Maryland Department of the Environment

FACTS ABOUT:

Nitrogen Discharge Limit for Large On-site System (7/16/2013)

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Recognizing the impact of groundwater discharge of treated wastewater on surface water quality and Chesapeake Bay, the following nitrogen effluent quality limitations are applicable to the large on-site sewage disposal systems with an average flow exceeding 5000 gallons per day (maximum flow exceeding 10,000 gallons per day). These limitations are intended to be used as guidance for system planning and design.

1. New proposed facilities within the Chesapeake Bay or Coastal Bay watersheds shall meet the yearly nitrogen loading limit based on an effluent nitrogen concentration of no greater than 8-mg/l *and the average design flow of the on-site disposal system. The permittee will be required to maintain that same yearly nitrogen load after any future expansion.

   *The 8mg/l total nitrogen (N) effluent limitation is based on the achievable water quality from the current best available technology (BAT). This limitation may be subjected to change to a lower limit as BAT improved. This limit may also be subjected to nutrient trading limitation in the future to eliminate nitrogen loads from new sources.

2. Existing facilities (with or without a discharge permit) within the Chesapeake Bay or Coastal Bay watersheds shall meet the yearly nitrogen loading limit based on an effluent nitrogen concentration of no greater than 20-mg/l and the average design flow of the on-site disposal system except for the existing permitted bermed infiltration pond (BIP) systems with a daily average flow of less than 5,000 gallons per day. No nitrogen effluent quality limitation will be required for existing permitted BIP systems with daily average flow of less than 5,000 gallons per day. For an existing facility permitted with lower than 20 mg/l effluent nitrogen limit, the yearly nitrogen load shall be determined based on the effluent nitrogen limit required in the existing permit instead of 20 mg/l. The permittee will be required to maintain that same yearly nitrogen load after any future expansion. The monthly average effluent nitrogen concentration shall meet 20 mg/l.

3. Existing un-permitted facilities within the Chesapeake Bay or Coastal Bay watersheds that propose to expand shall have the nitrogen effluent quality determined based on a weight ratio of the new flows (with N= 8 mg/l) and existing flows (with N=20 mg/l). The effluent quality shall meet the yearly nitrogen loading limit based on an effluent nitrogen concentration determined via the weight ratio above and the average design flow of the on-site disposal system. The permittee will be required to maintain that same yearly nitrogen load after any future expansion.

4. Existing (or with expansion) wastewater Facilities located in the well head protection area, the total nitrogen concentration not to exceed 10 mg/l (monthly average) effluent limitation will be required prior to the discharge to the onsite system. The annual nitrogen load will be determined based on 8 mg/l for new facilities and 20 mg/l for existing facilities.

5. For all facilities (existing or new), the discharge of wastewater shall not cause nitrogen in groundwater measured at monitoring well to exceed 10 mg/l at the property line. For an existing facility with a nitrogen discharge limitation of greater than 10 mg/l, a nitrogen balance calculation shall be performed to ensure that the nitrogen discharge to the disposal trenches can be diluted to meet 10mg/l at the property line.

6. The nitrogen loading cap to surface water will be determined for each permitted large onsite system and included in the discharge permit fact sheet. Depending on location of the disposal site, the following Bay Program's nitrogen delivery rate will be used to determine the nitrogen load to surface water: (1) An 80% delivery rate in critical area; (2) a 50% delivery rate within 1000 feet from any perennial surface water; and (3) a 30% delivery rate from distances greater than 1,000 feet from any perennial surface water.

   The effluent nitrogen concentration, permitted average flow and the applicable delivery ratio shown above are the parameters for determining the nitrogen load to surface water. The nitrogen removal efficiency in the four feet unsaturated treatment zone below the disposal trench is insignificant and will not be considered as a factor in the calculation.

   The nitrogen loading cap calculations shall be included in the Fact Sheet. The following statement shall be included in the permit.

   This nitrogen loading cap is not an assigned allocation for discharge to the surface waters of the local watershed via groundwater because the permit assumes other natural processes that reduce the amount of nitrogen reaching to the nearby surface waters from this system. The factsheet of this permit includes calculations for estimating the amount of nitrogen delivered to the nearby local surface water from this system.

7. For a newly proposed facility or expansion of an existing facility within the Chesapeake Bay or Coastal Bay watersheds, a complete offset of the nitrogen load delivered to surface water is required. For an expansion of an existing facility, a complete offset of the nitrogen associated with that expansion which exceeds the permitted nitrogen loading cap is required. Depending on location of the on site system, the following Bay Program's nitrogen delivery rate will be used for determining the nitrogen load from groundwater to surface water: (1) An 80% delivery rate in critical area; (2) a 50% delivery rate within 1000 feet from any perennial surface water; and (3) a 30% delivery rate from distances greater than 1,000 feet from any perennial surface water..