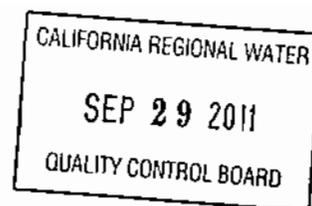


Water Resources Management
23829 NE Greens Crossing Road
Redmond, WA 98053



September 27, 2011

Regional Water Quality Control Board, San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

SUBJECT: Tentative Order Amending Municipal Regional Storm Water NPDES Permit

Dear Regional Board Members,

The proposed tentative order amending Municipal Regional Storm Water NPDES Permit (MRP) is an important step towards ensuring the long-term performance and effectiveness of biotreatment systems that rely on infiltration of storm water runoff; however, there are issues that must be addressed that were discussed in greater detail in my January 27, 2011 letter including:

- "Life of Facility" vs. "Life of Regulated Project"
- Release of Nutrients From Biotreatment Systems
- Upper Limit on Rate of Infiltration

"Life of Facility" vs. "Life of Regulated Project"

BASMAA's proposal incorporated in the Tentative Order leaves a very significant ambiguity between the terms "***Life of the Facility***" – the biotreatment system and "***Life of the Regulated Project***" – the development project that must be clarified. Various studies and monitoring of biotreatment systems have found that the longevity and effectiveness of engineered soil is decreased by clogging, reduced cation exchange capacity (CEC) with failure as early as the initial year of operation with very high rate failure rates within 5-7 years. Plugging of the infiltration surface and loss of percolation capacity by fine and coarse sediments, reduced CEC resulting in the breakthrough of heavy metals, accumulation of toxic and hazardous pollutants on the infiltration surface will require replacement and rehabilitation of the biotreatment facility multiple times during the "***Life of the Regulated Project***" which in most cases will be in excess of 50-years. This will require the rehabilitation and/or replacement of the facility's biotreatment media or construction of new or additional treatment facilities during the "***Life of the Regulated Project***".

The Operation and Maintenance inspection program requirements of Provision C.3.h. ii. (5) of the MRP provides a good framework for addressing the above concerns. An inspection program is meaningless without criteria, procedures and testing methods and protocols for determining when the infiltration surface has lost its percolation capacity, when CEC has been reduced and the facility is no longer effectively removing heavy metals and other pollutants to the MEP or when toxic and hazardous pollutants have accumulated to levels hazardous to the humans and wildlife. These criteria, procedures and testing methods and protocols must be developed and included in the amendments to the MRP.

Release of Nutrients From Biotreatment Systems

Multiple studies have documented the release of nutrients from biotreatment systems that must be of concern in the San Francisco Bay Area because of building evidence that the historic resilience of the Bay to the harmful effects of nutrient enrichment is weakening. I understand that the Regional Board staff in collaboration with Bay Area stakeholders through the San Francisco Estuary Institute is now developing a San Francisco Bay Nutrient Science Strategy. It is extremely poor public policy to be promoting the use of biotreatment media that would release nutrients at a time when there is a growing threat to San Francisco Bay of harmful effects of nutrient enrichment.

The Regional Board is strongly encouraged to implement the recommendations in my January 27, 2011 letter regarding design standards for biotreatment systems and require MRP permittees investigate and report on the use of alternative filtration media that would not increase the discharge of nutrients in storm water runoff.

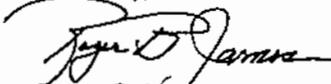
Upper Limit on Rate of Infiltration

The MRP in Provision C.3.c.i.(2)(b)(vi) requires that the soil media specifications and soil testing methods verify a *long-term* infiltration rate of 5-10 inches per hour. It is not clear from the MRP, MRP Fact Sheet or record whether the 10-inches per hour infiltration rate is intended to establish an upper limit for infiltration. The MRP needs to be clarified and an upper limit must be established that addresses excessive high rates of infiltration where there is insufficient filtration and retention of pollutants attached to particles, time for adsorption of pollutants through cation exchange or hydro modification requirements are not achieved.

The General Requirements for Soil Specifications in Attachment L to the tentative order should specify that "The maximum in-place infiltration rate for biotreatment or bioretention facilities constructed with under drains shall be no greater than 10-inches per hour."

Thank you for the opportunity to comment on proposed amendments to the MRP.

Sincerely,



Roger B. James
Senior Consultant