



April 1, 2009

MRP Tentative Order Comments
Attn: Mr. Dale Bowyer
Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Re: Municipal Regional Stormwater Permit Tentative Order Comments – NPDES
Permit No. CAS612008 R2-2009-XXXX February 11, 2009

Dear Mr. Bowyer,

Thank you for the opportunity to review and submit comments on the Revised Tentative Order for the Municipal Regional Stormwater NPDES Permit. We realize that this is an extreme undertaking and support efforts to reduce the amount of pollutants that enter our waterways. Filterra is an industry leader and pioneer in the advancement of bioretention as a method to reduce pollutants associated with stormwater runoff. Filterra was developed by Larry Coffman, former Prince George's County, MD, Stormwater Manager and the very person who coined the term Low Impact Development and as a result we feel an obligation to express our opinion.

It is apparent from the prescriptive wording in the revised Tentative Order that the Regional Board prefers landscape based stormwater BMPs. Landscape based treatment has often been shown to be a very effective form of stormwater treatment and why Filterra was developed as a landscape based design.

States such as Washington, Maryland, New Jersey and Virginia and cities such as Portland, OR have had effective programs in place for many years that evaluate the effectiveness of stormwater BMPs, both proprietary and non-proprietary. The Washington State Department of Ecology Program (**Guidance for Evaluating Emerging Stormwater Treatment Technologies, Technology Assessment Protocol - Ecology (TAPE)**) is an example of a program that has created an environment that joined both regulators and manufacturers into a concerted effort to advance stormwater treatment technology. As a result of this and similar programs comprehensive testing has been performed on installed and functioning non-proprietary and proprietary designs and devices. Caltrans also has a similar testing protocol for BMP's which tests for over 20 plus constituents.



We are however concerned that the current draft MRP is solely a design based plan and lacks performance based standards that establish water quality pollutant limits; discharge effluent standards or treatment goals.

Depending on site soils and geography, available landscape space, targeted pollutants and other variables, Filtterra may be the best choice to achieve pollutant removal and hydromodification goals. Filtterra can help to avoid poor natural soils, improper blending of existing soils, improper construction and lack of testing of some swales, bioretention cells and other designs and or devices. Filtterra has developed natural landscape based designs that use bioretention to effectively remove pollutants and have the ability to infiltrate, where applicable, to help meet the hydromodification requirements of the project (see attached figures). This process allows for consistency in installation, maintenance, cost, and pollutant removal rates which in turn makes the job of the regulator easier, thus reducing the overall cost of inspection and monitoring of the various phases of construction and operation of BMPs.

Filtterra has undergone TARP testing, is in process with CALTRANS testing and is near completion with TAPE protocol monitoring. – see attached list for further monitoring details.

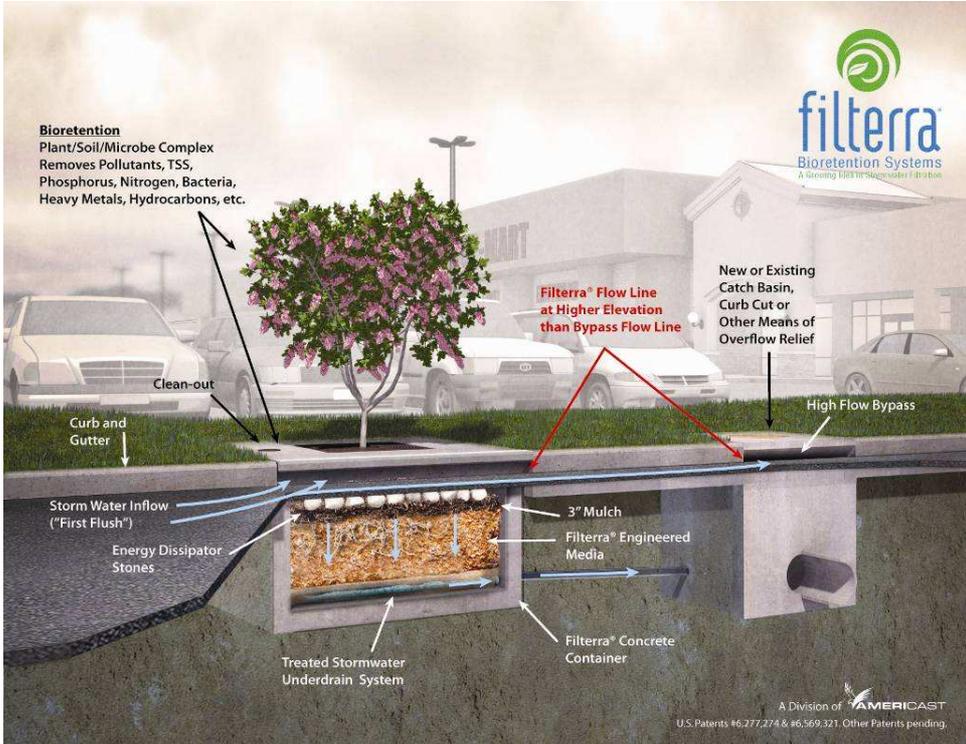
It is our opinion that cities and counties in the SF region should not be limited to specific designs to achieve pollutant removal and hydromodification goals, when performance tested landscape based BMPs such as Filtterra could be the best choice for many retro-fit, redevelopment, infill and new construction applications.

We appreciate this opportunity to comment on the tentative order. Please contact me with any questions regarding this comment letter.

Sincerely,

Chris Demarest
Filtterra[®] Bioretention Systems

Attachments:
Filtterra LID site Designs and Applications
Accredited Stormwater Test Protocol Summaries



Filterra Reuse Application





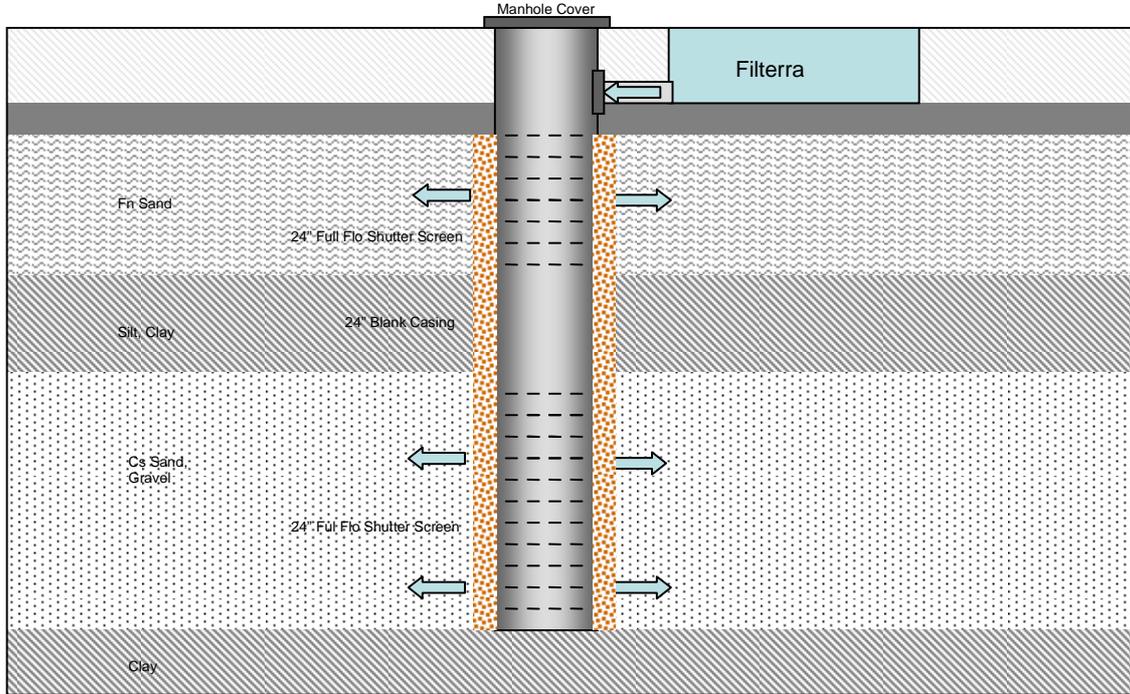
Filterra Infiltration Application



Filterra Storage/Infiltration Application



Filterra Dry Well Application





Filtterra® Third Party Verified Monitoring Site Studies

Protocol: Technical Acceptance Reciprocity Partnership (TARP)

Study: Field Evaluation of the Filtterra Stormwater Bioretention Filtration System

Location: Northern Virginia

Third Party Verifier: University of Virginia

Status: Completed May 2006

Purpose:

The purpose of the TARP Protocol is to provide a uniform method for demonstrating stormwater technologies and developing test quality assurance (QA) plans for certification or verification of performance claims. The advantages of using the Demonstration Protocol are numerous. Technology proponents will reduce duplicative or overlapping demonstration and performance testing of technologies; maximize research and development dollars; certify or verify the technology in accordance with performance claims and state regulatory standards; demonstrate effectiveness, cost, and marketability; and achieve maximum market penetration.

Since current NPDES Phase I and II regulations require industrial and municipal permittees to provide stormwater discharge control through use of BMPs, specific BMP usage is not subject to regulation. Stormwater BMPs with demonstrated capability, i.e., BMPs with reliable removal rates based on field testing, are more likely to be used in NPDES required Stormwater Pollution Prevention Plans (SWPPP) to control stormwater discharges. Obtaining certification or verification of a stormwater BMP technology from participating states can assist the technology in gaining regulatory acceptance in this application.

The main focus of the states' technology verification and certification programs is the independent validation of data supporting specific technology performance claims. Although the emphasis of the Protocol is to provide guidance on the requirements for obtaining performance data through use of Test QA Plans, proponents with existing data can check their data to determine if the requirements of a Test QA Plan can be fulfilled.

Storm Criteria:

- More than 0.1 inch of total rainfall.



- A minimum inter-event period of 6 hours, where cessation of flow from the system begins the inter-event period.
- Obtain flow-weighted composite samples covering a minimum of 70 % of the total storm flow, including as much of the first 20 % of the storm as possible.
- A minimum of 10 water quality samples (i.e., 10 influent and 10 effluent samples) should be collected per storm event. For composite samples, a minimum of 5 subsamples is acceptable (i.e., 2 composites with 5 subsamples = 10 water quality sample minimum or 1 composite sample with 10 subsamples = water quality sample minimum).
- Flow measurements should be taken to predict or calculate pollutant loads. The mass of pollutants in the discharge should be based on flow rates and pollutant concentrations or another reasonable approach.
- Data are needed to characterize the flow rate and flow volume for each storm event.
- The number of water quality sampling events should be representative of the storm events in the climatic region. At least 50 % of the total annual rainfall must be sampled, for a minimum of 15 inches of precipitation and at least 15, but preferably 20, storms. Storm events should be consecutive, where practicable. One-year of water quality sampling is optimal to observe performance changes as a function of season.
- Some sampling must be done during adverse weather conditions; for example, during spring snowmelt and heavy rainfall, when runoff and contaminant transport is expected to be greater. Data quantifying process inputs and outputs should be collected for use in mass balances and cost analysis.
- Programmable automatic flow samplers with continuous flow measurements should be used unless it is demonstrated that alternate methods are superior or that automatic sampling is infeasible.

Protocol: Technical Assessment Protocol – Ecology (TAPE)

Study: Filterra[®] Bioretention Filtration System Performance Monitoring

Location: Tacoma, Washington

Third Party Verifier: Herrera Environmental Consultants

Status: Testing near completion

Purpose:



The Washington State Department of Ecology (Ecology) has established specific use designations for emerging stormwater treatment technologies in accordance with guidelines that are identified by Ecology (2008) in the Technology Assessment Protocol – Ecology (TAPE). These use designations allow limited application of emerging stormwater treatment technologies in western Washington to facilitate field testing. If it can be shown through this testing that the treatment technology meets minimum treatment goals that are identified in the TAPE, Ecology may issue a General use level designation (GULD) for the technology that permits its more widespread use in western Washington. In November of 2006, Americast, Inc. received the following use designations from the Washington State Department of Ecology (Ecology) for the Filterra[®] stormwater treatment system:

- A conditional short-term use level designation (CULD) for basic (total suspended solids [TSS]) and phosphorus treatment
- A pilot use level designation (PULD) for enhanced and oil treatment.

As a condition of the CULD and PULD, Ecology is requiring monitoring to be conducted with results to be used to verify the performance of the Filterra[®] stormwater treatment system in accordance with requirements identified in the TAPE for obtaining a GULD.

Storm Criteria:

Sampling events will be selected to represent a range of conditions with respect to rainfall volume and intensity to ensure the representativeness of the data and to meet or exceed the TAPE criteria. The following criteria will serve as guidelines for defining the acceptability of specific storm events for sampling. These criteria are identical to the storm criteria listed in the TAPE guidelines.

- Target storm depth: A minimum of 0.15 inches of precipitation over a 24 hour period.
- Antecedent conditions: A period of at least 6 hours preceding the event with less than 0.04 inches of precipitation.
- Minimum duration: Target storms must have duration of at least 1 hour.
- End of storm: A continuous 6-hour period with no measurable rainfall.

Protocol: California Department of Transportation (Caltrans)

Study: Caltrans District 4 Filterra[®] Bioretention System Study

Location: Sonoma County, CA

Third Party Verifier: Geosyntec Consultants



Status: Monitoring equipment being installed

Purpose:

This protocol presents guidance to use in the planning and implementation of stormwater monitoring programs. The protocol listed in the Caltrans Guidance Manual is designed and organized to provide step-by-step descriptions of the processes used to plan and implement a successful water quality monitoring program specific to runoff from transportation-related facilities.

The main objective of this protocol is to provide consistency in monitoring methods among Caltrans various monitoring programs and projects, as well as consistency in monitoring protocols over time. Such consistency is essential to provide for data comparability, and for ease of data entry in the Caltrans stormwater database. In addition to consistency of monitoring methods, it is essential that monitoring data be collected so as to ensure that the data are accurate and precise. This protocol therefore features detailed information on quality assurance and quality control procedures.

The focus of the Caltrans Guidance Manual is on monitoring protocols that are used to plan and implement sampling and analysis for chemical and physical constituents, as part of a water quality monitoring program. Supplemental monitoring approaches that can be used to support water quality monitoring, including sediment chemistry monitoring, toxicity testing, use of biological or physical indicators, and visual monitoring are also discussed. The protocol is specifically prepared to address the monitoring of stormwater runoff from transportation facilities, and provide supporting information for the planning functions of the Caltrans Statewide Storm Water Management Plan (SWMP).

Storm Criteria:

The following criteria serve as guidelines for defining the acceptability of specific storm events for sampling. These criteria are based on the storm criteria listed in the Caltrans Guidance Manual.

- Target storm depth: A minimum 0.1 inches of precipitation over a 24 hour period.
- Antecedent conditions: A period of at least 6 hours preceding the event with less than 0.01 inches of precipitation.
- Minimum duration: Target storms should have duration of at least 1 hour.
- End of storm: A continuous 6 hour period with no measurable rainfall.



It is recommended that 12 storm events be monitored over the rainy season to ensure representativeness of the data.

The preceding studies sample for some or all of the following: TSS, TDS, TOC, DOC, Conductivity, Hardness, Turbidity, PSD, pH, Temperature, TKN, Nitrate, Nitrite, Ammonia, Total Phosphorus, Ortho Phosphorus, Dissolved Phosphorus, Total and Dissolved Heavy Metals (Copper, Lead, Zinc, Chromium, Cadmium and Nickel), Oil & Grease, TPH, Diazinon, Chlorpyrifos, Diuron, Glyphosate, Pyrene