related alarm equipment. Air Pollution Control regulations may also require air scrubbing equipment.

~~(h)~~(j) Evaporators. Demonstrate the required volume of chlorine can be supplied.

~~(i)~~(k) Respiratory protection. Where chlorine gas is handled, provide respiratory air-pac protection equipment that meets the National Institute for Occupational Safety and Health (NIOSH) standards. Store the equipment and operating instructions at a convenient location outside the room where chlorine is used or stored. The units must use compressed air, with at least a 30-minute capacity, and be compatible with units used by the local fire department. In the emergency response plan, describe how to maintain the equipment.

~~(j)~~(l) Sodium hypochlorite. Follow equipment standards in ~~252:656-11-4(g)~~ OAC 252:626-11-4(g).

~~(k)~~(m) Dechlorination. ~~All~~ When dechlorination is required by DEQ, the chlorinated effluent must be dechlorinated and discharges must be have less than 0.1 mg/l total residual chlorine.

- (1) **Equipment.** Do not chlorinate and dechlorinate with the same units. Handle aqueous solutions of sulphite or bisulfite with positive displacement pumps. Sulfur dioxide (SO₂) feed equipment must account for the property of the gas to easily liquefy. With one-ton containers, take special precautions to prevent chemicals from liquefying. Provide multiple

units to meet the operating requirements between the minimum and maximum wastewater flow rates and to avoid depleting dissolved oxygen in receiving waters.

(2) **Mixing.** Mechanical mixers are required unless the design will provide hydraulic turbulence to assure thorough and complete mixing.

(3) **Sulfonator water supply.** Provide an ample supply of water to operate the sulfonator, and protect it according to ~~ΘAC-252:656-9-2(b)~~. Back up ~~any~~ booster pumps; according to the power requirements of ~~ΘAC-252:656-9-2(a)~~.

(4) **Housing.** Storage and feed equipment for SO₂ shall be in a separate room from chlorine gas storage and feed equipment. The same storage requirements apply to SO₂ as for chlorine gas in (c) of this Section. Mixing, storage, and feed equipment areas must be designed to contain spillage or leakage or to route it to an appropriate containment unit.

(5) **Respiratory protection.** Same as for chlorine gas in (k) of this Section.

252:656-21-3. Ultraviolet radiation disinfection systems (UV systems)

(a) ~~**Application Use of UV for disinfection**~~. ~~The effluent to be disinfected shall not exceed 15 mg/l TSS. This process shall be limited to a~~ Ultraviolet radiation disinfection systems ("UV systems") shall only be used to disinfect high quality effluent having:

- (1) at least 65% ultraviolet radiation transmittance at 254 nanometers wave length; and
- (2) BOD and suspended solids concentrations no greater than 30 mg/l at any time. System sizing for an activated sludge effluent with the preceding characteristics at the design peak hourly flow, a UV radiation dosage not less than 30,000 $\mu\text{W}\cdot\text{sec}/\text{cm}^2$ shall be used after adjustments for maximum tube fouling, lamp output reduction after 8,760 hours of operation, and other energy absorption losses.

~~(b) **Equipment design.** Follow recommendations of equipment manufacturers for specific construction, cleaning and design requirements.~~

~~(b) **Sizing and UV dosage.** The following are the sizing and dosage requirements for UV systems:~~

(1) A wastewater treatment system utilizing a UV system to comply with disinfection requirements in an OPDES permit and/or to disinfect Category 3 reclaimed water shall be:

(A) sized using the:

- (i) design peak hourly flow for OPDES permits; or
- (ii) sized using the anticipated design flow for Category 3 reclaimed water; and

(B) designed to deliver a UV dosage of no less than 30 mJ/cm^2 (30,000 $\mu\text{W}\cdot\text{sec}/\text{cm}^2$) after adjustments for maximum tube fouling, lamp output reduction after 8,760 hours of operation, and other energy absorption losses.

(2) A wastewater treatment system utilizing a UV system to disinfect Category 2 reclaimed water shall be:

(A) sized using the anticipated design flow; and

(B) designed to deliver a UV dosage of no less than 210 mJ/cm^2 (210,000 $\mu\text{W}\cdot\text{sec}/\text{cm}^2$) after adjustments for maximum tube fouling, lamp output reduction after 8,760 hours of operation, and other energy absorption losses. This dosage is to be delivered assuming a UV transmittance of 55%.

(3) A wastewater treatment system utilizing both chlorination and UV disinfection to obtain required log removal for Category 2 reclaimed water shall be:

(A) sized using the anticipated design flow; and

(B) designed to deliver a UV dosage of no less than 40 mJ/cm^2 (40,000 $\mu\text{W}\cdot\text{sec}/\text{cm}^2$) after adjustments for maximum tube fouling, lamp output reduction after 8,760 hours of operation, and other energy absorption losses. This dosage is to be delivered assuming a UV transmittance of 65%.

~~(c) **Control system.** Provide the UV system with controls capable of switching banks of lamps on or off to achieve the necessary dose proportional to flow. A slave lamp operating to check wastewater effluent absorbance is required. Include appropriate alarms, power meters, on/off indicators, elapsed time monitors, lamp output monitors, intensity indicators, and lamp and ballast panel temperature indicators. Provide for measuring the wastewater flow through each~~

~~unit for adequate disinfection. All UV systems shall have:~~

- ~~(1) controls capable of maintaining the UV dosage proportional to the wastewater flow through the system,~~
- ~~(2) the capacity to determine the actual wastewater flow going through the UV system,~~
- ~~(3) the capability to measure UV transmittance manually or automatically, and~~
- ~~(4) indicators for:~~
 - ~~(A) UV intensity,~~
 - ~~(B) lamp and ballast panel temperatures,~~
 - ~~(C) power (on/off),~~
 - ~~(D) lamp output,~~
 - ~~(E) elapsed time of lamp usage,~~
 - ~~(F) all alarms, and~~
 - ~~(G) metering power.~~

~~(d) **Maintenance.** Equip reactors with a drain and the ability to isolate modules. Provide a backup reactor so that efficiency will not be impaired during either routine or emergency maintenance. Lamps and ballasts must be accessible. UV systems shall:~~

- ~~(1) Equip reactors be equipped with a drain; and~~
- ~~(2) be designed so that the ability to isolate modules equipment can be isolated for maintenance. Provide a backup reactor so that efficiency will not be impaired during either routine or emergency maintenance. Lamps and ballasts must be accessible.~~

~~(e) **Safety equipment.** Provide safety equipment for protection from UV radiation, such as proper goggles and clothing. Proper safety equipment (i.e., goggles, clothing, etc.) shall be provided to protect persons from UV radiation.~~

~~(f) **Reliability.** The performance of a UV reactor is dependent upon its power supply and functioning lamps; therefore a separate backup power supply must be provided. Provide a backup reactor so that efficiency will not be impaired during either routine or emergency maintenance. Lamps and ballasts must be accessible.~~

~~(f) **Lamps and ballasts.** The UV system shall be constructed so that its lamps and ballasts are accessible.~~

~~(g) **Availability of spare parts.** The minimum number of spare parts necessary to ensure continuous disinfection during maintenance and repair shall be available at the facility. The spare parts required shall include lamps, ballasts, quartz sleeves, sleeve wiper rings, cleaning chemicals, and any other items required by the manufacturer, owner, and engineer.~~

~~(h) **Monitoring and alarms.** The design engineer shall be responsible for specifying what the monitoring and alarm requirements need to be in order to assure continuous disinfection in compliance with the limits in the permit.~~

~~(i) **Cleaning and maintenance.** UV systems shall be routinely and properly maintained to assure disinfection requirements are continuously met.~~

~~(j) **Additional requirements when using UV disinfection for reclaimed water.** For systems supplying Category 2 reclaimed water, filtration is required as part of the disinfection process. The particle removal system must meet the redundancy requirements in 252:656-21-1(e) and be designed to handle the anticipated design flow.~~

~~(1) The hydraulic capacity of the inactivation step must be sized to convey the anticipated design flow.~~

~~(2) An independent, third party bioassay based on MS-2 phage shall be used to verify the design UV requirements. Only bioassay methods described in this Section will be approved by DEQ. The UV system shall deliver the target dosage based on the equipment's derating factors described below. Before design approval, the bioassay reports for the specific equipment being considered must be approved and on file with the DEQ, with specific sections marked confidential, if applicable. If needed, the UV equipment manufacturer shall verify that the scale up or scale down factor utilized in the design is appropriate for the specific application under consideration. Without exception, the basis for verifying the design delivered UV dose meets the requirements of this Section shall be an independent third party bioassay, signed and sealed by a professional engineer licensed by the State of Oklahoma.~~

- (A) The bioassay procedure must conform to an applicable protocol in the:
- (i) National Water Research Institute's Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse (August 2012);
 - (ii) NSF International, The Public Health and Safety Company, 40 CFR 35.6450 Environmental Technology Verification Protocol (October 2002);
 - (iii) USEPA Design Manual: Municipal Wastewater Disinfection, EPA/625/1-86/021 (1986); or
 - (iv) USEPA Ultraviolet Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule, 815-R-06-007 (November 2006).
- (B) The design equations provided by the validation report must be developed in accordance with a standardized bioassay protocol approved by DEQ.

SUBCHAPTER 23. SUPPLEMENTAL TREATMENT STANDARDS

252:656-23-1. High-rate effluent Effluent filtration

~~(a) **General.** Filtering lagoon effluent is not recommended. Granular media filters may be used for tertiary treatment to remove suspended solids from secondary effluents. Provide flow equalization facilities to maintain a constant filtration rate.~~

~~(a) **Design flow rate.** A wastewater treatment system:~~

- ~~(1) required to have filtration to maintain OPDES permit compliance shall be sized using the design peak hourly flow; and~~
- ~~(2) that produces Category 2 reclaimed water shall be sized using the anticipated design flow.~~

~~(b) **Conditions requiring pretreatment.** ~~Precede filter units~~ Filtration systems shall be preceded with a ~~pre-treatment~~ pretreatment process, such as chemical coagulation and sedimentation or other acceptable process, ~~where~~ when:~~

- ~~(1) permit requirements for suspended solids are less than 10 mg/l,~~
- ~~(2) effluent quality can be expected to fluctuate significantly, ~~or~~~~
- ~~(3) significant amounts of algae will be present,~~
- ~~(4) a lagoon is used for polishing effluent, which requires pilot testing for which the protocol has been pre-approved by DEQ, or~~
- ~~(5) the systems supplies Category 2 reclaimed water for reuse.~~

~~(c) **Reliability.** Filtration systems shall be designed and constructed with:~~

- ~~(1) convenient access to all components and the media surface for inspection and maintenance without taking other units out of service; and~~
- ~~(2) enclosed controls and equipment with heating and ventilation equipment to control humidity.~~

~~(d) **Redundancy.** Filtration systems shall have at least 2 units with the capacity to handle the maximum wastewater flow with the largest unit out of service.~~

~~(e) **Backwash.** Filtration systems shall have the capacity to backwash all filters.~~

- ~~(1) The backwash filter unit pumps shall be designed to backwash any filter with the largest pump out of service.~~
- ~~(2) Filtration systems shall be backwashed with filtered water.~~
- ~~(3) Backwash wastewater shall be returned to the headworks.~~
- ~~(4) The return rate of backwash water from filtration systems to treatment units shall not exceed 15% of the wastewater design daily average flow rate to the treatment units.~~
- ~~(5) The hydraulic and organic load from the backwash water shall be taken into account in the overall design of the treatment plant.~~
- ~~(6) Surge tanks, if necessary, must hold at least 2 backwash volumes.~~
- ~~(7) Where backwash water is pump-returned for treatment, the required pumping capacity shall be maintained with the largest unit out of service.~~

~~(f) **Back-up power.** Filtration systems shall have a back-up power source that meets the requirements of 252:656-9-1.~~

~~(g) **Drain line.** Each filter unit shall be equipped with a drain line at least 6 inches in diameter capable of draining the basin to the headworks.~~

(h) **Flocculation.** Flocculation shall be used prior to filtration when supplying Category 2 reclaimed water for reuse. Flocculation shall:

- (1) include chemical feed equipment to meet the reclaimed water system's anticipated design flow and the ability to proportion chemical feed rates;
- (2) ensure the rapid dispersion and mixing of chemicals throughout the wastewater by providing mechanical or in-line static mixers; and
- (3) include a minimum of 2 flocculation basins. Each basin shall be equipped with a:
 - (A) method to control the speed of the paddles; and
 - (B) drain line at least 6 inches in diameter capable of draining it to the head of the plant.

(b)(i) **Granular media filtration.** The following are the requirements when using granular media filtration:

(1) **Filter types-Gravity filter use.** Filters may be either gravity or pressure. Provide pressure filters with convenient access to the media for treatment or cleaning. Use gravity filters where greases or similar solids are expected to be present in the wastewater.

~~(e)(2) **Filtration rates.** Filtration rates shall not exceed 5 gpm/ft² at the maximum hydraulic design. Provide at least two units, with the capacity to handle the maximum wastewater flow peak hourly flow with the largest unit out of service.~~

~~(d) **Backwash.**~~

~~(+)(3) **Backwash rate.** The backwash rate shall be adequate to fluidize and expand each media layer a minimum of 20%. The backwash system shall provide a variable backwash rate of at least 20 gpm/ft² for 10 minutes.~~

~~(2) **Backwash.** Design the backwash filter unit pumps to backwash any filter with the largest pump out of service. Backwash with filtered water and return the wastewater to the headworks.~~

~~(e)(4) **Filter media.**~~

~~(+)(A) **Selection.** Media size will depend on the filtration rate, treatment prior to filtration, filter configuration, and effluent quality requirements.~~

~~(2)(B) **Specifications.** Minimum media depths and media sizes [shown in brackets], with a uniformity coefficient of 1.7 or less, are:~~

~~(A)(i) **Anthracite**~~

~~(+)(I) Single-medium - none~~

~~(+)(II) Dual-media - 20 in. inches [1.0-2.0 mm]~~

~~(+)(III) Multi-media - 20 in. inches [1.0-2.0 mm]~~

~~(B)(ii) **Sand**~~

~~(+)(I) Single-medium - 48 in. inches [1.0-4.0 mm]~~

~~(+)(II) Dual-media - 12 in. inches [0.5-1.0 mm]~~

~~(+)(III) Multi-media - 10 in. inches [0.6-0.8 mm]~~

~~(C)(iii) **Garnet or similar**~~

~~(+)(I) Single-medium - none~~

~~(+)(II) Dual-media - none~~

~~(+)(III) Multi-media - 2 in. inches [0.3-0.6 mm]~~

~~(f)(5) **Filter appurtenances.** Equip filters. Filters shall be equipped with:~~

~~(+)(A) washwater troughs,~~

~~(2)(B) surface wash or air scouring equipment,~~

~~(3)(C) effluent rate of flow control for effluent rate,~~

~~(4)(D) measurement and positive control of backwash rate,~~

~~(5)(E) capability to measure filter head loss,~~

~~(6)(F) positive means to shut off flow to filter during backwash and,~~

~~(7)(G) filter influent and effluent sampling points;~~

~~(H) Provide a manual override for automatic controls and each individual valve essential to the filter operation;~~

~~(I) Design the an underdrain system to uniformly distribute backwash water (and air, if provided) without clogging from solids in the backwash water;~~

- (J) Provide for a method for periodic chlorination of the filter influent or backwash water to control slime growths; and
- (K) pressure filters with convenient access to the media for treatment or cleaning.
- (j) **Traveling bridge filters.** All of the requirements in (a) through (i) of this Section apply to traveling bridge filters with the following exceptions:
- (1) **Filtration rates.** With one cell out of service, the peak application rate to any unit shall not exceed twice the applicable design filtration rate below:
- (A) A single media filter must have a maximum design filtration rate of 3.0 gpm/ft² of media surface at the peak hourly flow.
- (B) A dual media filter must have a maximum design filtration rate of 4.0 gpm/ft² of media surface at the peak hourly flow.
- (2) **Backwash system.** The backwash system shall:
- (A) provide a minimum of 20 gpm/ft² of media being backwashed at a given time;
- (B) have a minimum duration of at least 20 seconds for each compartment;
- (C) expand the media a minimum of 20%;
- (D) provide a backwash rate, pressure and backwash water storage based on the manufacturer's recommendations; and
- (E) have the ability for manual override.
- (3) **Traveling bridge mechanism.** The traveling bridge mechanism shall:
- (A) provide support and access to the backwash pumps and equipment;
- (B) be constructed of corrosion resistant materials;
- (C) have provisions for consistent tracking of the bridge;
- (D) provide support of the power cords; and
- (E) initiate a backwash cycle automatically when a preset head loss through the filter media occurs.
- (4) **Floating material control.** A traveling filter system shall provide for automatic and regular removal of any floating material from the surface of a filter and return the floating material to the headworks.
- (k) **Disc filters.** All of the requirements in (a) through (h) of this Section apply to disc filters with the following exceptions:
- (1) Provide a minimum of 2 disc filter units capable of independent operation.
- (2) The size of the opening in the screen material must be a nominal 10 μm.
- (3) Base the design on:
- (A) an average hydraulic loading rate of 3.25 gpm/ft²; and
- (B) a peak day hydraulic loading rate of 6.0 gpm/ft².
- (4) Equip the filter drum motor with a variable speed drive capable of adjusting the motor speed based on the plant flow.
- (5) The backwash rate, pressure and backwash water storage on the disc filter shall be based on the manufacturer's recommendations.
- (6) The disc filter and backwash operation shall be managed according to manufacture's recommendation with the ability for manual override.
- (7) Each unit shall be equipped with a level sensor to initiate the backwash cycle. The design of each unit shall also include a high water level sensor with a telemetry system capable of alerting the responsible person(s) in charge in case of equipment failure.
- ~~(g) **Reliability.** Design each filter unit for convenient access to all components and the media surface for inspection and maintenance without taking other units out of service. The need for housing filter units will depend on expected climatic conditions at the treatment plant site. Enclose all controls and equipment with heating and ventilation equipment to control humidity.~~
- ~~(h) **Backwash surge control.** The return rate of backwash water to treatment units shall not exceed 15% of the wastewater design daily average flow rate to the treatment units. Consider the hydraulic and organic load from waste backwash water in the overall design of the treatment plant. Surge tanks must hold at least two backwash volumes, and consider more for operational flexibility. Where backwash water is pump-returned for treatment, required pumping capacity shall be maintained with the largest unit out of service.~~

252:656-23-2. Disc filters [REVOKED]

~~(a) **Back-up power.** Provide a back-up power source that meets the requirements of 252:656-9-2 (a).~~

~~(b) **Flocculation.**~~

- ~~— (1) Design chemical feed equipment to meet the plant peak demand with the largest unit out of service and the ability to proportion chemical feed rates based on the plant flow.~~
- ~~— (2) Ensure the rapid dispersion and mixing of chemicals throughout the wastewater by providing mechanical or in-line static mixers.~~
- ~~— (3) Provide a minimum of two flocculation basins. Equip each basin with variable speed drives to control the speed of the paddles.~~
- ~~— (4) Equip each basin with a drain line at least 6 inches in diameter capable of draining it to the head of the plant.~~

~~(c) **Filters.**~~

- ~~— (1) Provide a minimum of two disc filter units capable of independent operation.~~
- ~~— (2) The size of the opening in the screen material must be between 20-30 μm .~~
- ~~— (3) Base the design on a hydraulic loading rate of 0.80 $\text{ft}^3/\text{ft}^2\text{-min}$.~~
- ~~— (4) Equip the filter drum motor with a variable speed drive capable of adjusting the motor speed based on the plant flow.~~
- ~~— (5) Provide a minimum of two backwash pumps. Base the backwash rate, pressure, backwash water storage on the disc filter manufacturer recommendations.~~
- ~~— (6) The disc filter and backwash operation must be managed by an automated control system with the ability to manually override the automated settings.~~
- ~~— (7) Each unit shall be equipped with a level sensor to initiate the backwash cycle. The design of each unit shall also include a high water level sensor with a telemetry system capable of alerting the person(s) in responsible charge, in case of equipment failure.~~
- ~~— (8) Equip each filter unit with a drain line at least 6 inches in diameter capable of draining the basin to the head of the plant.~~
- ~~— (9) The specifications shall require the equipment manufacturer to provide the following:~~
 - ~~— (A) Monitor the installation of the disc filter equipment.~~
 - ~~— (B) Equipment start-up and training of the plant personnel.~~

SUBCHAPTER 25. WASTEWATER-LAND APPLICATION SYSTEMS OF RECLAIMED WATER

252:656-25-2. Slow rate land application system design

(a) **Treatment.** Primary treatment of wastewater shall be completed in the primary lagoon cell prior to being land applied. Wastewater from the primary lagoon cell shall not be land applied.

(b) **Loading rates.** Hydraulic loading, BOD, suspended solids, nitrogen, phosphorus and crop selection must all be considered in the process design of land applications systems. Typically loading rates of BOD and SS for municipal wastewater are far below the loading rates determined by other parameters and will not be a concern in system design.

(c) **Land area.** The total area required for a slow rate land application system includes the field area (application site), treatment and storage site (normally primary treatment lagoons and storage ponds), buffer zones and service roads.

(d) **Control.** The applicant shall show they have the right to control the use of the land application site. A long-term contract for a minimum of 20 years is required.

(e) **Buffer zone.** A buffer zone of at least 100 feet in width shall be provided between the land application site and adjacent property. Additional distance may be required where prevailing winds could cause aerosols to drift into residential areas. The buffer zone shall be a part of the permitted site. [See 252:656-27-2(b) (relating to separation distance requirements).]

(f) **Public contact.** Wastewater shall be disinfected in accordance with 252:656-21 if it is to be applied to public contact areas.

(g) **Storage.** Storage of wastewater is required for periods when available wastewater exceeds design hydraulic loading rate, and when the ground is saturated or frozen. A water balance

computation is used to estimate the storage requirement. Provide water balance computations of the estimated storage needs. There shall be at least 90 days of storage in addition to the detention time required for primary treatment. The monthly available wastewater for each month shall be determined by equation (25-5) in Appendix D.

(h) **Flow measurement.** Provide for the measurement of wastewater to be land-applied. Flow measurement shall be accomplished by flow meters, or the calibration of pumps and installation of run-time meters.

(i) **Restrictions.** There shall not be any berms or other barriers on a land application site that would cause the pooling or ponding of wastewater at the land application site. Additionally, there shall not be any berms or barriers that impede the natural flow of stormwater from the site. No land application site shall exceed the maximum slope requirements at OAC 252:627-3.

(j) **Signs.** Suppliers are responsible for ensuring that the required signs, which describe the nature of the facility and advise against trespassing, are posted on signs every 200 feet around the perimeter of the permitted land application site.

(k) **Fencing.** All Category 5 reclaimed water land application sites shall be fenced to prevent unauthorized entry.

SUBCHAPTER 27. ~~WASTEWATER WATER REUSE~~

252:656-27-4. Distribution systems

(a) **Piping Cautionary language required.** The following cautionary language is required for all new and existing reclaimed water piping, valves, outlets and appurtenances in distribution systems.

(1) All new reclaimed water piping, valves, outlets and appurtenances in distribution systems shall be:

(A) colored purple (Pantone 522); ~~and shall be~~

(B) embossed or integrally stamped with a warning that includes the following (e.g., "CAUTION: CATEGORY #3 RECLAIMED WATER-DO NOT DRINK.");

~~(1)~~ (i) the word "CAUTION;"

~~(2)~~ (ii) specifies the category number of the reclaimed water; and

~~(3)~~ (iii) the words "DO NOT DRINK;" and

(e.g.: "CAUTION: CATEGORY #3 RECLAIMED WATER-DO NOT DRINK.")

(C) For ~~all pipes, piping,~~ the warning shall be located on opposite sides of all pipes and repeated every ~~three~~ 3 feet (3') or less.

(2) All existing reclaimed water piping shall, at a minimum, have above-ground signs placed every 100 feet with the information contained in subparagraph (1).

(b) **Hose bibs.** Hose bibs shall be located in locked, below-grade vaults. Reclaimed water hose bibs, hydrants and/or similar outlets shall be equipped with warning signs that indicate the water is not safe for drinking.

(c) **Gravity pipes.** Reclaimed water gravity pipes shall be designed and constructed to meet the requirements of ~~OAC-252:656-5-2, OAC-252:656-5-3, OAC-252:656-5-4 and OAC-252:656-5-5.~~

(d) **Pumping stations and force mains.** Pumping stations and force mains shall be designed and constructed in accordance with ~~OAC-252:656-7-1 through 4,~~ with the following exceptions:

(1) Pump openings less than three inches (3") may be allowed when settled or filtered reclaimed water is pumped.

(2) Water reuse systems with the ability to divert all reclaimed water to the wastewater's permitted discharge point, without operator assistance, may be exempt from the requirement to equip the lift station with emergency wet well storage, backup power supply or duplicate pumps.

(e) **Reclaimed water flushing system.** Reclaimed water distribution systems shall be designed with all appurtenances necessary to adequately flush the distribution system to prevent slime growth and the regrowth of pathogens. Flushing plans shall be developed for all reclaimed water distribution systems and submitted for DEQ approval. Flushing plans shall also be included in reclaimed water systems' O&M manuals [see ~~OAC-252: 656-3-10~~] and in suppliers' DEQ

approved inspection programs [see ~~ΘAC~~252:627-1-5(f)]. All flushing systems shall include at a minimum:

- (1) provisions for disposal of flushed water that prevent bypasses and discharges to waters of the state or elsewhere; and
- (2) air gaps designed pursuant to ~~ΘAC~~252:656-9-2 for all discharges to sanitary sewers.