

15A NCAC 18C .0405 STORAGE OF FINISHED WATER

(a) Ground Level Storage:

- (1) **Finished Water Ground Storage Tank.** Finished water ground storage tanks shall be provided with a light-proof and insect-proof cover of concrete, steel, or equivalent material approved by the Department. The construction joints between side walls and the covers of concrete tanks or reservoirs shall be above ground level and above flood level, except that clearwells constructed below filters may be excepted from this requirement if total design, including waterproof joints, gives equal protection from flooding.
- (2) **Access Manholes.** The access manholes for finished water ground storage tanks or reservoirs shall be framed at least four inches above the tank or reservoir covers at the opening and shall be fitted with solid covers of materials that overlap the framed openings and extend down around the frames at least two inches. The covers for the openings shall be hinged at one side and fitted with a locking device.
- (3) **Venting.** Finished water ground storage tanks or reservoirs shall have vents with screened, downward directed openings. The vent and screen shall be of corrosion resistant material.
- (4) **Overflow.** The overflow pipes for finished water ground storage tanks or reservoirs shall not be connected directly to sewers or storm drains. Screens or other devices to prevent access by vermin, such as rodents and insects, shall be provided in the overflow pipe.
- (5) **Inlets and Outlets.** Water supply inlets and outlets of finished water ground storage tanks and reservoirs shall be located and designed to provide circulation of the water and to meet the CT requirements in Section .2000 of this Subchapter. Baffles shall be constructed where necessary to provide thorough circulation of the water.
- (6) **Drain Valves.** All finished water ground storage tanks and reservoirs shall be equipped with drain valves that allow for unobstructed emptying of the tank.

(b) Elevated Storage Tanks:

- (1) **Standards.** The specifications for elevated tanks, stand-pipes, towers, paints, coatings, and other appurtenances shall meet the appropriate ANSI/AWWA Standards D100 11, D102 17, and D103 09 of the American Water Works Association, Inc., incorporated by reference including any subsequent amendments and editions. Copies may be obtained for public inspection as set forth in Rule .0503 of this Subchapter.
- (2) **Elevation of Storage Tanks.** The elevation of storage tanks shall be sufficient to produce a designed minimum distribution system pressure of 20 pounds per square inch at peak demand (fire flow) and 30 pounds per square inch during peak flow.
- (3) **Elevated storage tanks** shall be designed to minimize water age by avoiding short-circuiting of flows and dead-zones.
- (4) **Drain.** Elevated storage tanks shall be equipped with drain valves that allow for unobstructed emptying of the tank.

(c) Hydropneumatic Storage Tanks, referred to in this Rule as Pressure Tanks:

- (1) **Use of Pressure Tanks.** Where well yields and pumping capacities are sufficient, pressure tanks may be used to control pumps, stabilize pressures, and provide a minimum of storage. Pressure tanks shall have the capacity to maintain a minimum pressure of 30 pounds per square inch throughout periods of peak flow. Pressure tanks shall not be considered acceptable for meeting total storage requirements for public water systems of over 300 connections, except as provided in Paragraph (d) of this Rule.
- (2) **Corrosion Control.** Pressure tanks shall be galvanized after fabrication and provided with an ANSI/NSF approved liner or coating in accordance with Rule .1537 of this Subchapter.
- (3) **Required Parts.** Pressure tanks shall have access manholes, bottom drains, pressure gauges, and properly sized safety and vacuum relief valves.
- (4) **Controls.** Automatic pressure and start-stop controls for the operation of pumps shall be provided.
- (5) **Hydropneumatic Storage Tanks.** Hydropneumatic storage tanks shall conform to the construction and inspection requirements for pressure vessels adopted by the North Carolina Department of Labor and codified in 13 NCAC 13, incorporated by reference including any subsequent amendments and editions.
- (6) **Appurtenances to pressure tanks,** such as valves, drains, gauges, sight tubes, safety devices, air-water volume controls, and chemical feed lines, shall be protected against freezing.

(d) High Yield Aquifers:

- (1) Equipment. In lieu of providing elevated storage for public water systems over 300 connections in areas where aquifers are known to produce high yields, such as 400-500 gpm from an eight-inch well, a system of extra well pumping capacity, auxiliary power generating equipment, pressure tanks, controls, alarms, and monitoring systems may be provided. The design and installation of such system shall assure that reliable, continuous service is provided.
- (2) Auxiliary Power. A system relying on high-yield aquifers under Paragraph (d) of this Rule shall have an adequate number of wells equipped with sufficient pumping capacity so that the required flow rate will be maintained if the single largest capacity well and pump are out of operation. Auxiliary power generating equipment shall be provided for each well sufficient to operate the pump, lights, controls, chemical feeders, alarms, and other electrical equipment.
- (3) Pump Control. Pressure tanks designed in accordance with Paragraph (c) of this Rule and Section .0800 of this Subchapter shall be provided to maintain pressure and control the pump operation.
- (4) Alarm System. An alarm system shall be provided that will send a visual or audible signal to a constantly monitored location so that the water system operator will be advised of a primary power failure.

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