

April 22, 2011(revised May 17, 2011)

ERRATA SHEET

**REVISED CHANGES TO THE MODEL WATER QUALITY MANAGEMENT PLAN
AND TECHNICAL GUIDANCE DOCUMENT**

**Waste Discharge Requirements for Areawide Urban Storm Water Runoff
For
The County of Orange, Orange County Flood Control District and the
Incorporated Cities of Orange County with the Santa Ana Region
Order No. R8-2009-0030 as amended by Order No. R8-2010-0062**

(Language deleted is ~~struck through~~)

(Language added is **bold and shaded**)

1. Model Water Quality Management Plan Section 7.II-1.5 Paragraph 3 (page 7.II 1-10) modify as follows:

Below ground linear drainage and utility construction projects may result in the replacement of more than 5,000 square feet of impervious surface within a developed public street, road or highway such as storm drains, sewers and water lines. **However such** ~~Such~~ projects would not qualify as a Priority Project **if they maintain original line and grade, hydraulic capacity, original purpose of the facility, or occur in response to an emergency to protect public health and safety. Consequently, these projects would not require the preparation of a project WQMP but would require a Non-priority Project Plan. Due to the circumstances, projects done in response to an emergency may have their Non-Priority Project Plan prepared after-the-fact, but within three business days of the project's completion. Projects involving extending, relocating, or replacing storm drain lines may involve replacing more than 5,000 square feet of impervious surface and maintain original line and grade at the surface. However, these projects may alter the original line and grade or hydraulic capacity of storm drain facilities below ground. Such projects are Priority Projects and will require project WQMPs.** ~~since they are in a similar category as projects which maintain original line and grade at the surface and would not require the preparation of a Project WQMP. These projects involve trenching within existing developed rights-of-way, replacement, refurbishment or extension of storm drains, sewers, water lines and dry utilities and replacing the existing pavement, and the implementation of LID or structural treatment controls would mean a significant expansion of the project.~~

2. Model Water Quality Management Plan Section 7.II-2.3.4 Paragraph 3 (page 7.II 2-6) modify as follows:

... the POCs identified through the methods described in this section. **Any site-specific information used to identify additional POCs or remove a pollutant from being a presumed POC must be based on substantial evidence and justified in either the project's CEQA document and/or the project WQMP.** Watershed planning documents...

3. Model Water Quality Management Plan Section 7.II-2.4.3 Paragraph 2 (page 7.II 2-10) modify as follows:

A diversity of controls ~~will~~ **must** be provided, if **where** feasible,...

4. Model Water Quality Management Plan Figure 7.II-7 Top Box (page 7.II 2-14) modify as follows:

Utilize **Implement** LID BMPs

5. Model Water Quality Management Plan Figure 7.II-8 Top Box (page 7.II 2-15) modify as follows:

Utilize **Implement** LID BMPs...

6. Model Water Quality Management Plan Section 7.II-2.4.3.2 Paragraph 1, 2nd Bullet (page 7.II 2-16) modify as follows:

The sub-regional/regional BMP is sufficiently sized to ~~receive~~ **treat** runoff from the project, and...

7. Model Water Quality Management Plan Section 7.II-2.4.3.2 Paragraph 3 (page 7.II 2-16) modify as follows:

In the NOC Permit Area, LID BMPs **must be considered on-site as appropriate. For projects located within the planning area of a watershed-based plan (WIHMP), approved by the RWQCB Executive Officer, a rigorous project-specific feasibility analysis will be prepared using the analysis provided in the WIHMP and based on a site-specific analysis in the project WQMP. These analyses will collectively provide the basis for a project to: 1) exclude or reduce requirements for LID BMPs on-site; 2) select any on-site pre-treatment BMPs, if needed; and 3) establish the project's eligibility to rely on a regional BMP. The analysis in the project WQMP must demonstrate that the project meets any criteria developed in the watershed-based plan and that the regional BMP will meet** ~~are not required to be considered on-site if a watershed-based plan (WIHMP), approved by the RWQCB Executive Officer, has identified a sub-regional or regional BMP opportunity will serve the project and demonstrates that this opportunity meets the following criteria:~~

8. Model Water Quality Management Plan Section 7.II-2.4.3.2 Paragraph 4 (page 7.II 2-17) modify as follows:

A sub-regional or regional BMP opportunity that meets all of the above criteria but that is not part of an approved watershed-based plan may also be considered **for approval by the local jurisdiction. However the project applicant must document in the project WQMP, and the local jurisdiction independently review and verify, that the sub-regional or regional BMP and the project meet all of the criteria above.**

9. Model Water Quality Management Plan Section 7.II-3.0 Paragraph 4 (page 7.II 3-2) modify as follows:

... and that the treatment control BMP ~~is effective or highly effective~~ **has medium or high effectiveness (as described in Table 4-3 of the TGD Section 4.9)** for removing the POCs...

10. Model Water Quality Management Plan Section 7.II-3.0 Paragraph 5 (page 7.II 3-2) modify as follows:

... and **the discharge will not cause an impairment to the** beneficial uses of receiving waters... ~~In the NOC Permit Area, the use of structural treatment control BMPs are required before discharge to waters of the US unless there is a WIHMP which has been submitted to and approved by the Executive Officer that identifies alternative compliance approaches that achieve equivalent or better WQ benefits, and beneficial uses of receiving waters are not impaired.~~

11. Model Water Quality Management Plan Section 7.II-3.1 (page 3-5, starting at the top of the page) modify as follows:

would be expected to have other environmental benefits such as accelerated site clean-up. **Development in city centers, historic districts, or historic preservation areas often follows land-use patterns that existed before the introduction of the automobile and subsequent urban sprawl. New development or redevelopment in these areas is expected to follow those same patterns in order to be compatible with the surrounding area and thereby mimic many LID principles.** Alternatively, a redevelopment project could be implemented in a way that reduces the overall impervious footprint of the project site rather than increasing it.

Local jurisdictions may develop a water quality credit program that applies to certain types of development projects after they first evaluate the feasibility of meeting LID requirements onsite. **In order to determine if a project falls into any of the following categories, local jurisdictions will use the descriptions provided below as well as descriptions or definitions in local planning documents. If any of these descriptions or definitions is inadequate to determine a project's eligibility for credits, local jurisdictions will use published and generally accepted descriptions or definitions.**

If it is not feasible to meet the requirements for on-site LID, project proponents for specific project types can apply credits that would reduce project obligations for selecting and sizing other treatment BMPs or participating in other alternative programs. For Projects in the NOC Permit Area, credits can be applied before other alternative programs are evaluated and/or a Waiver request submitted. Also in the NOC Permit Area, the Permit allows for credits to be applied for hydromodification requirements. Permittee may develop a credit system for hydromodification at a future date and submit this to the Executive Officer for approval. For projects in the SOC Permit Area, credits can be applied as part of the LID Waiver Program.

12. Model Water Quality Management Plan Section 7.II-3.1 Paragraph 3, 5th Bullet (page 7.II 3-5) modify as follows:

... of a mass transit center **(e.g. bus, rail, light rail or commuter train station)**.

13. Model Water Quality Management Plan Section 7.II-3.1.1 Title (page 7.II 3-6) modify as follows:

Applying Water Quality Credits to LID and Treatment Control Performance Criteria

14. Model Water Quality Management Plan Section 7.II-3.1.1 last paragraph (page 7.II 3-7) modify as follows:

If more than one category applies to a particular project, the credit percentages would be additive. Applicable performance criteria depend on the number of LID water quality credits claimed by the proposed project. Water quality credits can be additive up to a 50 percent reduction (50 percent reduction maximum) from a proposed project's obligation for sizing **LID Treatment Control** BMPs, contributing to an urban runoff / mitigation fund, or off-site mitigation projects. The volume credit would be calculated as the design capture volume of the proposed condition multiplied by the sum of the percentages claimed above.

15. Model Water Quality Management Plan Section 7.II-3.3.2 (page 7.II 3-8, second paragraph) modify as follows:

If the cost of providing treatment control BMPs greatly outweighs the pollution control benefits they would provide, a waiver of treatment control and requirements can be requested and alternative compliance approaches must be used to fulfill the remaining unmet volume (See **Section 7.II-3.4 Section 7.II.3.3**).

16. Model Water Quality Management Plan Section 7.II-3.3 Paragraph 2 (page 7.II 3-9) modify as follows:

*... to the Executive Officer of the Regional Water Quality Control Board by-in writing 30 days prior to approval by the Permittee. If the Executive Officer of the Regional Water Quality Control Board does not respond **raise an objection** to a waiver request within 30 days, the **Permittee may approve the waiver-is deemed to be granted. Before approving a waiver and alternative compliance plan, the Permittee must determine that the Applicant's alternative compliance plan meets all criteria described in Section 7II-3.4.***

17. Model Water Quality Management Plan Section 7.II-4.1 Paragraph 2, 1st Bullet (page 7.II 4-1) modify as follows:

The Project Proponent must demonstrate that it has proposed **will** transfer of the BMP maintenance to another public entity **subject to the following provisions**. The Project Proponent will negotiate maintenance requirements with the entity that it is proposing to accept maintenance responsibilities within its jurisdiction; and negotiate with the resource agencies responsible for issuing permits for the construction and/or maintenance of the facilities. If necessary, the public entity will also demonstrate

through the CEQA review or the public entity's public review process that it can accept the maintenance responsibility. **If a public entity is named as the responsible maintenance entity, then the local jurisdiction must include that entity in its CEQA review process as a Responsible Agency where applicable.** The local jurisdiction must be identified as a third party beneficiary empowered to enforce any such maintenance agreement within their respective jurisdictions.

18. Model Water Quality Management Plan Section 7.II-5.0 Paragraphs 2 and 3 (page 7.II 5-1) modify as follows:

For all projects requiring discretionary or land use entitlement actions, a Conceptual or Preliminary WQMP should be submitted as part of the application for project approval during the environmental review phase (CEQA) and **must be submitted** prior to **relevant project-level** approval of entitlements, and Planning Commission approval of a project or other public hearing.

~~Each local jurisdiction may establish specific requirements for when a Conceptual or Preliminary WQMP should be submitted during the planning process for different planning actions which may vary depending upon the phase of planning for the Project. However, as described in Section 2, it is strongly recommended that the Conceptual or Preliminary WQMP be prepared and submitted during the preparation of environmental documentation for compliance with CEQA. The local jurisdiction will...~~

19. Model Water Quality Management Plan Section 7.II-5.1 Paragraph 2 (page 7.II 5-1) modify as follows:

A Conceptual or Preliminary WQMP supports the CEQA process **and provides documentation to support a checklist for an Initial Study and Negative Declaration or Mitigated Negative Declaration, or serves as the basis for the water quality section of an EIR. It should also** by serving as the basis for the Lead Agency and Responsible Agency to conclude that the MEP standard is being met by serving as the basis that selected BMPs will not have the potential to cause significant effects and/or that the effects have been mitigated, and ~~by providing supporting rationale for determining that WQ impacts are not significant or "are not significant with mitigation."~~ The Conceptual or Preliminary WQMP should to be circulated with the CEQA document or summarized within the circulated CEQA document.

20. Technical Guidance Document Section 2.3.2 Paragraph 2 (page 2-11) modify as follows:

These recommendations are not intended to imply that each of these analyses must be conducted for every Project **if an equally reliable source of information is available in place of any of these analyses or if the analysis outcome is obvious and can be documented based on simpler analysis methods.** For example, if groundwater is known to be very deep **based on regional surveys or other available information**, it is not necessary to conduct an evaluation of the exact water table or the potential for groundwater mounding.

21. Technical Guidance Document Section 2.3.2.3 Paragraph 4 (page 2-13) modify as follows:

It is recommended that coordination be initiated as early as possible during the Preliminary/Conceptual WQMP development process, **as part of the CEQA process (preferred) or otherwise.**

22. Technical Guidance Document Section 2.3.3.1 Paragraph 2 (page 2-17) modify as follows:

Project proponents should consult the most recent **EPA-approved** 303(d) list to identify whether the project's proximate and downstream receiving water bodies are listed as impaired. **The WQMP should document the 303(d) list that was consulted.** The most recent **EPA-approved** 303(d) list is located on the State Water Resources Control Board website.

23. Technical Guidance Document Section 2.4.2.4 Last Bullet (page 2-32) modify as follows:

~~If the project is located in HSG D soils per regional maps (**Appendix XV**), the project meets criteria to use regional maps for infiltration screening per **Appendix VII**, and the site geotechnical investigation, if otherwise required, and/or other available data identifies presence of soil characteristics which support categorization as D soils. For projects that meet the criteria to use regional maps, geotechnical investigation will not be required to include infiltration testing to confirm mapped categorization as HSG D soils; however, if other site-specific information is readily available, such as bore logs, relevant information therein must be used. **Further geotechnical investigations, including infiltration testing, are not required to confirm that a project overlies HSG D soils per regional maps (Appendix XV) if available data confirms the presence of soil characteristics which support characterizing the underlying soils as D soils (see Appendix VII). All priority projects must use all available geotechnical information in order to confirm the presence of HSG D soils. If there is no additional available data, other than regional maps, and the project is not a "small project" according to Table VII.2. of TGD Appendix VII, then further geotechnical investigation will be required according to Appendix VII. Small projects will not be required to perform further geotechnical investigations even if there is no other available geotechnical information, but these situations are expected to be rare cases. Individual jurisdictions will track these situations and report them in the Annual Progress Report in order to evaluate the effectiveness of the thresholds in Table VII.2.**~~

24. Technical Guidance Document Section 2.4.2.4 Last Bullet (page 2-33) modify as follows:

If there is substantial evidence that infiltration from the project would result in a significant increase in inflow and infiltration (I&I) to the sanitary sewer that cannot be sufficiently mitigated. Where it is within the reasonable scope of the project to rehabilitate the sanitary sewer to mitigate for I&I, this should be considered. **See Appendix XVII for a general countywide map of areas susceptible to high I&I.**

This map should be used for reference purposes, as more up-to-date maps should be available through the local sewer agency. The most up-to-date maps must be used when they become available. Infiltration activities that have the potential to contribute to a significant increase in I&I should be coordinated with the local sewer agency to ensure project drainage plans are protective of sewer hydraulic capacity. See Appendix XVII for screening criteria to identify projects that should consult with the local sewerage agency. It is recommended that coordination be initiated as early as possible during the Preliminary/Conceptual WQMP development process as part of the CEQA process (preferred) or otherwise.

25. Technical Guidance Document Table 2.7 Line 8 (page 2-36) modify as follows:

If any answer from row 1-3 is yes: infiltration of any volume is not feasible ~~onsite~~
within the DMA or equivalent.

26. Technical Guidance Document Table 2.7 (page 2-36) modify as follows:

[Add new line 8 to table] **Is there substantial evidence that infiltration from the project would result in a significant increase in I&I to the sanitary sewer that cannot be sufficiently mitigated? (See Appendix XVII)**

Provide narrative discussion and supporting evidence:

Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

[Renumber subsequent lines accordingly.]

27. Technical Guidance Document Section 2.4.2.6 Paragraph 3 (page 2-38) modify as follows:

The recommended project planning approach for addressing hydromodification requirements depends on the relative magnitude of hydromodification requirements compared to LID requirements; **if the volume of water that needs to be reduced to address hydromodification requirements is greater than the treatment volume for LID requirements, then hydromodification controls may satisfy both requirements and vice versa.**

28. Technical Guidance Document Section 2.4.3.4 Paragraph 2 (page 2-40) modify as follows:

[Append to paragraph] **In all cases where biotreatment is used as part of compliance with LID criteria, biotreatment BMPs shall be designed to achieve the maximum feasible level of infiltration and ET and achieve the minimum feasible discharge to the MS4 by meeting the criteria contained in Appendix XI.3 and Appendix XII. Satisfaction of these criteria shall be documented in the Project WQMP.**

29. Technical Guidance Document Section 2.4.3.4 (page 2-40 to 2-43) modify as follows:
- [Format edit: Change all bullet lists in this section to numbered lists to clarify that these are a stepwise process.]*
30. Technical Guidance Document Section 2.4.3.6 (page 2-43) modify as follows:
- To demonstrate conformance with LID and treatment control criteria via this pathway, the Project WQMP should cite and/or attach the applicable watershed-based planning documentation to the Project WQMP that **demonstrate documents** that the criteria described in Section 2.4.2.2 of the Model WQMP are met.
31. Technical Guidance Document Section 2.4.3.7 (page 2-43) modify as follows:
- Documentation that BMPs have been selected to address the pollutants of concern per instructions contained in Section ~~2.4.2~~ **2.4.2.5**
32. Technical Guidance Document Section 2.6.1 Paragraph 1 (page 2-44) modify as follows:
- Project location map that **shows and identifies the immediate downstream** receiving water(s) ~~bodies~~ **of the project and any 303(d) listed or TMDL water bodies further downstream.**
33. Technical Guidance Document Section 2.7.1 Paragraph 1, 3rd Bullet (page 2-45) modify as follows:
- Storm drain elevations may be constrained by a variety of factors in a roadway project (utility crossings, outfall elevations, etc.) that **cannot be overcome and** may override stormwater management considerations.
34. Technical Guidance Document Section 4.4 (page 4-3) modify as follows:
- The utilization of captured water used should comply with codes and regulations and should not result in runoff to storm drains, or receiving waters (~~except indirectly via the sanitary sewer/municipal wastewater treatment system~~).
35. Technical Guidance Document Section 4.9 Paragraph 1 (page 4-5) modify as follows:
- Table 4.2 and Table 4.3 provide rankings of relative performance of LID BMPs and Treatment Control BMPs, respectively, to support the BMP selection criteria described in Section ~~2.4.2~~ **2.4.2.5**.
36. Technical Guidance Document Table 4.2 Line 8 (page 4-8) modify as follows:
- Expected performance should be based on evaluation of unit processes provided by BMP and available testing data. **Testing data should be evaluated based primarily on the effluent quality achieved by the BMP and the ability of the BMP to provide statistically significant removal under average conditions. Percent removal alone should not be used to evaluate the performance of proprietary BMPs (See Wright Water Engineers and Geosyntec Consultants, 2007).**

The basis for determining the rating of proposed proprietary BMPs must be documented in the Project WQMP. Approval is based on the discretion of the reviewing agency. **Product-specific rankings may be published in the Technical Guidance Document at a later date.**

[Add citation: Wright Water Engineers and Geosyntec Consultants, 2007. Frequently Asked Questions Fact Sheet for the International Stormwater BMP Database: Why does the International Stormwater BMP Database Project omit percent removal as a measure of BMP performance? (as posted on www.bmpdatabase.org)]

37. Technical Guidance Document Section 5.2 Paragraph 5 (page 5-1) modify as follows:

[Append to paragraph] **Local jurisdictions may reject or require that a proposed hydromodification control measure be modified in order to ensure that control measures can be reasonably maintained.**

38. Technical Guidance Document Section 5.3.1 Paragraph 4 (page 5-2) modify as follows:

If the results indicate that HCOCs do not exist, then hydromodification **control** requirements ~~are met~~ **do not apply**. The Project WQMP should **must** document **that HCOCs do not exist and these provide all supporting** calculations/documentation.

39. Technical Guidance Document Section 6.2 Number N13 (page 6-3) modify as follows:

If wash water is used, it must be disposed of in an approved manner and not discharged to the storm drain system. If there are no other alternatives, discharge of non-stormwater flow to the sanitary sewer ~~may be considered only if allowed by the local sewerage agency through a permitted connection.~~ **must be at an acceptable discharge point such as a cleanout, oil/water separator, grease interceptor, or industrial sewer connection. All sewer discharges shall be in accordance with the Orange County Sanitation District's Wastewater Discharge Regulations and/or Washwater Disposal Guidelines.**

40. Technical Guidance Document Section 7.1 Number 4 (page 7-1) modify as follows:

The agreement should grant permission to a local government or its authorized agent to enter onto property to inspect BMPs **and in response to emergencies (i.e., flooding, etc.).**

41. Technical Guidance Document Section 7.1 Number 5 (page 7-2) modify as follows:

[Append to paragraph] **The relationship between failure to maintain BMPs and potential nuisance issues (vectors, etc.) should be considered in the development of maintenance agreements.**

42. Technical Guidance Document Appendix (page iii) modify as follows:

[Add to Table of Contents] **Appendix XVII. Supporting Information Relative to Sanitary Sewer Inflow and Infiltration**

[Add placeholder for supporting materials on sanitary sewer inflow and infiltration to be developed.]

43. Technical Guidance Document Appendix (page iv) modify as follows:

[Add to Table of Appendices] **XVII. Supporting Information Relative to Sanitary Sewer Inflow and Infiltration**

44. Technical Guidance Document Appendix Section VI.2.1 (page VI-3) modify as follows:

For ~~eligible~~ redevelopment projects that reduce the overall impervious footprint of the project site compared to current use, the volumetric offset provided by water quality credits shall be calculated as follows:

45. Technical Guidance Document Appendix Section VI.3.1.2 (page VI-5) modify as follows:

[Correct typographical issue with numbering.]

46. Technical Guidance Document Appendix Example VI.4 (page VI-6) modify as follows:

[Correct typographical issue with numbering.]

47. Technical Guidance Document Appendix Section VII.3.2, 5th Bullet (page VII-8) modify as follows:

In general, no more than five **valid** tests are required per development, **unless more tests would be valuable or necessary** (at the discretion of the qualified professional assessing the site, as well as the reviewing agency).

48. Technical Guidance Document Appendix Section VII.4.3 (page VII-34) modify as follows:

A factor of safety ~~is~~ shall be used.

49. Technical Guidance Document Appendix Section VIII.2.2 Paragraph 2 (page VIII-3) modify as follows:

Methods for quantifying groundwater mounding potential range from detailed modeling studies to simple conservative estimation techniques. The methods employed ~~will be~~ selected by the project proponent **will be subject** to the acceptance of the reviewing agency.

50. Technical Guidance Document Appendix Section IX.1 Paragraph 2 (page IX-1) modify as follows:

They do require irrigation, so their effects on water supply **demand** should be considered. **In addition, green roofs may use reclaimed water for irrigation and measures may be required to mitigate the risk of discharges leaving the site.**

51. Technical Guidance Document Appendix Section IX.1 Paragraph 2 (page IX-1) modify as follows:

[Append to paragraph] **Green roofs are considered to be self-retaining on the basis that they provide the maximum feasible area for ET and provide biotreatment for the remaining portion of the DCV. Ground-level LID BMPs must still be provided for ground level drainage areas, where feasible, and optionally can be sized to provide additional volume reduction and biotreatment of runoff from green roofs.**

52. Technical Guidance Document Appendix Section IX.1 Paragraph 3 (page IX-1) modify as follows:

As such, it is not generally possible for green roofs of a reasonable thickness to provide reliable reduction of the entire DCV within the timeframe criteria applied to other HSCs.

53. Technical Guidance Document Appendix Section X.2.8 (page X-10) modify as follows:

- *[Move paragraph to end of bullet list]* **Finally, it is noted that** ~~the~~ the State Board has evaluated, **in general,** the potential negative environmental consequences of reclaimed water on groundwater quality as part of developing its policy on reclaimed water, and the State Board supports the use of reclaimed water for landscape irrigation.
- **The use of reclaimed water to supplant the use of harvested water for irrigation could contribute to groundwater quality impacts. This depends on the quality of harvested runoff that might alternatively be used compared to the quality of the reclaimed water. However, the maximum potential fraction of the total inflow to the groundwater basin influenced by the priority for reclaimed water versus harvested water is believed to be very minor based on the applicability of the New Development and Significant Redevelopment LID requirements in the foreseeable future and will therefore not have a significant impact on groundwater quality.**
- **In addition,** It is noted that reclaimed water poses potential issues **impacts** to groundwater quality **related to use of reclaimed water**, particularly salt and nutrient accumulations, which must be **evaluated and** managed by providers of reclaimed water...

54. Technical Guidance Document Appendix Section XIII.1 (page XIII-1) modify as follows:

[Insert before first paragraph] **The purpose of this Criterion is to help ensure that the most effective retention and biotreatment BMPs are selected for use. The Permits require that a design volume be included for retaining stormwater on site (if feasible). As the permit makes no mention of recovering this storage to be able to manage subsequent runoff events, it is possible that one could select a LID retain on site BMP that would be relatively ineffective due to low drawdown rates (for example, insufficient demand for irrigation use of harvested water) and resulting excessive overflows or bypasses of LID systems. This criterion is intended to ensure that harvest and use systems would result in equal or better performance than a biotreatment system which has been designed to maximize infiltration and evapotranspiration as required by this Model WQMP and TGD. This criterion in no way restricts one from including LID features that do not meet this criteria, but in that case the project proponent would need to include additional LID features to meet the overall requirement to retain on site, and if infeasible, biotreat on-site, 80 percent of average annual stormwater runoff volume.**

55. Technical Guidance Document Appendix Section XIII.2 Paragraph 4 (page XIII-2) modify as follows:

The **direct costs and** other environmental and societal effects associated with such a system **would** include:

- **Cost to provide the tank and distribution system,**
- **Cost to provide an additional BMP(s) to retain or biotreat the overflow from the tank up to 80 percent capture,**
- Energy and resources used to manufacture of plastic, metal, or concrete tanks,

56. Technical Guidance Document Appendix Section XIII.2 (page XIII-3) modify as follows:

[Add to end of section] **This analysis seeks to identify a minimum level of performance of retention BMPs at which the 'alternative scenario' (i.e., biotreatment), after all retention options have been exhausted, would achieve approximately equivalent volume reduction and a higher level of treatment. This analysis assumes that the designer is faced with a mutually exclusive choice between using an infiltration, evapotranspiration, or harvest and use retention BMP versus using a biotreatment BMP or, in the case of a tandem system (e.g., a green roof is the principal retention BMP, with the balance of the drainage area's DCV, or more, treated in a biotreatment system), a combination of both classes of BMPs.**

57. Technical Guidance Document Appendix Section XIII.3 Paragraph 3 (page XIII-3) modify as follows:

When designed to these criteria, biotreatment BMPs are expected to achieve retention of a substantial volume of stormwater. A recent analysis of the monitored inflow and outflow data contained in the International Stormwater BMP Database showed a **average long term** volume reductions on the order of 40 percent for biofilters, 30

percent for extended detention basins, and 60 percent for bioretention areas. **These values represent the average of observed total volume reductions through infiltration and transpiration during entire monitoring studies. Total volume reductions during a study were calculated based on comparison of the total inflow volume and outflow volumes measured over the duration of each study (including multiple – up to 65 - storm events). As these analyses utilized long-term observed volume reductions over a series of storm events, they provide a valid comparison to the capture efficiency and volume reduction criteria contained in this TGD that were developed upon long-term hydrologic simulations and summaries.**

58. Technical Guidance Document Appendix Section XIII.3 Paragraph 4 (page XIII-4) modify as follows:

These values provide a benchmark **for comparing the performance of LID BMPs (infiltration, harvest and use, and evapotranspiration) against the performance of LID biotreatment BMPs, which under some circumstances, may provide a similar level of retention plus offer other pollutant treatment mechanisms. This analysis shows that while LID biotreatment BMPs are not designed to fully retain the DCV, they are capable of providing substantial volume reductions, on the order of half of the water that is captured and managed. This analysis further shows that a well designed LID biotreatment BMP that has been designed to capture 80 percent of average annual storm water runoff and has been designed to achieve maximum feasible volume reduction would be expected to achieve total long term volume reduction on the order of 40 percent of long term runoff volume. This means that a designer, faced with a LID retention BMP with a performance of 40 percent or less could substitute the LID retention BMP with a LID biotreatment BMP that is capable of carrying 100 percent of the DCV without impairing the overall performance of the site's system of BMPs. This is because roughly 40 percent of the DCV will be incidentally infiltrated or evapotranspired by the LID biotreatment BMP – roughly equal or better than the low-performing LID retention BMP. Therefore, it is appropriate to designate 40 percent retention as a threshold for eliminating the mandatory selection and use of a specific LID retention measure in favor of using LID bioretention BMPs that achieve a comparable or greater level of retention for the system as a whole. This threshold must not be used to reduce the site's overall level of retention.** ~~reference for establishing an incremental threshold criterion. Retention BMPs should provide significantly greater volume reduction than the volume reduction achieved by biotreatment BMPs. Otherwise, there is no basis for requiring retention BMPs when biotreatment BMPs would provide equivalent volume reduction and provide treatment of captured water that is not retained, thereby not requiring a separate BMP to be added (at additional cost) to meet the remaining biotreatment obligations. On this basis, a threshold incremental benefit of approximately 40 percent is appropriate.~~

59. Model Water Quality Management Plan Section 7.II-2.4.3.2 Figure 7.II-7 (page 7.II.2-14) highlighted area modified to read:

Figure 7.II-7: Design the Site Incorporating LID BMPs – Without HCOCs

