



San Francisco Bay Regional Water Quality Control Board

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Subject: Conditional Acceptance of Guidance for Sizing Green Infrastructure Facilities in Street Projects

Dear MRP Stormwater Program Managers:

This letter provides the Water Board's conditional acceptance of BASMAA's "Guidance for Sizing Green Infrastructure Facilities in Street Projects" (Guidance) and the "Green Infrastructure Facility Sizing for Non-Regulated Street Projects Technical Report" (Report). The Water Board supports Permittee efforts to retrofit existing streets with low impact development/green stormwater infrastructure (LID) bioretention treatment controls and recognizes both the challenges inherent in retrofitting existing urban infrastructure and the substantial water quality and related benefits that can result from successful retrofits.

Municipal Regional Stormwater NPDES Permit (MRP) Permittee studies, including stormwater resource plans and work on reasonable assurance analyses for pollutants of concern, have identified the public right-of-way, and particularly streets, as a key location for retrofits to control urban runoff pollution from the Bay Area's already-built urban environment. The Water Board recognizes the importance of green street retrofits and supports Permittee efforts to implement them. At the same time, there is a potentially significant trade-off between reduced treatment control sizing relative to the tributary area and the likelihood a control will function effectively over its life. All else

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being equal, controls that are relatively larger are more likely to provide water quality and related co-benefits with less attention over time.

MRP Provision C.3.j.i.(g) allows the Permittees to propose an approach for alternate sizing of LID treatment controls to achieve treatment control and hydromodification requirements in certain green streets projects where conventional design storm hydraulic sizing may be difficult:

For street projects not subject to Provision C.3.b.ii (i.e., non-Regulated Projects), Permittees may collectively propose a single approach with their Green Infrastructure Plans for how to proceed should project constraints preclude fully meeting the C.3.d sizing requirements.

The Report, in support of the Guidance, sets forth a sizing approach for bioretention controls for treatment using the combined flow and volume modelling approach. The Report notes, appropriately, that Permittees will design treatment controls to be “as large as feasible.” Where larger sizing is impracticable, this approach enables bioretention controls to be as small a percentage of the tributary area as possible, and as little as 1.5 – 3 percent, while treating at least 80 percent of the average annual runoff based on local precipitation gauge records. This conditional acceptance provides direction on how Permittees should design controls to be as large as practicable, within existing MRP requirements.

The Guidance includes general suggestions regarding an approach for treating less than 80 percent of the total runoff, which may be appropriate for voluntary green street retrofit projects, and could be considered for green infrastructure plan street retrofit projects, in combination with Permittee reasonable assurance analyses and a future, more-detailed proposal of how to implement such reduced sizing. We look forward to working with the Permittees on that.

One aspect of the approach is that it has minimized safety factors, which, as noted in the Guidance, is likely to result in the construction of controls that have a greater need for operation and maintenance work over their lifetime, a higher rate of failure, and may be more likely to have reduced effectiveness and a reduced effective life in the absence of that attention. This calls into question whether the approach meets the C.3.d sizing requirements for Regulated Projects, and whether it should be applied beyond non-Regulated Green Streets retrofit projects. In the absence of additional evaluation of this issue, the reduced sizing approach should not be applied to Regulated Projects.

In addition, BASMAA considered developing, but did not include in this effort, specific guidance regarding how Permittees could determine practicability for using the reduced sizing approach, and regional guidance for green street best management practice installation, such as recommended locations and designs based on typical tributary areas. Such work could be a useful future project. The Guidance does include examples of constraints that could lead to reduced sizing.

The Report and Guidance do not propose an alternative sizing approach for hydromodification. While noting the MRP's triggers for hydromodification controls, the Guidance states categorically that hydromodification controls "...do not apply to street projects that retrofit drainage systems that receive runoff from existing roofs and paving." It is likely that many projects would not trigger the MRP's hydromodification control requirements. However, where the retrofits are part of a project that meets or exceeds the triggers for the MRP's hydromodification requirements, then the requirements would apply. Permittees should continue to review that as part of project implementation.

To better address the question of practicability and to help develop information that can contribute to future guidance regarding green street retrofits, this conditional acceptance directs Permittees to use existing MRP Provision C.3.d regulated project sizing for green street bioretention treatment control initial sizing. The design approaches for that sizing are set forth in the Permittees' existing technical guidance documents. With cause (e.g., significantly constrained area for a BMP, substantially increased costs for that sizing relative to the C.3.j.i.(g) approach, significant amounts of run-on from adjacent areas, or other substantial constraints identified by Permittees), and with reporting in their Annual Reports, Permittees may use the proposed C.3.j.i.(g) sizing for "non-Regulated Project" green streets projects, including non-Regulated Project green streets projects in Permittees' Green Infrastructure Plans and purely voluntary green streets projects.

The intent of the reporting is for the Permittees and the Water Board to, over time, identify more categorically green street retrofit approaches and needs, allowing Permittees to more-easily implement an effective and robust green street retrofit program. We look forward to working with the Permittees to identify appropriate and useful sizing analysis practicability information that can be developed, reported, and/or retained by the Permittees, as appropriate.

This conditional approval categorizes green streets projects into three categories. Regulated Projects under MRP Provision C.3.b, including green street retrofit projects funded all or in part from alternate compliance; green street retrofit projects that are not otherwise Regulated Projects under C.3.b, which may include green street retrofit projects in Green Infrastructure Plans; and purely voluntary green street retrofit projects.

- **Regulated projects:** Should be designed to the sizing standard in C.3.d, using the approaches set forth in existing Permittee technical guidance manuals.¹
- **Green street retrofit projects in Permittee green infrastructure plans, which are not Regulated Projects under C.3.b:** Should be designed to the sizing standard in C.3.d, using the approaches set forth in existing Permittee technical guidance manuals. If Permittee analysis determines there is substantial cause to

¹ The Water Board may consider changes to this approach for Regulated Projects in a future MRP reissuance, following additional discussion regarding safety factors, control performance, and more-specific guidance regarding implementation.

reduce the sizing to the proposed C.3.j.i.(g) approach, then reduce the sizing, with reporting in the Permittee's annual report as to why larger sizing was impracticable.

- **Voluntary green street retrofit projects outside of green infrastructure plans:** Permittees should determine whether controls can be designed to the C.3.d sizing standard, using the approaches set forth in existing Permittee technical guidance manuals. To the extent that is not possible, they should use the C.3.j.i.(g) approach.

The Guidance notes that even with site-specific constraints, it may still be desirable to design bioretention treatment controls to treat amounts of runoff below the 80 percent of average annual runoff standard. We agree. It notes, further, that “[p]ollutant reduction achieved by GI facilities in street projects will be estimated in accordance with the Interim accounting Methodology or the applicable Reasonable Assurance Analysis.” We look forward to working with the Permittees to establish an agreed-upon approach for estimating pollutant load reductions associated with smaller-sized facilities. In addition, we are interested to work with the Permittees regarding guidance on bounds for control sizing, such as particular control designs to use or bounds below which the operation and maintenance burden may be unreasonably high relative to the benefits achieved.

We look forward to working with you to identify appropriate reporting regarding use of the Guidance and Report that can be completed prior to the MRP's reissuance, and which could inform the reissuance. Reporting is likely to include a narrative discussion of how Permittees implemented the alternative design guidance for projects using it, and consideration of how to track partial treatment with respect to crediting for Provisions C.11 and C.12.

If you have any questions or would like to discuss this matter further, please contact Dale Bowyer at (510) 622-2323 or dale.bowyer@waterboards.ca.gov.

Sincerely,

Keith H. Lichten, Chief
Watershed Management Division