

ITEM: 18

SUBJECT: Effluent Limitations for Nitrogen for Wastewater Treatment Facilities

BOARD ACTION: *Informational Item Only*

BACKGROUND: In wastewater, total nitrogen may be found in four forms: organic nitrogen, ammonia nitrogen, nitrite nitrogen, and nitrate nitrogen. Domestic wastewater treatment facilities (WWTF) can provide treatment through nitrification and denitrification of wastewater. Nitrification is the biological oxidation of ammonia nitrogen to nitrite nitrogen followed by the oxidation of nitrite nitrogen to nitrate nitrogen. Denitrification is the reduction of nitrate nitrogen to nitrogen gas that is released to the atmosphere and thus removed from wastewater.

When wastewater is beneficially used for landscape or crop irrigation, the nitrogen present can be a source of nutrients for crops. Excess nitrogen, especially in the nitrate form, can percolate to groundwater and pollute it, causing potential human health concerns to those who drink nitrate-polluted water.

Some recent Waste Discharge Requirements (WDRs) include effluent limitations for total nitrogen where treatment is needed to protect groundwater resources. Effluent limitations are included to ensure proper operation of the WWTF for the oxidation/reduction of total nitrogen. Setting an effluent limit for total nitrogen ensures that the contribution of nitrogen from the WWTF discharge will not contribute to nitrate nitrogen concentrations in groundwater in excess of the primary maximum contaminant level (MCL).

ISSUES: There is no water quality objective for total nitrogen, but there is a MCL for nitrate nitrogen of 10 milligrams per liter (mg/L). For this reason, some have commented that an effluent limitation for total nitrogen of 10 mg/L is inappropriate and not consistent with any adopted water quality objective or known criteria and should not be included in the WDRs.

RECOMMENDATION: This is an informational item for Board discussion and provides the opportunity for Board members to have input to staff on this issue.

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