

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

STAFF REPORT AND RECORD OF DECISION
STANDARD URBAN STORM WATER MITIGATION PLANS
AND
NUMERICAL DESIGN STANDARDS FOR BEST MANAGEMENT PRACTICES

1.0 EXECUTIVE SUMMARY

The Standard Urban Storm Water Mitigation Plan (SUSMP) is a model guidance document for use by builders, land developers, engineers, planners and others to select post-construction Best Management Practices (BMPs) and obtain municipal approval of the urban storm water runoff mitigation plan for projects which fall into selected categories. A proposed SUSMP (December 7, 1999 version) was developed by Regional Board staff and distributed to interested parties.

The proposed SUSMP is designed to ensure that storm water pollution is addressed in one of the most effective ways possible, i.e., by incorporating Best Management Practices (BMPs) in the design phase of new development and redevelopment. It provides for numerical design standards (water quality design standards) to ensure that storm water runoff is managed for water quality concerns in addition to flood protection and that pollutants carried by storm water are retained and not delivered to waterways. Further, two additional categories are being included for storm water control requirements. These categories are, (i) parking lots 5,000 square feet (or with 25 or more parking spaces) and (ii) development of locations discharging to environmentally sensitive areas. The proposed SUSMP also attempts to respond to various concerns by providing a choice of design criteria and incorporating provisions that allow for flexibility thereby recognizing that a single numerical standard may not be appropriate in every case

The proposed SUSMP will require all new development or redevelopment that includes one of the following planning projects to select post-construction treatment BMPs for implementation:

- (i) 100+ home subdivision;
- (ii) 10-99 home subdivision;
- (iii) 100,000+ square-foot commercial development;
- (iv) automotive repair facilities;
- (v) retail gasoline outlets;
- (vi) restaurants;
- (vii) parking lots more than 5,000 square feet or more than 25 parking spaces
- (viii) hillside located single-family dwelling,

- (ix) construction projects in environmentally sensitive areas

Note: The first two categories are combined in the December 7, 1999 proposed SUSMP document.

The Standard Urban Storm Water Mitigation Plan (SUSMP) proposed by the Regional Board staff takes much of the original language offered by the Co-Permittees in their submittal to the Regional Board on August 22, 1999, and consolidates it in a more concise and understandable document without duplication

2.0 STATEMENT OF THE PROBLEM

Water Quality and Storm Water

The water quality impacts of urbanization and urban storm water discharges have been summarized by several recent USEPA reports.¹ Urbanization causes changes in hydrology and increases pollutant loads which adversely impact water quality and impair the beneficial uses of receiving waters. Increases in population density and imperviousness result in changes to stream hydrology including:

- (i) increased peak discharges compared to predevelopment levels;
- (ii) increased volume of storm water runoff with each storm compared to pre-development levels;
- (iii) decreased travel time to reach receiving water; (iv) increased frequency and severity of floods;
- (iv) reduced stream flow during prolonged periods of dry weather due to reduced level of infiltration;
- (v) increased runoff velocity during storms due to a combination of effects of higher discharge peaks, rapid time of concentration, and smoother hydraulic surfaces from channellization, and
- (vi) decrease infiltration and diminish groundwater recharge.

The Los Angeles County municipal storm water management (municipal separate storm sewer system [MS4]) program conducts monitoring to:

- (i) quantify mass emissions for pollutants,
- (ii) identify critical sources for pollutants of concern in storm water;
- (iii) evaluate BMP effectiveness, and
- (iv) evaluate receiving water impacts.

The monitoring indicates that instream concentrations of pathogen indicators (fecal coliform and streptococcus), heavy metals (such as Pb, Cu, Zn,) and pesticides (such as diazinon) exceed state and federal water quality criteria.² The mass emissions of pollutants to the ocean

¹ *Storm Water Phase II Report to Congress* (USEPA 1995); *Report to Congress on the Phase II Storm Water Regulations* (USEPA 1999); *Coastal Zone Management Measures Guidance* (USEPA 1992)

² Los Angeles County 1998-1999 Stormwater Monitoring Report, Los Angeles County Department of Public Works (1999). Data summarizes results of storm water monitoring for the most recent year and the past five years.

are significant from the urban Watershed Management Areas (WMAs) such as the Los Angeles River WMA, Ballona Creek WMA, and Coyote Creek WMA with the Los Angeles River WMA providing more than seventy percent of the loadings. Critical sources data for facilities (such as auto-salvage yards, primary metal facilities, and automotive repair shops) showed that total and dissolved heavy metals (Pb, Cu, Zn, and Cd), and total suspended solids (TSS) exceeded state and federal water quality criteria by as much as a hundred times. The results are consistent with a limited term study conducted by the Regional Board to characterize storm water runoff in the Los Angeles region before the issuance of MS4 permits.³ Storm water runoff data from predominant landuses showed similar patterns. Light-industrial, commercial and transportation landuses showed the highest range of exceedances. A pesticide (diazinon) showed higher ranges from residential landuse. The data for polycyclic aromatic hydrocarbons (PAHs), a known pollutant of concern in urban storm water runoff, is inconclusive but improved analytical methods may yield more definitive results next year. Receiving water impacts studies found that storm water discharges from urban watersheds exhibit toxicity that are attributable to heavy metals. Biosurveys of the sea-bottom showed bioaccumulation of toxicants. Sediment analysis showed higher concentrations of pollutants such as Pb and PAHs than rural watersheds (2 to 4 times higher). In addition, toxicity of dry weather flows was observed with the cause of toxicity undetermined.⁴ Previous studies have found chemical concentration of pollutants that exceed state and federal water quality criteria in storm drains flowing to the ocean,⁵ and that there are adverse health impacts from swimming near them.⁶

Treatment BMP requirements on new development and redevelopment offer the most cost effective strategy to reduce pollutant loads to surface waters. Retrofit of existing development will be expensive and may be considered on a targeted basis. Studies on the economic impacts of watershed protection indicate that storm water quality management has a positive or at least neutral economic effect while greatly improving the quality of surface waters.⁷

Municipal storm water regulations at 40 CFR 122.26 require that pollutants in storm water be reduced to the maximum extent practicable (MEP). The USEPA's definition is intentionally broad to provide maximum flexibility in MS4 permitting and to give municipalities the opportunity to optimize pollutant reductions on a program-to-program basis.⁸ The definition of MEP has generally been applied to mean implementation of economically achievable management practices. Because storm water runoff rates can vary from storm to storm, the statistical probabilities of rainfall or runoff events become economically significant and are central to the control of pollutants through cost effective BMPs. Further, it is recommended

³ *Storm Water Runoff in Los Angeles and Ventura Counties, Final Report* (1988), California Regional Water Quality Control Board, Los Angeles, SCCWRP Contribution C292. This study found the highest mean concentrations of pollutants of concern such as heavy metals in the urban watershed rivers and that they contributed significant loads to the ocean.

⁴ *Toxicity of Dry Weather Flow from the Santa Monica Bay Watershed*, Bay, S. et al (1996), Bull. Southern California Acad. Sci. 5(1), pp. 33-45. The paper describes preliminary results on dry weather toxicity which have been confirmed by the MS4 monitoring program.

⁵ *Chemical Contaminant Release into Santa Monica Bay, Final Report*, American Oceans Campaign, Santa Monica (1993)

⁶ *The Health Effects of Swimming in Ocean Water Contaminated by Storm Drain Runoff*, Haile, R.W. et al. (1999), Epidemiology 10: 355-363). The study found higher risks of respiratory and gastrointestinal symptoms from swimmers.

⁷ *The Economics of Watershed Protection*, T. Schuler (1999), Center for Watershed Protection, Endicott, MD. The article summarizes nationwide studies to support the statement that watershed planning and storm water management provide positive economic benefits.

⁸ Storm Water Phase II Final Rule – Pre-Federal Register Version, p 87 (USEPA 1999). See USEPA's discussion in response to challenges that the definition is sufficiently vague to be deemed adequate notice for purposes of compliance with the regulation.

that storm water BMPs be designed to manage both flows and water quality for best performance.⁹ It is equally important that treatment BMPs once implemented be routinely maintained.

Financing the MS4 program offers a considerable challenge for municipalities. A proven successful financing mechanism is the establishment of a storm water utility.¹⁰ Utility fees, which are assessed on the property owner based on some estimate of storm water runoff generated for the site, are a predictable and dedicated source of fund. Utility fees can also provide a mechanism to provide incentives to commercial and industrial property owners to reduce impervious surface areas. Such incentives offer flexibility to property owners to choose the better economic option – paying more fees or improvements to reduce runoff from the site.

3.0 REVIEW OF STANDARDS FOR DEVELOPMENT PLANNING

The American Society of Civil Engineers (ASCE) and the Water Environment Federation (WEF) have recommended a numerical BMP design standard for storm water that is derived from a mathematical equation to maximize treatment of runoff volume for water quality based on rainfall/ runoff statistics and which is economically sound (ASCE/ WEF 1998).¹¹ The maximized treatment volume is cut-off at the point of diminishing returns for rainfall/ runoff frequency. On the basis of this equation the maximized runoff volume for 85 percent treatment of annual runoff volumes in California can range from 0.08 to 0.86 inch depending on the imperviousness of the watershed area and the mean rainfall.¹²

Other methods of establishing numerical BMP design standards include: (i) Percent treatment of the annual runoff; (ii) Full treatment of runoff from rainfall event equal to or less than a predetermined size; (iii) Percent reduction in runoff based on a rainfall event of standard size.¹³ These numerical design standards have been applied to Development Planning in Puget Sound, WA; Alexandria, VA; Montgomery County, MD; Denver, CO, Orlando, FL and Austin, TX.

The City of Seattle requires that where new development coverage is 750 square feet or more, storm water detention be provided based on a 25 year storm return frequency and a peak discharge rate not to exceed 0.2 cubic foot per second.¹⁴ Additionally, for projects that add more than 9,000 square feet in developmental coverage, the peak drainage water discharge rate is limited to 0.15 cubic feet per second per acre for a two-year storm. The City of Denver

⁹ *Urban Runoff Pollution – Summary Thoughts* – The State of Practice Today and For the 21st Century. Wat. Sci. Tech. 39(2) pp. 353-360. L.A. Roesner (1999)

¹⁰ *Preliminary Data Summary of Urban Storm Water Best Management Practices* (1999), Report No. EPA-821-R-99-012, USEPA.. The document reviews municipal financing mechanisms and summarizes experience in the U.S. to date.

¹¹ In *Urban Runoff Quality Management*, WEF Manual of Practice No. 23, ASCE Manual and Report on Engineering Practice No. 87. WEF, Alexandria, VA; ASCE, Reston, VA. 259 pp. (1998).

¹² *Sizing and Design Criteria for Storm Water Treatment Controls*, Presentation to California Storm Water Quality Task Force, November 13, 1998, Sacramento, CA. L.A. Roesner, Camp Dresser McKee .

¹³ *Sizing and Design Criteria for Stormwater Quality Infrastructure*, Presentation at California Regional Water Quality Control Board Workshop on Standard Urban Storm Water Mitigation Plans, August 10, 1999, Alhambra, CA., R.A. Brashear, Camp Dresser McKee.

¹⁴ City of Seattle Municipal Code, Chapter 22.802.015 – Storm water, drainage and erosion control requirements.

requires new residential, commercial, and industrial developments to capture and treat the 80th percentile runoff event. This capture and proper treatment is estimated to remove 80 to 90 percent of the annual TSS load which is a surrogate measure for heavy metal and petroleum hydrocarbon pollutants.¹⁵

In the Los Angeles Region, at least three different numerical mitigation measures are in use or have been proposed by a small number of municipalities.

The County of Los Angeles requires that development projects that meet the threshold criteria in the unincorporated area select treatment BMPs that mitigate “runoff generated from each and every storm event of up to and including 0.75 inch rainfall”. The point of diminishing return for rainfall treatment for Los Angeles County (Civic Center rainfall record) and the coastal Los Angeles (LAX rainfall records) coincide roughly with 0.75 inch and 1.4 inches.

The City of Santa Monica requires that development projects reduce 20 percent of the projected runoff from a one-inch 24-hour storm using impervious factors based on Los Angeles County flood control benefit assessment¹⁶. All new parking lots are required to have the capability to treat one inch of precipitation that falls in a 24 hour period. Developers are given the option to pay in lieu fees, to be used for other water quality projects by the City, should the standard be impossible to meet because of limiting considerations.

The City of Calabasas requires that development projects demonstrate an effort to reduce projected runoff by 20 percent from the base 1985 10-year storm basis (approximately 3.5 inches).¹⁷

Other cities such as Arcadia, Baldwin Park, Cudahy, Culver City, El Monte, Hermosa Beach, Pasadena, Rancho Palos Verdes, Redondo Beach, San Fernando, Sierra Madre, South El Monte, South Gate, Temple City, and West Hollywood, while not having formally adopted the numerical design standard of 0.75 inch, have expressed a willingness or have implemented the standard already. These communities express a preference for a simple and easy to recall numerical standard applicable countywide.¹⁸

Ventura County has proposed draft land development criteria that treatment BMPs be designed for using a unit basin storage volume design based on 70 percent capture of annual runoff and flow based design criteria based on 10 percent of the peak 50 year flow rate from impervious areas.¹⁹

¹⁵ Urban Storm Drainage, Criteria Manual – Volume 3, Best Management Practices, Urban Drainage and Flood Control District, Denver, CO (1999). Manual provides detail design criteria for new development for the Denver Metropolitan area.

¹⁶ City of Santa Monica Municipal Code, Chapter 7.10 – Urban Runoff Pollution (1995). The City of Santa Monica’s numerical mitigation measure emphasizes flow reduction of about 0.2 inch of rainfall, which limits options for “treatment”.

¹⁷ City of Calabasas Municipal Code, Title 17, Chapter 17.56 – Urban Runoff Pollution Control (1998). The City of Calabasas numerical mitigation measure (0.7 in.) appears to be equivalent to the Los Angeles County measure for unincorporated areas (0.75 in.).

¹⁸ See Letter dated January 18, 2000 from John Hunter & Associates, Consultants for these cities, addressed to Dennis Dickerson, Regional Board Executive Officer

¹⁹ Letter from A. Sheyadai, Ventura Countywide Stormwater Quality Management Program to X. Swamikannu (September 13, 1999) with attachment. ‘Stormwater Treatment: A Design Approach for Volumetric and Flow Based Best Management Practices’, J. Endicott *et al.*

A few States have already established or are in the process of finalizing numerical standards for sizing storm water post-construction BMPs for new development and significant redevelopment. The State of Maryland has established storm water numerical criteria for water quality of 0.9 to 1 inch and BMP design standards in a unified approach combining water quality, stream erosion potential reduction, groundwater recharge, and flood control objectives.²⁰ The State of Florida has used numerical criteria to require treatment of storm water from new development since 1982 including BMPs sized for 80 percent (95 percent for impaired waters) reduction in annual total suspended solids load derived from the 90 percent (or greater for impaired waters) annual runoff treatment volume method for water quality.²¹ The State of Washington has proposed at least six different approaches of establishing storm water numerical mitigation criteria for new development which add 10,000 square feet of impervious surface or more for residential development and 5,000 square feet of impervious surface or more for other types of development²². The mitigation criteria options include the 90th percentile 24-hour rainfall event and the six month 24 hour rainfall event.

On a national level, the USEPA is planning to standardize minimum BMP design and performance criteria for post-construction BMPs under Title III of the Clean Water Act and will likely build from the experience of effective state and local programs to establish national criteria.²³ The USEPA, based on the National Urban Runoff Program, supports the first half-inch of rainfall as generating first flush runoff.²⁴ First flush runoff is associated with the highest pollutant concentrations, and not pollutant load. The USEPA considers the first flush treatment method, the rainfall volume method, and the runoff capture volume method as common approaches for sizing of water quality BMPs.

4.0 NEW DEVELOPMENT REQUIREMENTS BACKGROUND

Los Angeles County and municipalities within the County (except the City of Long Beach) implement a municipal storm water program to reduce storm water and urban runoff pollution under the requirements of Board Order No. 96-054. The City of Long Beach implements a separate municipal storm water program to reduce storm water and urban runoff pollution under Board Order No. 99-060 adopted by the Regional Board on June 30, 1999. The Los Angeles County Municipal Storm Water Permit include requirements that Standard Urban Storm Water Mitigation Plans (SUSMPs) be prepared for priority planning projects and that they include appropriate Best Management Practices (BMPs) and guidelines to reduce pollutants in storm water to the maximum extent practicable (Permit Pt. 2. III.A.) The City of

²⁰ Maryland Storm Water Design Manual - Draft (Maryland Department of the Environment 1998). The Final document is scheduled for publication in January 2000. Changes are mostly in format to improve presentation according to the authors.

²¹ Florida Development Manual: A Guide to sound Land and Water Management (Florida Department of Environmental Protection 19xx). The manual describes structural and non-structural construction and post construction BMPs design criteria.

²² Storm Water Management in Washington State Volumes 1 – 5. Public Review Draft (Washington Department of Ecology 1999). The volumes 1,3 and 5 are most relevant to new development standards and cover Hydrologic and Flow Control Designs, Minimum Technical Requirements and Treatment BMPs. The volumes will be adopted as statewide standards in early 2000 after completion of public hearings according to the agency.

²³ Storm Water Phase II Final Rule – Pre-Federal Register Version, p 53 (USEPA 1999). See USEPA's discussion on construction and post-construction BMP requirements for Phase II.

²⁴ A Watershed Approach to Urban Runoff: Handbook for Decisionmakers, Terene Institute and USEPA Region 5 (1996). See discussion on sizing rules for water quality purposes, p 36.

Long Beach municipal separate storm sewer system (MS4) permit includes requirements that make SUSMP provisions adopted by the Regional Board or approved by the Regional Board Executive Officer for Los Angeles County and Cities applicable to its program.

On April 22, 1999, the Regional Board approved a List of BMPs for MS4 Co-Permittees to select from and require implementation of the most effective BMPs in their Development Planning and Development Construction programs (Board Resolution No. 99-03). The Regional Board at that time also requested that the SUSMPs for Priority Planning Project categories, which incorporate the BMPs, be brought to it for discussion.

Los Angeles County Department of Public Works (LACDPW), on behalf of the Co-Permittees, submitted SUSMPs for Regional Board Executive Officer approval on July 22, 1999. These SUSMPs were revised and resubmitted on August 12, 1999, after a joint SUSMP workshop held on August 10, 1999, to clarify the meaning of some text. SUSMPs have been submitted for: (i) 100+ home subdivisions; (ii) 10-99 home subdivisions; (iii) 100+ square-foot commercial developments; (iv) automotive repair facilities; (v) retail gasoline outlets; (vi) restaurants; and (vii) hillside located single-family dwellings. Prior to submittal to the Regional Board, draft versions of the SUSMPs were distributed to environmental groups, contractors, developers, consultants and trade industry groups for review and comment.

The SUSMP requirements within this proposal for the Los Angeles County storm water program, will apply to the City of Long Beach MS4 permit for the following categories only: (i) 10-99 home subdivisions; (ii) 100 or more subdivisions; (iii) 100,000 or more square foot commercial developments; and (iv) projects located adjacent to or discharging to environmentally sensitive areas.

For (i) restaurants; (ii) retail gasoline outlets; and (iii) automotive repair facilities, it is expected that the City of Long Beach will require post construction BMPs to meet the numerical design standard approved by the Regional Board. The City of Long Beach MS4 permit does not require that SUSMPs be prepared for these categories, since the requirements are contained in the City of Long Beach Storm Water Management Program.

The Long Beach MS4 permit requires that the City conduct a parking lot-study (with ten or more spaces) to characterize and evaluate storm water runoff pollution and mitigation and submit a report in July 2000. It is expected that the City of Long Beach parking lot study will consider any requirements approved by the Regional Board for parking-lots, including treatment control BMPs based on a numerical design standard.

The Regional Board provided Public Notice on August 16, 1999, of proposed action on the SUSMP and proposed discussion on September 16, 1999, before the Board and invited comments from interested parties. Comments were received from municipalities, environmental groups, businesses, environmental consultants, and the building industry.

These comments are summarized in "Comments and Response" included in the Record of Decision and was part of the package mailed out with the notice of proposed action for the January 6, 2000, Board meeting.

5.0 STANDARD URBAN STORM WATER MITIGATION PLANS (SUSMPS)

LACDPW and its Co-Permittees submitted for approval by the Executive Officer, SUSMPs for: (i) 100+ home subdivisions; (ii) 10-99 home subdivisions; (iii) 100+ square-foot commercial developments; (iv) automotive repair facilities; (v) retail gasoline outlets; (vi) restaurants; and (vii) hillside located single-family dwellings.

Post-construction BMPs to be selected include: Structural Control BMPs, Treatment Control BMPs, And Source Control BMPs. The list of treatment control BMPs includes (i) vegetated swales and strips; (ii) extended/ dry detention basins; (iii) infiltration basins; (iv) infiltration trenches; (v) wet ponds; (vi) constructed wetlands; (vii) oil/water separators; (viii) catch-basin inserts; (ix) storm drain inserts; (x) media filtration; (xi) bioretention; (xii) dry wells; (xiii) cisterns; and (xiv) foundation planting.

As submitted, the SUSMPs for the 100+ home subdivision, the 10-99 home subdivision, and 100+ square-foot commercial development categories included requirements that storm water runoff be mitigation with source control and treatment control BMPs. The SUSMPs for automotive repair facilities; retail gasoline outlets; restaurants; and hillside located single-family dwellings required only source control BMPs. No numerical design criteria were included. A 0.6-inch 24-hour rainfall criterion that was in earlier drafts of the document and circulated to Co-Permittees and interested parties for comment was deleted from the Co-Permittee's SUSMP proposal submitted to the Regional Board.

6.0 STAFF PROPOSED SUSMP IMPROVEMENTS

At the Regional Board meeting held on September 16th, the only significant difference between the staff's proposal and that of the Co-Permittee's was the inclusion of a numerical design standard for the sizing of Best Management Practices. Without including a specific design standard in the SUSMP proposal, staff hold that the SUSMPs would be left without a key provision that would ensure that BMPs would be utilized in the most effective manner as directed by the Regional Board in its April 1999 approval of the List of Best Management Practices for New Development.

With action on the SUSMP proposal delayed following the September 16, 1999 Regional Board meeting, staff were able to develop a more refined proposal that would build in additional flexibility for Co-Permittees. On December 7, 1999, staff released a revised proposal for public review and comment.

The December 7th SUSMP proposal is a substantial revision to that which was before the Board on September 16th. Much of the language of the original SUSMP proposal submitted by the Co-Permittees remains. The following revisions to the original language (not all of the revisions made are discussed herein) represent the most significant differences between the August 1999 Co-Permittee submittal and the December 7th staff proposal:

Consolidation of Text

The August proposal contained much text that was redundant by replicating language for each individual SUSMP category. This redundant language has been consolidated in a section that applies a set of SUSMP requirements to all SUSMP categories. In addition, the two categories for residential developments have now been consolidated into one category.

Numerical Design Standard

As before the Regional Board in September, the December 7th staff proposal includes numerical design criteria for BMP. Four different numerical design criteria for BMPs have been provided while essentially retaining the technical basis of the September 7 staff proposal for numerical design standards for treatment control BMPs.

As presented in the December 7th document, the post-construction treatment BMPs shall be designed to:

A. mitigate (infiltrate or treat) storm water runoff from either:

1. each runoff event up to and including the 85th percentile 24-hour runoff event determined as the maximized capture storm water volume for the area from the formula recommended in *Urban Runoff Quality Management, WEF Manual of Practice No. 23/ ASCE Manual of Practice No. 87, (1998)*, or
2. the annual runoff volume, based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment by the method recommended in *California Stormwater Best Management Practices Handbook – Industrial/ Commercial, (1993)*, or
3. the volume of runoff produced from each and every storm event up to and including 0.75 inch of rainfall, prior to its discharge to a storm water conveyance system, or
4. the volume of runoff produced from each and every storm event up to and including a historical-record based reference 24-hour rainfall criterion for “treatment” (0.75 inch average for the Los Angeles County area) that achieves approximately the same reduction in pollutant loads achieved by the 85th percentile 24-hour runoff event,

AND

B. control peak flow discharge to provide stream channel and over bank flood protection, based on flow design criteria selected by the local agency.

Significantly, the December 7th staff proposal contains a provision that allows BMPs to not be sized to include runoff from roof structures under certain conditions. These conditions include ensuring that the runoff from the roof surface is directed to a storm drain system prior to allowing any commingling with other surface runoff that may be carrying contaminants. Additionally, the runoff from the roof area should not itself be contaminated. Allowance of a roof runoff exemption allows for BMPs to be designed for a smaller amount of runoff thereby resulting in a smaller structural BMP and less initial construction and maintenance costs.

In addition, staff has recognized that flow considerations may be significant in the design of certain BMPs (such as catch-basin inserts). However, limited analyses exist at this time of flow rate and rainfall intensity statistics for water quality design. Thus staff has provided a general

provision, determined by the local agency, to control peak flow discharge to avoid stream channel erosion and over-bank flooding only. Flow rate criteria for flow sensitive BMPs will need to be developed in the future.

Additionally, restaurants involving land area of 5,000 square feet or less are excluded from the numerical design standard.

Definition of Hillside

The December 7th proposal attempted to provide clarity to the definition of "Hillside" for consistent interpretation. However, the definition in the December 7th proposal was defined broadly and requires modification. A Change Sheet will be offered to modify the definition as property located in an area with known erosive soil conditions, where the development would involve regulated grading on any natural slope that is 25 percent or greater.

Redevelopment Threshold

Comments have suggested the need for a trigger threshold to the definition of 'Redevelopment' for SUSMP requirements to become applicable. A Change Sheet will provide a revision for the definition of "Redevelopment" which will provide that "on an already developed site, the creation or addition of fifty percent or more of impervious surfaces or the making of improvements to fifty percent or more of the existing structure". This change ensures that minor modifications to existing structures or properties do not unintentionally trigger SUSMP requirements.

Parking Lots

A new category subject to SUSMPs "Parking Lots" was added. Parking lots with daily vehicular traffic produce pollutants such as heavy metals, oil and grease, and petroleum hydrocarbons from vehicle drippings and engine system leaks. Studies in the Los Angeles area conducted on the quality of storm water from parking lots indicate that the concentration of the pollutants often exceed water quality criteria.²⁵ These results affirm studies, conducted by some business groups included in the priority-planning category, which demonstrate that pollution from commercial parking lots is similar.²⁶

The Los Angeles municipal storm water permit currently includes requirements for parking lots with the threshold condition of 25 or more parking spaces (equivalent to 5,000 square feet of

²⁵ *Santa Monica Bay Area Municipal Storm Water/ Urban Runoff Pilot Project Studies: Evaluation of Potential Catchbasin Retrofits*, Santa Monica Bay Cities Consortium (1998); and *Consent Decree Report: Strip Filter*, City of Los Angeles, Stormwater Management Division (1999), these studies characterized parking lot storm water runoff from areas 10,000 -150,000 square feet and evaluated BMP pollutant removal effectiveness.

²⁶ *Results of a Retail Gasoline Outlet and Commercial Parking Lot Storm Water Runoff Study*, Western States Petroleum Association and American Petroleum Institute (1994). The study simulated runoff and found that pollutant concentrations from commercial parking lots and gas stations are similar.

surface area).²⁷ Separately, the Long Beach municipal storm water permit includes a special study provision to characterize pollution and evaluate controls for parking lots with 10 or more spaces. It is expected that the Long Beach parking lot study will develop additional information on controls necessary, if any, for these smaller (10-25 space) parking lots.

Comments received have suggested that the staff's original intent with respect to this provision were unclear. A Change Sheet will clarify staff's intent that this requirement be applied only to commercial "stand alone" parking lots, i.e., parking lots that are not associated with small commercial developments.

Environmentally Sensitive Areas

The new category of Environmentally Sensitive Areas was added subject to SUSMPs. Urban storm water discharges that contribute pollutants to areas designated as environmentally significant or environmentally sensitive may adversely impact the ecology that has been designated for protection under state, federal and local laws.

Comments have been received that draw attention to the fact that many different provisions of law, regulation, and guidance define a variety of environmentally sensitive areas that, taken together, may result in the application of SUSMP criteria to an inherently vague definition leading to application of that criteria in situations where it was not intended. The staff proposal's definition requires careful review to ensure that it is defined to reflect Regional Board direction and regulatory clarity. A Change Sheet will address comments received. Some considerations in crafting a definition follow:

Under the federal Endangered Species Act (ESA) agency actions must not jeopardize the existence of listed species or modification of a critical habitat.²⁸ The Regional Board has a responsibility, as the implementing agency for a federal regulation, to ensure that its actions be consistent with the ESA. Applicability of the requirement to develop a SUSMP has been limited to areas designated as environmentally sensitive or significant by the State Water Resources Control Board, the State Resources Agency, and the County of Los Angeles. The Long Beach municipal storm water permit already requires SUSMP for development in locations discharging to environmentally sensitive areas.²⁹

The California Coast Act (CA) Section 30116 defines sensitive coastal resource areas as: "Those identifiable and geographically bounded land and water areas within the coastal zone of vital interest and sensitivity. "Sensitive coastal resource areas" include the following:

²⁷ Board Order No. 96-054, Pt. 2. 1.E.1.a.ix. The Los Angeles permit requires that Permittees have the legal authority to require sweeping or other equally effective measures to remove debris from industrial commercial motor vehicle parking lots with more than 25 parking spaces.

²⁸ 62 Fed. Reg. 7872. The USEPA states in the preamble to the reissuance of NPDES general permits for storm water discharges from construction activities, that prohibition in the Endangered Species Act on harmful agency actions are binding on it, other federal agencies, permittees, and the public at large. EPA writes, "Federal agencies are required to consult with the Fish and Wildlife Service or the National Marine Fisheries Service to ensure that any action authorized, funded, or carried out by them are not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat."

²⁹ Board Order No. 99-060, Pt. 4. 1.D.5. The Long Beach municipal storm water permit states that, "the Standard Urban Storm Water Mitigation Plan [shall] be prepared for...(d) environmentally sensitive areas."

- (a) special marine and land habitat areas, wetlands, lagoons and estuaries as mapped and designated in part 4 of the coastal plan
- (b) areas possessing significant recreational value
- (c) highly scenic areas
- (d) archaeological sites referenced in the California coastline and recreation plan or as designated by the state historic preservation officer
- (e) special communities or neighborhoods which are significant visitor destination areas.
- (f) areas that provide existing coastal housing or recreation opportunities for low and moderate income persons.
- (g) areas where divisions of land could substantially impair or restrict coastal access."

The Los Angeles County General Plan identifies Ecologically Significant Habitat Areas (ESHAs). Areas in Los Angeles County that are ecologically sensitive were first identified in the early 1970s by a court decision (the Judge Thomas decision) and subsequently modified based on "the England and Nelson Study" conducted by the Museum of Natural History for the Los Angeles County Department of Regional Planning ((Los Angeles County Significant Ecological Areas Study, 1976). Subsequent modifications have been conducted on a case by case basis. These areas are designated Ecological Significant Areas (SEAs) and include all ESHAs.

Sensitive resources include streams and wetlands, but also some upland areas such as oak woodlands coastal sage scrub and certain desert habitat. The Coastal Act protects SEAs, streams and wetlands. The term "sensitive resource areas" include these areas. The coastal act defines an ESHA as an area in which the habitat is rare or especially valuable.

Retail Gasoline Outlets

At present, most retail gasoline outlets are operated as fueling facilities only. Automotive repair activities are no longer conducted on these sites. Consistent with this trend, the BMP requirements for retail gasoline outlet with fueling services only have been limited to guidelines in, *Best Management Practices Guide: Retail Gasoline Outlets*, California Stormwater Quality Task Force (1997). Where a retail gasoline outlet provides fueling services and operates a service bay for automotive repair, BMP requirements to reduce storm water pollution from vehicle repair/ maintenance activities would also apply.

Conflicts with Local Practices

Language has been included to allow changes to provisions in the SUSMP if there is conflict with established local codes, if the modification would not otherwise defeat or circumvent the intent of the SUSMP requirements. This provision of the SUSMP enables municipalities to make changes to the SUSMP to be consistent with local codes and practices without prior approval of the Regional Board Executive Officer where the change has little bearing on SUSMP requirements to reduce storm water pollution.

Provision of Waiver

A waiver provision has been included in the SUSMP to enable municipalities to afford developers and builders the option of in lieu fees where "Impracticability" of storm water treatment can be established. Recognized situations of "Impracticability" include, (i) extreme

limitations of space for treatment; (ii) unfavorable or unstable soil conditions for infiltration; and (iii) presumptive risk of groundwater contamination because an underground drinking water source or potential drinking water source is less than ten feet from soil surface.

As proposed, a waiver granted by a municipality for any project is revocable by the Regional Board Executive Officer for cause and with proper notice upon petition. Along with the waiver option is a requirement that the municipality, in turn, require that the cost savings of not implementing SUSMPs be transferred to a storm water mitigation fund, designated by the municipality, to be used to promote regional or alternative solutions for storm water pollution control. A public agency or a non-profit entity must operate the storm water pollution control project. Any other generic basis of 'Impracticability', other than the three listed above, must be submitted by the Co-Permittee to the Regional Board and approved by the Executive Officer before it can take effect. The purpose of the waiver is to provide an alternative for individual projects where storm water treatment is infeasible, while ensuring that storm water pollution control efforts are not obviated by the grant of waiver.

Groundwater Resource Protection

The SUSMP explicitly recognizes that in some circumstances, infiltration BMPs, may not be appropriate because of the risk of contamination of groundwater resources. It identifies the factors that determine potential for groundwater contamination. These are, (i) pollutant mobility; (ii) pollutant abundance in storm water, and (iii) soluble fraction of pollutant. A reference for further information on how to evaluate limitations and potential risk is provided, *Potential Groundwater Contamination from Intentional and Non-Intentional Stormwater Infiltration, Report No. EPA/600/R-94/051, USEPA (1994)*.

Alternative Certification Option

The SUSMP includes a provision that authorizes municipalities, in lieu of conducting a detailed plan review, to accept a signed certification by a registered engineer or a licensed architect that the urban storm water mitigation plan submitted by the project proponent meets BMP criteria described in the SUSMP. As initially proposed in the December 7th SUSMP document, the registered engineer or licensed architect was to provide evidence that the certifying person has undergone training on designing BMPs to meet the numerical mitigation criteria and other conditions in the SUSMP not more than two years prior to the signature date on the plan. The training on SUSMP and BMP design criteria may be conducted by any institution with the relevant expertise. Some such institutions are universities, the American Society of Civil Engineers (ASCE), the American Public Works Association (APWA), the American Society of Landscape Architects (ASLA), and the California Water Environment Association (CWEA). The purpose of the provision was to provide an option for municipalities to limit resource demands on planning departments, without reducing storm water quality protection objective of the SUSMP. While the concept remains desirable, staff will propose a modification that encourages, rather than require, Co-Permittees who elect to accept certifications from registered professional engineers and licensed architects, to verify that the certifying person has been trained, by an institution with expertise, on design of BMPs for water quality.

7.0 SAMPLE APPLICATION OF THE NUMERICAL MITIGATION MEASURE

After the Regional Board Executive Officer approves the SUSMP, municipalities will be expected to implement an urban storm water mitigation plan approval program. The municipality must require that projects that meet the criteria established in the permit and SUSMP prepare and submit an Urban Storm Water Mitigation Plan for approval. Project proponents must identify in the Plan post-construction treatment control BMPs for implementation. The treatment control BMP(s) must be sized or designed to treat the volume/flow of storm water produced by rainfall events up to and including the design storm (numerical design criteria).

The project proponent will select source control and treatment control BMP(s) from the list approved by the Regional Board in Board Resolution No. 99-03, and included in the SUSMP. For example, for a 100+ home sub-division project, these may include swales (for the parkway); infiltration basin at the end of swale; biofilters (around parking lots); green belts (between rear yards); detention basin (as a lake); and catch-basin basket inserts (for trash). In combination, these treatment control BMPs must be sufficiently sized, i.e., designed and constructed, to treat, infiltrate, or filter the first 0.75 inch of storm water runoff from a storm or a storm event. The urban storm water mitigation plan will specify the treatment control BMPs and other source control BMPs that will be built into the project.

The municipality could then review the Urban Storm Water Mitigation Plan to make sure that it meets the requirements of the SUSMP for the project type. If the SUSMP requirements are met, the municipality may approve the project to proceed. As an alternative, the municipality, may in lieu of detailed plan checking, accept signed certification by a registered engineer or a licensed architect. The municipality may require that the certifying person provide evidence of undergoing training for BMP water quality sizing and other plan requirements. For example, training conducted by institutions with BMP water quality design expertise, within two years of the plan signature date, may be considered qualifying.

Alternatively, if the project proponent can demonstrate that construction of treatment control BMPs are impracticable the municipality may authorize the project proponent to transfer equivalent funds to alternative BMP projects to control storm water pollution managed by a public or non-profit agency. Some examples of recognized situations of impracticability are unstable soil conditions, shallow groundwater, or extreme limitations of space.

8.0 LEGAL AND REGULATORY BASIS FOR ACTION³⁰

Regional Board Authority to Adopt the Proposed SUSMP.

The Regional Board has the authority to adopt the proposed SUSMP and numerical mitigation standards for new development and significant redevelopment. Regional Board Order No. 96-054 ("Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharges Within the County of Los Angeles") requires that each of the Permittees develop an Urban Storm Water Mitigation Plan following the model approved by the Executive

³⁰ Section 8.0 was prepared by the Regional Board's Legal Counsel, Mr. Jorge Leon

Officer.³¹The proposed action would adopt the model, or Standard Storm Water Mitigation Plan for the Co-Permittees to follow.

Although Order No. 96-054 provides that the Regional Board Executive Officer has authority to approve the model program, as proposed, the current proposal is being submitted to the Board itself for review and endorsement at an upcoming meeting. Following consideration by the Board, the Executive Officer would proceed to approve the SUSMP for Los Angeles County Co-Permittees. In addition, the proposal would make the SUSMP applicable to the City of Long Beach. This is required because the City of Long Beach has a storm water permit (Order No. 99-060 separate from the one applicable to other cities in the County.

The proposed SUSMP would require, *inter alia*, that (a) post-construction treatment control BMPs be required for nine categories of development and (b) the BMPs be designed to mitigate (treat or infiltrate) the runoff from all storms up to 0.75 inch of rainfall for 24-hour period or equivalent runoff volume. These requirements are based upon application of provisions of the Clean Water Act (CWA), section 402(p) and the 1987 Amendments to the CWA. The federal provisions require that a storm water program:

“* * *

(ii) Shall include a requirement to effectively prohibit non-storm water discharges into storm sewers; and

(iii) Shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants. [Section 402(p)(3)(B), USC Section 1342(p)(3)(B), emphasis added.]

The proposal is an effort to meet the CWA requirements. In a 1992 decision, the U.S. Court of Appeals for the Ninth Circuit (NRDC v. U.S. U.S. EPA, 966 F.2d 1292) interpreted the above language as providing the Administrator or the State with a substantial amount of discretion:

“[t]he language in (iii), above, requires the Administrator or the State to design controls. Congress did not mandate a minimum standards approach or specify that U.S. EPA develop minimal performance requirements...we must defer to U.S. EPA on matters such as this, where U.S. EPA has supplied a reasoned explanation of its choices.”

The decision, sometimes referred to as “NRDC II,” stands for the proposition that the U.S. EPA and the States are authorized to require implementation of storm water control activities that, upon “reasoned explanation,” accomplish the goals of Section 402(p).

In a very recent decision, the Ninth circuit Court of Appeals reinforced the U.S. EPA’s and the State’s authority in this area. In Defenders of Wildlife v. Browner (1999) Case No. 98-71080, the Ninth Circuit Court of Appeals reviewed an action of the U.S. U.S. EPA to adopt a Storm Water Management Program in the State of Arizona. That program included best management practices such as storm water detention basins, retention basins, and infiltration

³¹ Los Angeles Municipal Permit, (Part III.A., at Page 31.)

ponds. The question was whether the U.S. EPA may require numeric limitations to ensure strict compliance with the state water-quality standards. The Court concluded that the CWA does not require strict compliance; however, citing the language of (iii), above, it stated: “[t]hat provision gives the U.S. EPA discretion to determine what pollution controls are appropriate. As this court stated in NRDC II, ‘Congress gave the administrator discretion to determine what controls are necessary...[cites omitted] (at page 11687).

The SUSMP proposal is an effort to meet the CWA Section 402(p) requirements and the staff has provided a “reasoned explanation of its choices” in the SUSMP proposal, the staff report, and the accompanying materials. Accordingly, the proposed SUSMP requirements are well within the Regional Board’s authority and discretion.

Process under Order 96-054.

The Executive Advisory Committee of the Storm Water Program for Los Angeles County has suggested that the present process, by which the Regional Board will consider endorsement of a storm water program, violates the model program adoption process as set out in Order 96-054.

The argument relies heavily on a premise that the Permit process provides significant notice, review and meet-and-confer protections that will benefit the Co-Permittees. The comment accurately sets forth the storm water program submittal, review, and approval provisions as set forth in Order No. 96-054. However, those provisions must be considered in their full context, including, significantly, the deadline set forth in the permit for implementation. That deadline (July 30, 1999) has come and gone. Because of the lapse of the deadline, the lack of countywide implementation of an effective SUSMP, and the impending expiration of Order No. 96-054 itself, the process prescribed in the permit is now obsolete.

The process now proposed by the Executive Officer would expedite implementation of an effective SUSMP while still effectively providing the protections to the Co-Permittees provided under the Order’s scheme. That is, while the proposed process differs from that set forth in Order No. 96-054, it creates no actual prejudice to the Co-Permittees. None is described in the Executive Advisory Committee’s (EAC) comment letter of December 22, 1999. To the contrary, in order to provide for program submittal, review, and meet-and-confer, the Executive Officer and staff have held numerous discussions with the Co-Permittees, the County and the EAC regarding the SUSMP proposal, including a workshop held August 10, 1999 and the discussion before the Regional Board itself of September 16, 1999. During these discussions, several proposals have been exchanged between the staff and the interested parties and the record in this matter now contains a substantial number of comments and responses.

Significantly, the Executive Officer’s proposal has the endorsement of the U.S. EPA.³² Moreover, as a further consideration, the U.S. EPA’s October, 1999 “NPDES Program Implementation Review” for this region was critical of the process set forth in Order 96-054 for model program approval.³³

³² See Letter of January 13, 2000 to Dennis Dickerson, Executive Officer from Alexis Strauss, Director, Water Division, U.S. EPA.

³³ See NPDES Program Implementation Review: California Regional Water Quality Control Board 4, Los Angeles Region. USEPA, Region 9, Final Report – October 1999., at page 10 of 45. The report notes at page 28 that the process was “...hindering overall progress towards achieving permit objectives”.

The unfortunate effect of adopting the EAC's argument to adhere at this time to the scheme laid out in Order 96-054 would be to further seriously delay implementation of the SUSMP without providing any real additional procedural protections to the Co-Permittees. It would also expose the Regional Board to court action for failure to timely move toward program implementation.

Given the circumstances of this matter, the fact that a change of process has not deprived the Co-Permittees of any opportunity to discuss the SUSMP provisions and propose alternatives or any other protections, and the fact that the Regional Board's primary responsibility is to protect the water quality in the Region (Water Code Section 13000), the Board may, within its legal discretion, determine that the best way to do so in the municipal storm water context, is to proceed with the SUSMP proposal under the process presented by staff, rather than delay program implementation.

Compliance with the California Environmental Quality Act.

The City of Los Angeles has requested the "Regional Board's analysis of the potential multi-media environmental impacts from the proposed requirement "(i.e. the California Environmental Quality Act documentation and supporting information developed for this specific discretionary regulatory action." The proposed action is a requirement of Order No. 96-054. The issuance of the order itself, and the requirements contained in the order, is exempt from CEQA (Water Code Section 13389). Accordingly, no specific CEQA documentation has been prepared for this proposal. Nonetheless, the staff has prepared preliminary cost-benefit analyses contained in the supporting material, and these can be provided.

Notice Sufficiency

A party commented that insufficient notice has been provided to the public regarding this matter.

An earlier version of the SUSMP proposal was issued to the public in August 1999 and a public workshop was held on August 10, 1999. Additionally, this matter was heard before the Regional Board during a discussion at its September 16, 1999 meeting. While the only applicable legal notice requirement is 10 days (Govt. Code Section 11125), the Regional Board staff has provided 30 days public notice of the revised version that is currently scheduled to be heard by the Board at its January 26, 2000 meeting. This constitutes adequate legal notice.

Implementation Date.

Order No. 96-054 contemplates that implementation of the SUSMP requirements commence no later than July 30, 1999. Since that date has passed, a new implementation date must be determined following approval of the SUSMP by the Executive Officer. There is no legal standard upon which to base a new implementation date. The Executive Officer is free to establish a revised implementation schedule. Inasmuch as the municipalities will likely be required to adopt or amend existing ordinances to require compliance with the SUSMPS, a new implementation date should take that need into account. I recommend that the Co-

Permittees be requested to submit comments on this issue and that the Board consider alternatives proposed.

Unfunded Mandate.

The requirements of the proposed SUSMP are not within the definition of “Unfunded Mandates” that would require reimbursement of costs under the California Constitution. This is because the requirements of the SUSMP are derived from the federal Clean Water Act, not from State Law. Inasmuch as the Regional Board staff’s proposal would implement a federal requirement, rather than a state requirement, the SUSMP are not unfunded mandates.

Compliance With the Administrative Procedure Act.

The EAC argues that the proposed SUSMP constitutes rulemaking, in violation of the California Administrative Procedure Act, Government Code Section 11340 et.seq. The EAC’s objection to the model program adoption process comes approximately three and a half years beyond the legal statute of limitations (Water Code Section 13320 provides 30 days for an aggrieved person to petition for review of a Regional Board action). The model programs provision, contained in Order No. The Regional Board adopted Order No. 96-054, on July 15, 1996. The argument is not only grossly untimely, it is also incorrect. The APA requirements apply only to rulemaking activities. Contrary to the EAC’s assertion, the proposed action is not “rulemaking” in nature. Rather, it is the identification of further requirements set forth in permit Order No. 96-054. Under the APA itself, the issuance of such permits is not subject to the rulemaking requirements of the APA (Government Code Section 11352(b)).

9.0 RECOMMENDATION

Staff has reviewed the state of current technical practice and the regulatory authority vested with the Regional Board to direct implementation of actions to reduce pollutants in storm water. The municipal storm water program for Los Angeles County and cities is in its ninth year of implementation. The municipal storm water program has been widely criticized as being ineffective and there have been delays in achieving implementation of all facets of the 1996 permit requirements.³⁴ Some cities have adopted programs embracing many of the elements of the SUSMP program as proposed, including the numerical design criteria, and the County is using the 0.75 inch design standard (as a result of its own determination of the appropriateness of that value in reaching an accord regarding litigation settlement).

In view of 1) the legal authority of the Regional Board; 2) the practice already in place in a substantial portion of the County; and 3) the need to address the contribution of pollutants from storm water runoff; it is appropriate for the Regional Board to establish numerical design criteria for treatment BMPs for priority development projects. While the staff proposal cites a 0.75 inch standard, the specific design standard to be adopted and a schedule for its implementation remain matters which are within the discretion of the Regional Board.

Staff further recommends that the Regional Board adopt the numerical BMP design standard in the SUSMP as the minimum standard of review for post-construction BMPs, in the Los

³⁴ Runoff Remedies will be Complex, Costly, Los Angeles Times, September 6, 1999. M. Cone.

Angeles Region, for projects subject to coverage under the state general permit for storm water discharges associated with construction activity.

Regional Board staff recommends that the Regional Board endorse the December 7, 1999 staff proposal for SUSMPs with appropriate changes as included in the Change Sheet to be available at the Board meeting, and/or as modified and directed by the Regional Board. Comments are being received as this staff report is being developed and the Change Sheet to be submitted to the Board will likely include revisions based on comments received after the date of this Report.