April 3, 2009

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

Dear Mr. Bowyer,

Thank you for the opportunity to comment on the February 11, 2009, Revised Tentative Order. It is clear that this permit intends to force stormwater management system designers to follow a low impact development design approach. The LID approach is similar to the three part approach appearing in previous California NPDES permits, which requires sequenced application of source control, site design and finally treatment control features. The LID movement is partly a response to the widespread failure to adequately consider site design elements that can reduce the amount of runoff generated on site, prior to implementation of treatment or flow controls. This permit generally does a good job of redirecting focus toward site design elements.

However, the selection requirements for treatment controls on new development and redevelopment projects appearing section C.3 of this permit are fundamentally flawed. The opening paragraph states, the goal to "address both soluble and insoluble stormwater runoff pollutant discharges and prevent increases in runoff flows from new development and redevelopment projects…is to be accomplished primarily through the implementation of low impact development (LID) techniques employing landscape-based treatment measures." This section of the permit effectively supplants the goal of reducing the discharge of pollutants of concern to the "maximum extent practicable" (MEP), with the goal of implementing landscape based techniques to the maximum extent practicable. These are not interchangeable goals. The MEP approach is mandated by the Clean Water Act and requires a performance based hierarchy of management approaches. An implement landscape-based treatment measures to the MEP goal relies on the false assumption that landscape-based BMPs treatment measures are always more effective and feasible as compared to "vault based systems."

This permit would prohibit the use of a treatment train, including a vault based filtration system followed by an underground infiltration system, where a landscape based BMP, such as bioretention, could be used. From the perspective of meeting the requirement to reduce the discharge of pollutants of concern to the MEP, the systems are equivalent if the water quality design storm is infiltrated. The decision as to which system is selected should be up to the site owner. Perhaps the underground system will reduce irrigation demands, simplify operation and maintenance requirements and allow for denser development of the site. This permit takes the

power to make such decision away from a stormwater management system engineer.

Some vault based systems, particularly media filters, can be designed to provide performance on par with landscape-based, vegetated BMPs like grass swales and filter strips. They can also provide distinct advantages by virtue of the fact that they remove and retain pollutants in a location that is typically underground. CONTECH has installed over 3,000 vault based treatment systems in California in the last 10 years. We also perform maintenance services for some of these systems. Necessary maintenance intervals vary widely, but are typically between 1-3 years for most units. The sheer amount of material removed from these systems is staggering. It is hard to imagine a better place to store literally tons of trash and debris, hydrocarbons, sediment and associated pollutants in a more benign place than in an underground vault. Especially in urban hotspots, trying to capture and contain these pollutants in landscape-based vegetated BMPs can be an eyesore and a health hazard.

Unfortunately, this permit does not allow a site designer to select treatment controls with consideration of the need for spill protection, aesthetic or health and safety issues, maintenance feasibility or any other considerations other than whether or not the treatment system is vault-based or vegetated. Engineered treatment and hydromodification controls should be selected based on site constraints, their proven performance capabilities, and the pollutants and hydrologic conditions of concern on site.

If there is insufficient information available to make these comparative performance assessments, the monitoring section of the permit should be revised to include a program to establish the performance implications of various design criteria for common BMPs. Currently the permit requires no individual BMP monitoring. Instead section C.8 requires regional water quality and habitat assessments. This is useful for establishing the overall health of water bodies and to identify trends, but it does not improve our understanding of the effectiveness of specific treatment and hydromodification BMPs.

Specific Recommendations:

Section C.3.c.i (1) (b-e), Page 22
These source control requirements are qualitative and possibly unenforceable unless design requirements are defined. These criteria should be rewritten to be quantitative and measurable. For example:

(c) Trash storage areas must be covered and enclosed with fencing such that rainwater cannot contact stored trash, and trash can not be transported by wind or water from the containment area.

(e) Irrigation systems use no more than 80% of the average water demand for similar type conventional landscape systems. Landscape systems may not cause or contribute to dry weather runoff be created.

Section C.3.c.i (2) (d), Page 22
These site design and stormwater treatment requirements require that runoff be directed to "vegetated" areas. As a water conservation measure, and to avoid soil erosion caused by directing high velocity flows toward vegetated areas, the word "vegetated" should be changed to "permeable" in this section.

Footnote 3 is missing from this section. Presumably it includes some definition or runoff reduction performance standard for permeable surfaces.

Section C.3.c.i (1) (i), Page 23
Please change the word "vegetated" to "permeable" to allow the use of xeriscaped or non-vegetated permeable areas to intercept flow from impervious areas.

Section C.3.c.i (2) (e-h), Page 23
These subsections impose a treatment BMP selection hierarchy that is form based instead of performance based. For example, it requires that "natural feature" systems be considered prior to "vault based" systems without defining either term. This is problematic for many reasons:

It is inconsistent with the directive in the Clean Water Act to reduce the discharge of pollutants to the maximum extent practicable. Some vault based systems typically perform better for key pollutants of concern than some natural feature systems. For example the International BMP Database summary report prepared in 2008 for the EPA and others shows that media filters tend to outperform biofilters for important parameters like TSS and TP. Heavy metal removal rates are not substantially different between BMP types. Without a clear performance advantage between BMPs, the hierarchy presented in this section is not justifiable.

Certainly we should expect biofiltration BMPs to significantly reduce pollutant loads leaving sites when designed similar to the Contra Costa County IMP criteria which requires slow percolation through 18 inches or more of soil and vegetation. However this section does not require such BMPs and it does not include any BMP performance criteria, either for runoff reduction or pollutant removal. Instead, it simply prioritizes the use of "natural feature" BMPs.

The design, construction, installation, and maintenance of vault based systems tends to be much more standardized and therefore performance is more consistent. Vegetated BMPs are subject to far more performance affecting factors than vault based systems. For example, bioretention system performance is highly dependent on the quality of soils used and the degree of compaction of those soils during construction. The engineer designing these systems rarely has control over either of these factors, and as a result, systems may leach pollutants from amended soil or may not allow infiltration at the design rate. Natural feature systems are also more likely to be treated like conventional landscaping and may become a net source of nutrients, pesticides, dry weather runoff, bacteria and other associated pollutants.

Such pitfalls are avoidable with adequate coordination and training. Unfortunately this section requires that "natural feature" BMPs be used regardless of the level of coordination and training that is likely. Where control over construction, operation and maintenance of "natural feature" BMPs can not be reasonably assured, using a vault based system may be a better bet for improving water quality.

Section C.3.c.i.2 (i), Page 22
This is a site design approach and should be moved to subsection (d) or prior to that section. If it is intended to apply to landscape areas, it should be combined with subsection (e). The term "vegetated" should be replaces with "permeable".

Section C.3.c.i (4-6), Page 23

These sections present reporting and approval requirements for projects using "vault-based treatment systems to provide primary treatment" for 10% or more of site runoff. They should be removed since they are redundant and are predicated on the false assumption that "vault-based" systems are inherently inferior to "natural feature" systems. The permittees are already required to submit BMP installation, inspection and maintenance records annually. If the Board is interested in reviewing approval trends for any type of system, this information is sufficient. Stormwater plan reviewers at the permittee level are charged with ensuring that the provisions of the permit are upheld on a project by project basis. The requirements in this section create an additional review requirement for some projects that becomes the burden of the Executive Officer of the Board.

This terminology in this section is also unclear. "Vault-based treatment systems" are undefined but could reasonably be assumed to include modular filter systems, sand filters, gravity separators, flow-through planter boxes or any other system which is contained in an impermeable vault. It is possible for a BMP to have both "natural features" and to be "vault-based".

It is also unclear what "primary treatment" means. For example, the first step in a treatment train, usually consisting of gross solids removal, is conventionally referred to as primary treatment. In this case, I suspect the term "sole" treatment more accurately captures the intent of the section. This point should be clarified since it is often prudent to include a vault based BMP as the first treatment step where moderate to high pollutant loads are expected or where spill potential is high.

These points of semantic clarification are made necessary by the lack of performance standards in this section. A preferable alternative would be to replace this entire section with the requirement that the treatment system with the best documented performance for the pollutants and hydrologic conditions of concern, that is also feasible, be used. This change would make the section consistent with past interpretations of the MEP standard which includes both technical and fiscal considerations. The current section does not allow either consideration.

Section C.3.d.iv (2) (a), Page 25
This section requires that stormwater be percolated through 2 feet or more of suitable soil at an infiltration rate of at least 5"/hr prior to discharge through an infiltration facility, even when that infiltration facility meets groundwater and well head setback requirements. This is an unnecessarily high level of treatment for runoff that will be traveling through at least 10' of native soil prior to reaching the water table. It also requires no spill protection. Hydrodynamic separators are routinely used upstream of infiltration devices since they provide spill protection and can be sized to reliably remove particles as fine as 50 microns. Where the ratio of annual infiltration volume to infiltrating surface area is very small, for example a dry well, treatment by filtration upstream of infiltration may be necessary.

Section C.3.d.iv (2) (d), Page 26
A spill protection requirement is needed to protect groundwater from contamination for these areas that pose a high threat to water quality. Vault based spill containment should be required upstream of "infiltration devices" or landscape based infiltration BMPs on these sites. The existing treatment requirement in this section is redundant since Section C.3.d.iv(2)(a) requires treatment for all infiltration devices.

C.3.e, Page 26
It is important to incentivize infill and redevelopment projects; however, this section requires only a limited set of treatment BMPs to be considered prior to waving the hydraulic treatment control sizing requirements of section C.3.d. While these sizing requirements may be difficult to achieve with the landscape based BMPs listed in footnote 6, there are numerous underground options that can be employed without impacting geologic stability and without limiting the density of development on site.

For example, a treatment train utilizing a vault based filter system followed by an underground detention system or infiltration facility can provide substantial water quality benefits and meet hydromodification requirements. Such a system could be located under a parking lot, or in a fire lane, where it will not impact land use decisions and where it will store pollutants out of public contact. Capturing and storing pollutants in this manner should be preferable to allowing undersized landscape based BMPs that concentrate pollutants where the public is likely to come into contact with them.

C.3.g.ii (1), Page 30
The Contra Costa monitoring program referenced here includes no water quality parameters. At least a small number of IMPs should be monitored for effectiveness on an individual basis. The monitoring provisions in section C.8 are not sufficient to establish the effectiveness of individual controls.

C.3.h.ii (3), Page 34
Add "Maintenance" to O&M inspection and maintenance of the installed stormwater treatment

system(s) and HM control(s) (if any).

C.3.h.ii (6), Page 35
This section requires that the permittees conduct all inspections. This creates an unnecessary burden on them. Section C.3.h.1(1) requires site owners to formally accept inspection and maintenance responsibility, which often includes contracting for these services with an independent party. It should be sufficient for the permittees to collect inspection and maintenance reports, including information required in section C.3.h.iv(1), from the site owner or service provider in lieu of an actual site visit by the permittee.

C.3.h.iv (1), Page 36
This section should make it clear that the BMPs must be inspected to ensure that the initial design infiltration, storage, flow capacity or other parameters are met. Unfortunately, vegetation health or other qualitative observations are often used as a surrogate for an actual BMP performance assessment. This is not acceptable since it does not ensure that the BMP is performing its intended water quality or hydraulic function.

C.3.i, Page 37
Please **c**hange "vegetated" to permeable where it appears. This is especially important for roof runoff management since downspout and roof gutter flow is delivered at a high velocity that may erode vegetation and soil. Directing these flows to a gravel area or piping them directly to a subsurface infiltration trench vastly reduces the potential for on-site erosion.

Summary

These changes will ultimately provide more flexibility for stormwater management system designers to tailor controls to their specific site constraints. This flexibility can actually improve the quality of our water bodies if the selection process is performance based rather than form based.

Sincerely,

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Regulatory Relations Manager – Southwest