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Documentation in Support of Rebuttal to Santa Ana Regional Water Quality Control Board's and the Department of Finance's Responses to Test Claim 09-TC-03 Santa Ana Regional Water Permit – Orange County

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MS4 Permit Improvement Guide

U.S. ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF WATER

OFFICE OF WASTEWATER MANAGEMENT

WATER PERMITS DIVISION

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 14 2010

OFFICE OF
WATER

Dear NPDES Stormwater Managers,

I am pleased to announce that the Environmental Protection Agency (EPA) has completed the "Municipal Separate Storm Sewer System Permit Improvement Guide." The primary purpose of this guidance document is to assist National Pollutant Discharge Elimination System (NPDES) permit writers in strengthening municipal separate storm sewer system (MS4) permits.

This Guide contains examples of permit conditions and supporting rationale that could be used in fact sheets that accompany NPDES permits. The Guide also includes recommendations for permit writers on how to tailor the language depending on the type of permit. For example, permits covering traditional municipalities may contain different permit provisions than those covering non-traditional entities like departments of transportation, universities, and prisons.

I ask that permit writers review the permit language and corresponding discussion presented in this Guide and consider how to incorporate this, or similar, language into their MS4 permits. Some modification of the language may be necessary to make it suitable for use with specific MS4 permits, and to better tailor it to meet the needs and goals of the various permitting authorities.

The permit language suggested in this Guide is not intended to override already existing, more stringent or differently-worded provisions that are equally as protective in meeting the applicable regulations. EPA expects the permitting authority to continue to make significant progress and ensure that the intent of the regulations or more stringent requirements is captured in the permit.

In addition, EPA would like to particularly stress the following key principles:

- Permit provisions should be clear, specific, measurable, and enforceable. Permits should include specific deadlines for compliance, incorporate clear performance standards, and include measurable goals or quantifiable targets for implementation.
- Permits should contain a performance standard for post-construction that is based on the objective of maintaining or restoring stable hydrology to protect water quality of receiving waters or another mechanism as effective.

EPA has begun a rulemaking to strengthen the stormwater program. Using this Guide to improve permits represents the direction that EPA is taking to strengthen the program. This Guide is a living document that will be updated as new information for improving the stormwater program is obtained.

I appreciate your continued efforts in strengthening the NPDES municipal stormwater program. If you have any questions about this Guide or suggestions for further improvements, please contact Rachel Herbert of my staff at herbert.rachel@epa.gov or call her at 202-564-2649.

Sincerely,

Linda Y. Boornazian

Linda Y. Boornazian, Director
Water Permits Division

CC: State Stormwater Coordinators
Association of State and Interstate Water Pollution Control Administrators

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INTRODUCTION & GETTING STARTED

Purpose

The primary purpose of the MS4 Permit Improvement Guide (Guide) is to assist National Pollutant Discharge Elimination System (NPDES) permit writers in strengthening municipal separate storm sewer system (MS4) stormwater permits. The objective of the Guide is to facilitate the creation of MS4 permits which are clear, consistent with applicable regulations, and enforceable. This Guide contains examples of permit conditions and supporting rationale that could be used in fact sheets that accompany NPDES permits. Permit language should include controls that identify specific actions permittees must perform to comply with the Permit Requirements.

This Guide focuses in large part on permits for small (Phase II) MS4s. However, while the contents of the Guide are generally organized consistent with the six minimum control measures (40 CFR 123.34(b)) applicable to Phase II MS4 permits, however, permit writers may find this Guide useful for Phase I MS4 permits. In addition, the Guide specifically addresses Phase I MS4 Permit Requirements with regard to the industrial program elements set forth in the Phase I regulations at 40 CFR 122.26(d)(2)(ii) and (iv)(C). These are addressed in Chapter 7. The Guide may also be useful for "non-traditional" MS4 permittees, such as departments of transportation (DOTs), universities and prisons.

EPA has developed a Stormwater Phase II Final Rule Fact Sheet Series (www.epa.gov/npdes/stormwater/swfinal) to assist permitting authorities and permittees in understanding the Phase II regulations. Further, EPA has developed the National Menu of Stormwater Best Management Practices (www.epa.gov/npdes/stormwater/menuofbmps) which provides descriptive information in fact sheets about various best management practices associated with the Phase II six minimum control measures.

The Guide was created by reviewing numerous MS4 permits and fact sheets from around the country. Some of the example permit and fact sheet language presented in this Guide has been adapted from these permits; in those instances where existing language that meets the purpose of this document was not available, EPA has crafted new language.

Contents of this Guide

This document is divided into parts, as noted above, based largely on the six minimum control measures required in the Phase II stormwater regulations (see 40 CFR 122.34(b)). Chapters 1 -6 address development and implementation of a stormwater management program (SWMP) and the six minimum control measures that must be included in the SWMP. Chapter 7 addresses industrial facilities programs relevant for Phase I MS4 permits. Chapter 8, Overall Evaluation and Adaptive Management, discusses reporting, evaluation, and tracking requirements. This Guide does not focus on the water quality provisions of the Clean Water Act, which may require more stringent requirements than those programmatic elements specified here.

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Each chapter opens with an introduction providing a brief overview of relevant regulatory requirements pertaining to the subject of the chapter. Each chapter is then divided into sections in which the following topics are addressed:

- *Example Permit Provision* – This section includes example MS4 permit language. The language has been formatted and numbered in such a way that each section corresponds directly to a permit structured in accordance with the chapter sequence of this Guide. EPA developed these examples by first surveying existing EPA and State MS4 permit language and drawing upon agency experience in implementing permits. EPA has identified the source of the language (in footnotes) if adapted from specific permits.

- *Example Permit Requirement Rationale for the Fact Sheet* – This section describes the rationale for the example permit provision. This language can assist the permit writer in developing the fact sheet, which accompanies all NPDES permits; however, it is up to the permit writer to ensure that a complete and customized version of the fact sheet accompanies the permit. Example Permit Requirement Rationale for the Fact Sheet sections often describe "requirements" or steps that "must" be taken. To the extent this language is used in these sections, it is intended to describe requirements included in the example permit provisions. It does not mean that all permits "must" include the specific "requirement" described.

- *Recommendations for the Permit Writer* (included where appropriate) – This section discusses issues the permit writer should consider in determining how to use the example permit provisions.

How to Use this Guide

This guidance includes "example" MS4 permit language for specific program elements, but is not intended to be definitive or comprehensive for all MS4 Permit Requirements.[1] EPA recommends that permit writers review the example permit language presented in this guide and consider how to incorporate this, or similar, language into MS4 permits as appropriate. Each state may have different NPDES requirements along with varied experience overseeing MS4 programs, and MS4 permittees vary widely in storm water management experience and sophistication, size, topography, precipitation patterns, land use, receiving water conditions and other factors. In most instances, EPA anticipates that permit writers will modify the language to make it suitable for specific MS4 permits, and to tailor example provisions to meet the various needs and goals that apply.

When possible, this Guide has tried to provide examples that can be used for both Phase I and Phase II permits. However, in some instances EPA has provided suggestions for how the language can be tailored to better fit within the context of a Phase I or Phase II permit. In addition, EPA acknowledges that some language presented in this Guide may be more suitable for an individual permit rather than a general permit. While EPA has presented a discussion for ways the language could be altered to fit these scenarios in Recommendations for the Permit Writer sections, it is up to the permit writer to determine the best use of the material for the permit being crafted.

[1] For example, the guide does not explicitly address provisions for compliance with CWA section 402(p)(3)(B)(ii), water quality standards, applicable wasteload allocations in TMDLs or such other conditions as the permitting authority deems necessary. For information on integrating TMDLs into stormwater permits see USEPA's DRAFT TMDLs to Stormwater Handbook (www.epa.gov/owow/tmdl/stormwater)

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The example permit language in this Guide has been written as if the permit is a reissued permit and not an initial permit, since most MS4 permittees have been subject to NPDES permits for at least one permit term. Requirements to develop the initial SWMP are not included in this Guide since they would have been included in the first permit term. It is important that permit writers consider the different stages in the development and implementation of SWMPs when establishing permit conditions as well as the experience learned from other more advance programs. So, for example, this Guide includes brackets to indicate the place for an appropriate schedule or deadline rather than indicating specific timeframes in all instances. These examples are available to the permit writer, along with other resources such as the permittee's draft or existing SMWP document, annual reports, prior permit experience, receiving water quality information and the permit writer's best professional judgment, to issue permits suitable for their specific MS4s.

The permit language suggested in this Guide is not intended to override already existing, more stringent or differently-worded provisions that are equally as compliant in meeting the applicable regulations and protective of water quality standards. EPA expects the permitting authority to ensure that the intent of all applicable regulations is captured in the permit. States with more stringent permit provisions should continue to strengthen these provisions as the permits are reissued. This Guide includes suggestions on how to develop permit language for MS4 permittees. This Guide does not impose any new legally binding requirements on EPA, States, or the regulated community, and does not confer legal rights or impose legal obligations upon any member of the public. In the event of a conflict between the discussion in this Guide and any statute, regulation, or permit the statute, regulation or permit controls.

Terminology: SWMP and SWMP Document
This guide uses the term SWMP to refer to the stormwater management program that is required by the Phase I and Phase II regulations to be developed by MS4 permittees. The SWMP document is the written plan that is used to describe the various control measures and activities the permittee will undertake to implement the stormwater management program.

Preparing to Write an MS4 Permit

Most Phase II MS4 permittees are regulated under a general permit (with some exceptions where individual permits have been used for Phase II and non-traditional MS4 permittees). Phase I MS4 permittees are regulated under individual permits, and can include multiple co-permittees. EPA regulations require that initial MS4 permits (i.e. first permit term) set the foundation of the permittee's SWMP. For Phase II MS4 the focus is on the six minimum control measures in 40 C.F.R. 122.34(b), while the Phase I MS4 permittees are informed by the regulations at 40 C.F.R. 122.26(d). See Chapter 1 of this Guide.

As the permit writer prepares to reissue an MS4 permit, regardless of whether the permit is an individual or general permit, EPA recommends that the permit writer review, at a minimum, the following sources of information:

Past annual reports
For currently regulated MS4s, annual reports submitted by the permittee can include information that will help permit writers develop more specific and measurable Permit Requirements. The most recent annual report is usually the most helpful to review, but additional annual reports can be reviewed if time allows. If the permit writer is developing a general permit, a broad selection of

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annual reports from various permittees should be reviewed. In particular, EPA recommends that the permit writer review, at a minimum, the following specific information:

Areas of obvious strengths or weaknesses in the SWMP

- For example, is the permittee vague about specific activities (often an indicator of a weak program area), or is the permittee clearly meeting the requirements of the permit and/or going above and beyond the minimum requirements?

Trends or common compliance problems

- For example, does the permittee analyze the data to assess the most common compliance problems, and then modify their controls/programs to address these problems? For example, do they use the common compliance issues identified to target their training and outreach/education efforts for construction operators?

Level of implementation of SWMP activities (e.g., frequency and numbers of inspections, frequency of catch basin cleaning, street sweeping)

- Does the permittee report the total universe when reporting the quantity of an activity achieved? For example, if the MS4 is required to conduct industrial inspections, does it report it did 100 inspections (which may be good or bad, depending on how many it was required to inspect), or that it did 100 out of 5,000 (only 2% of the total)?

Water quality priorities for the permittee (e.g. impaired waters, TMDLs, high quality waters)

- Does the permittee's annual report describe priority pollutants for impaired waters and other water quality programs and what was done to reduce and/or eliminate their contact with stormwater? Does the SWMP target both impaired and high quality waters?

Specific sources or pollutants of concern permittee is currently focusing on

- Does the SWMP target pollutants of concern in its activities?

Level and type of enforcement currently being used by permittee

- Does the annual report provide data and summary information on the different types of enforcement actions taken (how many verbal warnings, written notes, fines, etc)?

Any trends (i.e. water quality, compliance, control measure implementation levels) being reported by Permittees which indicate success or failure of particular SWMP components

- Does the permittee analyze the data, or just report the data in the MS4 annual report?

Types of measurable goals being applied and achieved by permittees

- Has the permittee met the measurable goals stated in the permit and SWMP?

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Stormwater management program (SWMP)
Review the most current SWMP documents for potential gaps that may need to be specifically addressed in the reissued MS4 permit. EPA's *MS4 Program Evaluation Guidance* (available at www.epa.gov/npdes/pubs/ms4guide_withappendixa.pdf) can be used to assess the key elements in a SWMP.

NPDES MS4 audit reports, construction/industrial/commercial site inspection reports
Review the findings from any MS4 audits conducted during the past permit term to help identify key issues that should be addressed in the next permit. For example, if the audits identified weak or missing program elements and other controls, these should be addressed in the reissuance of the permit. Construction, industrial, and/or commercial site inspection reports for facilities within the MS4's boundary should be reviewed to determine if there are common compliance issues that should be addressed in the MS4 permit (for example, more training, more frequent inspections, more complete inventory or prioritization, etc.).

Monitoring/Information on Quality of Receiving Waters
Review any monitoring data collected by the permittee or any other entity that has collected useful monitoring data to identify potential pollutants of concern. In addition, the most recent information on impaired waters and total maximum daily loads (TMDLs) for the permit area should be reviewed. If there are waste load allocations (WLAs) applicable to the permittee, these should be addressed in the permit. If no WLA has been assigned to the MS4, the permit writer should still consider pollutants of concern identified in 303(d) lists and TMDLs when developing Permit Requirements. Such information will help identify whether more targeted permit conditions are needed to reduce the discharge of these pollutants. This Guide does not specifically address the inclusion of TMDL requirements in MS4 permits.

Permit renewal application data or past notice of intent (NOI) information
Review any permit renewal applications or NOIs submitted to establish coverage for the previous permit term. Permit writers should consider the recommendations made in the EPA "Interpretive Policy Memorandum on Reapplication Requirements for Municipal Separate Storm Sewer Systems" (www.epa.gov/npdes/pubs/owm0125.pdf) published in 1996 (40 CFR Part 122; Federal Register, Volume 61, Number 155). This document provides information which clarifies the MS4 reapplication requirements and explains that MS4 permit applicants and NPDES permit writers have discretion to customize appropriate and streamlined reapplication requirements on a case-by-case basis.

Previous MS4 permit
Finally, review any past MS4 permits to identify where permit language should be revised or completely rewritten, for example, because language was vague. This MS4 permit improvement Guide should be used help strengthen key areas in the permit.

Note that if the MS4 permit is being issued for the first time, some of the above information will not exist yet, such as past annual reports or old SWMP documents.

MS4 Permit Writing Tips

There are a few general tips to keep in mind when writing MS4 permits. First, and most importantly, permit provisions should be clear, specific, measurable, and enforceable. Permits should include specific

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deadlines for compliance, incorporate clear performance standards, and include measurable goals or quantifiable targets for implementation. Doing so will allow permitting authorities to more easily assess compliance, and take enforcement actions as necessary.

For example, the following permit provision could be strengthened: "The permittee shall demonstrate compliance with this Permit through the timely implementation of control measures and other actions to reduce pollutants in discharges to the maximum extent practicable in accordance with their SWMP…" This permit provision does not define what "timely implementation" is, allowing the permittee to determine what is timely. Timely implementation could be, although it probably was not intended to be, interpreted as meaning up to five years, or it could mean that implementation must occur within six months. In addition, "other actions" are mentioned in this provision, but they are never described. If a permit requires "other actions," these actions should be specifically described in the permit. Finally, it is important to strike a balance of providing specific Permit Requirements while still allowing the permittee come up with innovative controls.

In addition, vague phrases such as "as feasible" and "as possible" should be avoided because they result in inconsistent implementation by permittees and difficulties in permit authority oversight and enforcement. The permit writer's role is to determine what is necessary to achieve in a permit term, and to develop clear, enforceable language that conforms to these determinations. Accordingly, the permit should set forth objective standards, criteria or processes, which will aid the permittee in complying with the permit, as well as the permitting authority in determining compliance in the MS4 permit.

In order for permit language to be clear, specific, measurable and enforceable, each Permit Requirement will ideally specify:

- *What* needs to happen
- *Who* needs to do it
- *How much* they need to do
- *When* they need to get it done
- *Where* it is to be done

For each Permit Requirement: "What" is usually the stormwater control measure or activity required. "Who" in most cases is implied as the permittee (although in some cases the permitting authority may need to specify who exactly will carry out the requirement if there are co-permittees). "How much" is the performance standard the permittee must meet (e.g., how many inspections). "When" is a specific time (or a set frequency) when the stormwater control measure or activity must be completed. "Where" indicates the specific location or area (if necessary). These questions will help determine compliance with the permit requirement.

The Use of Partnerships in MS4 Permits

Since the Phase II Rule applies to all small MS4s within an urbanized area regardless of political boundaries it is very likely that multiple governments and agencies within a single geographic area are subject to MS4 permitting requirements. For example, a city government that operates a small MS4 within an urbanized area may obtain permit coverage under a general Phase II permit while other MS4s in the same vicinity (such as a county, other cities, or a state DOT) may have individual Phase I MS4 permits. All permittees are responsible for permit compliance in their permitted area. Given the

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potential for overlapping activities in close proximity, EPA encourages permittees in a geographic area to establish cooperative agreements in implementing their stormwater programs. Partnerships and agreements between permittees and/or other agencies can minimize unnecessarily repeating activities and result in using available resources as efficiently as possible. Using existing tools and programs instead of creating new ones can allow permittees to focus resources on high priority program components instead. In addition by forming partnerships, water quality can be examined and improved on a larger, consolidated scale rather than on a piece-meal, site-by-site basis.

In addition to requiring MS4 permittees to maintain records of program implementation such as inspection forms, monitoring data, dry weather screening reports, and notices of violation, EPA recommends that MS4 permits include requirements for permittees to summarize and analyze data and submit the analysis to the permitting authority. For example, as permittees are required to evaluate program compliance and appropriateness of best management practices, the permit could require permittees to address in annual reports questions such as:

- For illicit discharge data, what are the most prevalent sources and pollutants in the illicit discharge data, and where are these illicit discharges occurring? How many illicit discharges have been identified, and how many of those have been resolved? How many outfalls or screening points were visually screened, how many had dry weather discharges or flows, at how many were field analyses completed and for what parameters, and at how many were samples collected and analyzed? Does the permittee need to conduct more inspections in these areas, or develop more specific outreach targeting these sources and pollutants?
- For the construction data, what are the most common construction violations, and are there any trends in the data (e.g., construction operators who receive more violations than others, areas of the MS4 with more violations, need to refine guidance or standards to more clearly address common violations) How has the permittee responded to these trends? Over the last year, how many construction site SWPPP reviews were completed and approved? How many inspections were conducted, how many noncompliant sites were identified, and how many enforcement actions (and of what type) were taken?

Also, although the stormwater Phase II rule requires reports, after the first permit term, reports are required to be submitted only in years two and four of the permit term. EPA strongly encourages annual reports for all permittees. (See 40 CFR 122.34(g)(3))

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CHAPTER 1: ESTABLISHMENT OF THE STORMWATER MANAGEMENT PROGRAM

Introduction

An over-arching legal authority framework must be established in order for the SWMP to be effective. Ensuring that the permittee has established the legal authority to meet the requirements of the permit, created a well described enforcement response plan (ERP), and allocated adequate resources will set a necessary foundation for the SWMP.

Included Concepts

- ► Requirement to develop a stormwater management program
- ► Necessary legal authority
- ► Enforcement Measures and Tracking
- ► Adequate resources

Legal Authority

Permittees must have the authority to carry out all aspects of their stormwater management programs, including requiring the control of pollutants flowing into the MS4 system, having access to inspect sources of pollutant discharges, and being able to compel compliance and issue citations in the event of violations. Legal authority is especially critical for construction site runoff control, post-construction/permanent runoff control, industrial and commercial inspections, and illicit discharge detection and elimination programs. (See 40 CFR 122.26(d)(2)(i) and 40 CFR 122.34(b)(3)(ii)(B), (b)(4)(ii)(A), and (b)(5)(ii)(B))

A permittee seeking permit coverage under individual permits is required to describe the legal authority it has to implement and enforce the SWMP. EPA recommends that general permits also require regulated MS4s to describe their applicable legal authority in their Notices of Intent (NOIs) (40 CFR 122.26(d)(2)(i), 122.33(b)). This legal authority is typically established through the adoption of one or more ordinances, or by modifying existing ordinances to provide the necessary authority. In some cases, a permittee might already have codified water quality provisions to address previous MS4 Permit Requirements; in this case, the permittee should be required to review existing codes and ordinances and prepare a statement detailing any necessary changes required to address the new MS4 permit requirements. Some permittees, such as, DOTs, universities, and prisons, may not have the authority to create and enforce ordinances. For these entities other mechanisms and authorities that they do possess should be utilized (e.g. DOT right-of-way permits).

Enforcement Measures and Tracking

Permittees are required by the Phase I and Phase II regulations to include in their ordinance, or other regulatory mechanism, penalty provisions to ensure compliance with construction and industrial requirements, to require the removal of illicit discharges, and to address noncompliance with post-construction requirements. In complying with these requirements, EPA recommends the use of enforcement responses that vary with the type of permit violation, and escalate if violations are repeated or not corrected. EPA recommends that the permittee be required to develop and implement an enforcement response plan (ERP), which clearly describes the action to be taken for common violations associated with the construction program, industrial and commercial program, or other SWMP programs. A well-written ERP provides guidance to inspectors on the different enforcement

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responses available, actions to address general permit non-filers, when and how to refer violators to the State, and how to track enforcement actions.

Adequate Resources

Each permittee will fund its SWMP differently; therefore, in order to assess whether adequate resources have been allocated to carry out the requirements of the MS4 permit, the permitting authorities should require their permittees to submit an accounting of stormwater-related budgets, costs, and staffing resources updated annually. The fiscal analysis should document and explain changes to budgets from year to year and describe how each type of funding can and cannot be used for stormwater program activities. (See 40 CFR 122.26(d)(2)(vi)).

1.1 Requirement to Develop a Stormwater Management Program

Example Permit Provision

1.1.1 Requirement to Develop Program – The permittee must revise and update its written stormwater management program (SWMP) document and submit the SWMP to the [*insert name of Permitting Authority*] for review by [*insert deadline, e.g., within one year of permit issuance*]. The permittee must continue to implement the current SWMP until the revised SWMP is submitted. The SWMP does not contain effluent limitations; the limitations are contained in Parts [*insert relevant part of the permit*] of the permit.

1.1.2 Contents of the SWMP document – At a minimum, the permittee must include the following information in its SWMP document:

a. Ordinances, or other regulatory mechanisms, providing the legal authority necessary to implement and enforce the requirements of this permit (see Part 1.1);

b. Statement by the permittee's legal counsel certifying to adequacy of legal authority (see Part 1.2);

c. Written procedures describing how the permittee will implement provisions described in Parts 2-8.

1.1.3 Modifications to the SWMP document – The [*insert applicable name of permitting authority*]may notify the permittee of the need to modify the SWMP document to be consistent with the permit, in which case the permittee will have [*insert deadline, e.g. 90 days*] to finalize such changes to the program. The permittee is required to keep the SWMP document up to date during the term of the permit. Where the permittee determines that modifications are needed to address any procedural, protocol, or programmatic change, such changes must be made as soon as practicable, but not later than [*insert deadline, e.g. 90 days*].

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Example Permit Requirement Rationale for the Fact Sheet

The permittee is required to develop a SWMP document that describes how the permittee will meet the control requirements in the permit. (See 40 CFR 122.26(d)(2)(iv), 122.34(a)). The SWMP document is a consolidation of all of the permittee's relevant ordinances or other regulatory requirements, the description of all programs and procedures (including standard forms to be used for reports and inspections) that will be implemented and enforced to comply with this permit and to document the selection, design, and installation of all stormwater control measures. The permittee is required to submit its SWMP document to the permitting authority. If modifications to the SWMP are necessary then the permitting authority will notify the permittee.

Recommendation for the Permit Writer

The permit writer should include in this section the relevant parts of the permit that require specific descriptions or justifications to be included in the SWMP document. Also, permit writers may need to include an additional requirement regarding the submittal of the SWMP document since some information contained in the SWMP document is required to be submitted prior to the permittee obtaining permit coverage. In addition, permit writers should refer to the memo entitled *Interim Guidance on Implementation of NPDES Regulations for Storm Water Phase II for Small Municipal Separate Storm Sewer Systems in Response to Recent Ninth Circuit Decision in Environmental Defense Center, et al. v. EPA, No. 00-70014 & consolidated cases (9th Cir.)* for additional guidance on the implementation of regulations for Phase II MS4s (www.epa.gov/npdes/pubs/interim_guidelines_memo_final.pdf).

1.2 Requirement to Develop Adequate Legal Authority to Implement and Enforce Stormwater Management Program

Example Permit Provision

1.2.1 Within [*insert deadline, e.g., one year from permit issuance*] the permittee must review and revise its relevant ordinances or other regulatory mechanisms, or adopt any new ordinances or other regulatory mechanisms that provide it with adequate legal authority to control pollutant discharges into and from its MS4, and to meet the requirements of this permit.

1.2.2 To be considered adequate, this legal authority must, at a minimum, address the following:

a. Authority to Prohibit Illicit Discharges – Prohibit and eliminate illicit connections and discharges to the MS4. Illicit connections include pipes, drains, open channels, or other conveyances that have the potential to allow an illicit discharge to enter the MS4. Illicit discharges include all non-stormwater discharges except fire fighting discharges, discharges from NPDES permitted industrial sources and discharges not otherwise authorized under Part 1.2.2.b. of this permit.

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b. Allowable Non-Stormwater Discharges –Exceptions to the prohibition in Part 1.2.2.a. may include the following, only if they are considered non-significant contributors of pollutants: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)) to separate storm sewers, uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water.

c. Authority to Prohibit Spills or Other Releases – Control the discharge of spills, and prohibit dumping or disposal of materials other than stormwater into the MS4.

d. Authority to Require Compliance – Require compliance with conditions in the permittee's ordinances, permits, contracts, or orders (i.e., hold dischargers accountable for their contributions of pollutants and flows).

e. Authority to Require Installation, Implementation, and Maintenance of Control Measures – Require owners/operators of construction sites, new or redeveloped land, and industrial and commercial facilities to minimize the discharge of pollutants to the MS4 through the installation, implementation, and maintenance of stormwater control measures consistent with [*insert references to applicable stormwater control measure manuals, guidance documents, etc.*].

f. Authority to Receive and Collect Information – The permittee must have the authority to request from operators of construction sites, new or redeveloped land, and industrial and commercial facilities information such as stormwater plans, inspection reports, and monitoring results, and other information deemed necessary to assess compliance with this permit. The permittee must also have the authority to review designs and proposals for new development and redevelopment to determine whether adequate stormwater control measures will be installed, implemented, and maintained.

g. Authority to Inspect – The permittee must have the authority to enter private property for the purpose of inspecting at reasonable times any facilities, equipment, practices, or operations related to stormwater discharges to determine whether there is compliance with local stormwater control ordinances/standards or requirements in this Permit.

h. Response to Violations – The permittee must have the ability to promptly require that violators cease and desist illicit discharges or discharges of stormwater in violation of any ordinance or standard and/or cleanup and abate such discharges, including the ability to:

   1. Effectively require the discharger to abate and clean up their discharge, spill, or pollutant release within [*insert deadline, e.g. 48 hours*] of notification; or

   2. For uncontrolled sources of pollutants that could pose an environmental threat, require abatement within [*insert timeframe, e.g. 30 days of notification*]; or,

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3. Perform the clean up and abatement work and bill the responsible party, if necessary.
4. If a situation persists where pollutant-causing sources or activities are not abated, provide the option to order the cessation of activities until such problems are adequately addressed.
5. When all parties agree that clean-up activities cannot be completed within the timeframe provided, determine a new timeframe and notify the [*insert name of permitting authority*].

i. Monetary Penalties – The permittee must have the ability to:

1. Levy citations or administrative fines against responsible parties either immediately at the site, or within a few days.
2. Require recovery and remediation costs from responsible parties.

j. Civil/Criminal Penalties – The permittee must have the ability to impose more substantial civil or criminal sanctions (including referral to a city or district attorney) and escalate corrective response, consistent with its enforcement response plan developed pursuant to Part 1.3, for persistent non-compliance, repeat or escalating violations, or incidents of major environmental harm.

k. Interagency Agreements – Control of the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements or other similar agreements with other owners of the MS4, such as [*insert other applicable permittees*].

1.2.3 The permittee must include as part of its written SWMP document a statement certified by its chief legal counsel that the permittee has taken the necessary steps to obtain and maintain full legal authority to implement and enforce each of the requirements contained in this permit. This statement must include:

a. Identification of all departments within the permittee's jurisdiction that conduct stormwater-related activities and their roles and responsibilities under this permit. Include an up-to-date organizational chart specifying these departments, key personnel, and contact information.

b. Identification of the local administrative and legal procedures and ordinances available to mandate compliance with stormwater-related ordinances and therefore with the conditions of this permit.

c. A description of how stormwater related-ordinances are implemented and appealed.

d. A description of whether the municipality can issue administrative orders and injunctions, or whether it must go through the court system for enforcement actions.

Example Permit Requirement Rationale for the Fact Sheet

Adequate legal authority is required to implement and enforce most parts of the SWMP. (See 40 CFR 122.26(d)(2)(i) and 40 CFR 122.34(b)(3)(ii)(B), (b)(4)(ii)(A), and (b)(5)(ii)(B)). Without

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adequate legal authority the MS4 would be unable to perform many vital SWMP functions such as performing inspections and requiring installation of control measures. In addition, the permittee would not be able to penalize and/or attain remediation costs from violators.

Recommendations for the Permit Writer

A major difference between a traditional MS4 and a non-traditional MS4 (such as a DOT, military base, or university) is often the scope of legal authority available to the MS4. Non-traditional MS4 permittees often cannot pass "ordinances" nor do they have enforcement authority like a typical municipality, so legal authority may consist of policies, standards, or specific contract language. Non-traditional MS4 permittees also do not generally have the authority to impose a monetary penalty. Although these differences exist, just like traditional MS4s, non-traditional MS4s must have the legal authority to develop, implement, and enforce the program. Moreover, the scope of legal authority that may be exercised by MS4 operators that are municipalities may vary from state to state. Therefore, permit writers should tailor the legal authority section depending on the types of permittees covered and the scope of authority that may be exercised by the permittee. For example, non-traditional MS4 permittees often have authority over what their contracts require. Therefore, the permit could require that contracts for construction and maintenance activities include specific stormwater requirements that ensure the permittee's requirements are met. In addition, cooperative agreements could be maintained with those permittees that do possess the legal authorities to enforce stormwater measures within the permittee's MS4 boundary.

The discharge prohibitions listed in Part 1.2.2 are taken from the Phase II regulations and are the minimum requirements. Note that, unlike Phase II MS4s, Phase I MS4 permittees are required to address the sources of non-stormwater discharges in Part 1.2.2.b. when they are identified as sources of pollutants in stormwater discharges. (See 40 CFR 122.26(d)(2)(iv)(B)). The permit writer may choose to apply additional or more stringent prohibitions. For example, some states have chosen to prohibit discharges from street washing activities as they can be significant sources of pollutants such as oil and grease and heavy metals.

1.3 Enforcement Measures and Tracking

Example Permit Provision

1.3.1 The permittee must continue to implement, and revise within [*specify deadline for completion, e.g. 12 months of permit issuance*] if necessary, an enforcement response plan (ERP), which sets out the permittee's potential responses to violations and addresses repeat and continuing violations through progressively stricter responses as needed to achieve compliance. The ERP must describe how the permittee will use each of the following types of enforcement responses based on the type of violation:

a. Verbal Warnings – Verbal warnings are primarily consultative in nature. At a minimum, verbal warnings must specify the nature of the violation and required corrective action.

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b. Written Notices – Written notices of violation (NOVs) must stipulate the nature of the violation and the required corrective action, with deadlines for taking such action.

c. Escalated Enforcement Measures – The Permittee must have the legal ability to employ any combination of the enforcement actions below (or their functional equivalent), and to escalate enforcement responses where necessary to address persistent non-compliance, repeat or escalating violations, or incidents of major environmental harm:

1. Citations (with Fines) – The ERP must indicate when the permittee will assess monetary fines, which may include civil and administrative penalties.
2. Stop Work Orders – The permittee must have the authority to issue stop work orders that require construction activities to be halted, except for those activities directed at cleaning up, abating discharge, and installing appropriate control measures.
3. Withholding of Plan Approvals or Other Authorizations – Where a facility is in non-compliance, the ERP must address how the permittee's own approval process affecting the facility's ability to discharge to the MS4 can be used to abate the violation.
4. Additional Measures – The permittee may also use other escalated measures provided under local legal authorities. The permittee may perform work necessary to improve erosion control measures and collect the funds from the responsible party in an appropriate manner, such as collecting against the project's bond or directly billing the responsible party to pay for work and materials.

1.3.2 Enforcement Tracking – The Permittee must track instances of non-compliance either in hard-copy files or electronically. The enforcement case documentation must include, at a minimum, the following:

a. Name of owner/operator of facility or site of violation
b. Location of stormwater source (i.e., construction project, industrial facility)
c. Description of violation
d. Required schedule for returning to compliance
e. Description of enforcement response used, including escalated responses if repeat violations occur or violations are not resolved in a timely manner
f. Accompanying documentation of enforcement response (e.g., notices of noncompliance, notices of violations)
g. Any referrals to different departments or agencies
h. Date violation was resolved.

1.3.3 Recidivism Reduction – The permittee is required to identify chronic violators of any SWMP component and reduce the rate of noncompliance recidivism. The permittee

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> must summarize inspection results by these chronic violators and include incentives, disincentives, or an increased inspection frequency at the operator's sites. [2]

Example Permit Requirement Rationale for the Fact Sheet

The permit requires permittees to have an established, escalating enforcement policy that clearly describes the action to be taken for common violations. The policy must describe the procedures to ensure compliance with local ordinances and standards, including the sanctions and enforcement mechanisms that will be used to ensure compliance. (See 40 CFR 122.26(d)(2)(i)). It is critical that the MS4 have the authority to initiate a range of enforcement actions to address the variability and severity of noncompliance. Enforcement responses to individual violations must consider criteria such as magnitude and duration of the violation, effect of the violation on the receiving water, compliance history of the operator, and good faith of the operator in compliance efforts. Particularly for construction sites, enforcement actions must be timely in order to be effective.

Recommendations for the Permit Writer

Typical enforcement mechanisms include verbal warnings, written NOVs, administrative fines and orders, stop work orders, and civil or criminal penalties. Some non-traditional MS4 permittees, such as DOTs and universities, may not have the authority to use the mechanisms described above. Therefore the enforcement requirements in the permit should take the permittee's enforcement limitations and abilities into consideration, allow for alternative mechanisms such as related contract obligations or right-of-way permits, and/or require entities that cannot enforce to coordinate with those entities that can. For example, if a DOT discovers an illicit discharge to the right-of-way, a mechanism should be in place for the DOT to communicate with the adjacent municipality to eliminate the discharge in a timely manner.

Some permit writers include specific language as to when permittees can refer violations of NPDES permits to the permitting authority. Because of the often similar control measures required in MS4 construction programs and NPDES CGP SWPPP requirements, permit writers want the permittee to make an honest effort at achieving compliance with their local requirements before referring a violator to the NPDES permitting authority. An example of permit language on NPDES referrals, which require the MS4 permittee to make a good faith effort at ensuring compliance by conducting at least two inspections and notices of violation, follows:

> NPDES Permit Referrals–For those construction projects or industrial facilities subject to the [*insert name of applicable NPDES general construction/industrial permit*], the permittee must:

[2] Adapted from 2009 San Francisco Bay Municipal Regional Stormwater Permit (Order No. R2-2009-0074; www.swrcb.ca.gov/sanfranciscobay/board_decisions/adopted_orders/2009/R2-2009-0074.pdf) and the Los Angeles MS4 Permit (Part 3; www.swrcb.ca.gov/rwqcb4/water_issues/programs/stormwater/municipal/ms4_permits/los_angeles/2001-2007/LA_MS4_Permit2001-2007.pdf)

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a. Refer non-filers (i.e., those facilities that cannot demonstrate that they obtained permit coverage) to the [*insert name of permitting authority*] within [*insert number of days, e.g. 30 days*] of making that determination. In making such referrals, the permittee must include, at a minimum, the following documentation:

1. Construction project or industrial facility location.
2. Name of owner or operator.
3. Estimated construction project size or type of industrial activity (including SIC code if known).
4. Records of communication with the owner or operator regarding filing requirements.

b. Refer violations to the [*insert name of permitting authority*] provided that the permittee has made a good faith effort of progressive enforcement to achieve compliance with its own ordinances. At a minimum, the permittee's good faith effort must include documentation of two follow-up inspections and two warning letters or notices of violation. In making such referrals, the permittee must include, at a minimum, the following documentation:

1. Construction project or industrial facility location
2. Name of owner or operator
3. Estimated construction project size or type of industrial activity (including SIC code if known)
4. Records of communication with the owner or operator regarding the violation, including at least two follow-up inspections, two warning letters or notices of violation, and any response from the owner or operator

It is important to note that a referral to the permitting authority does not relieve the MS4 from its enforcement obligations. The MS4 must continue to work with the permitting authority, using all available enforcement authority in order to gain compliance.

1.4 Requirement to Ensure Adequate Resources to Comply with MS4 Permit

Example Permit Provision

1.4.1 Secure Resources – The permittee must secure the resources necessary to meet all requirements of this permit.

1.4.2 Annual Fiscal Analysis – The permittee must conduct an annual analysis of the capital and operation and maintenance expenditures needed, allocated, and spent as well as the necessary staff resources needed and allocated to meet the requirements of this permit, including any development, implementation, and

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enforcement activities required. The analysis must include estimated expenditures for the reporting period, the preceding period, and the next reporting period and be submitted with the annual report.

a. Each analysis must include a description of the source of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds.

b. Each analysis must include a narrative description of circumstances resulting in a [*insert percentage, e.g. 25 percent or greater*] annual change for any budget line items.

c. Each analysis must include a description of the staff resources necessary to meet the requirements of this permit.

Example Permit Requirement Rationale for the Fact Sheet

The annual fiscal analysis will show the allocated resources, expenditures, and staff resources necessary to comply with the permit, and implement and enforce the permittee's SWMP. (See 40 CFR 122.26(d)(2)(vi). The annual analysis is necessary to show that the permittee has adequate resources to meet all Permit Requirements. The analysis can also show year-to-year changes in funding for the stormwater program. A summary of the annual analysis must be reported in the annual report (see Section 8.4 and Appendix A). This report will help the Permitting Authority understand the resources that are dedicated to compliance with this permit, and to implementation and enforcement of the SWMP, and track how this changes over time.

Recommendations for the Permit Writer

Permit writers should be specific when requesting financial analysis information from the permittee. The Annual Report Template provided in this Guide includes basic questions that should be adequate for Phase II MS4s. However, more detailed information may be warranted from more established programs and larger Phase I MS4s.

Because stormwater is a component in many different program areas, it can often be difficult to get an accurate accounting of costs. For example, inspection staff may have multiple responsibilities in addition to stormwater inspections. Is it appropriate to count an entire inspector's time (i.e. full-time equivalent (FTE)) as a stormwater cost if the inspector is also doing building inspections? Also, some permittees count street sweeping as a stormwater compliance cost, while others consider their street sweeping costs as an aesthetic or air quality cost. Permittees should provide a detailed breakdown of costs, along with background or additional discussion so the permit writer knows what the costs include.

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CHAPTER 2: PUBLIC EDUCATION AND OUTREACH/PUBLIC INVOLVEMENT

Introduction

The Phase II Regulations require MS4 permittees to develop programs to educate the public about the impact of stormwater discharges on local waterways and the steps that citizens, businesses, and other organizations can take to reduce the contamination of stormwater (40 CFR 122.34(b)(1),(2)). Phase I MS4 permittees were also required to describe their proposed public education programs as part of their initial permit application, but the regulations are not as specific as Phase II. (See 40 CFR 122.26(d)(2)(iv) (B), (D)(4) and (A)(6)).

Included Concepts

- ► Developing a comprehensive stormwater education/ outreach program
- ► Involving the public in planning and implementing the SWMP

As the public gains a greater understanding of the benefits of stormwater management, an MS4 is likely to gain more support for the SWMP (including financial support) and increased compliance with the applicable regulatory requirements as the public understands how their actions impact water quality. Education and awareness programs help change human behavior with respect to reducing the amount of pollution generated from stormwater sources within the MS4 system. In addition to education, encouraging public participation in local stormwater programs can lead to program improvement as well as enabling people to identify and report a pollution-causing activity, such as spotting an illicit discharge.

2.1 Developing a Comprehensive Stormwater Education/Outreach Program

Example Permit Provision

2.1.1 The permittee must:

a. Continue to implement, and revise if necessary within [*specify the time when the development of the program must be completed, e.g., within the first year after permit issuance*], a comprehensive stormwater education/outreach program. The program must, at a minimum:

1. Define the goals and objectives of the program based on at least three high priority, community-wide issues (e.g. reduction of nitrogen in discharges from the MS4, promoting pervious techniques used in the MS4);
2. Identify and analyze the target audience(s);
3. Create an appropriate message(s) based on at least three targeted residential issues and three targeted industrial/commercial issues from the suggested list below (or three issues deemed more appropriate to the MS4):

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Residential Community

- Residential car washing and auto maintenance control measures
- Off-pavement automobile parking
- Home and garden care activities (pesticides, herbicides, and fertilizers)
- Disposal of household hazardous waste (e.g. paints, cleaning products)
- Snow removal activities
- Using techniques that keep water onsite and/or reduce imperviousness (rain barrels, rain gardens, porous pavers, permeable concrete, porous asphalt, etc.)
- Litter prevention
- Importance of native vegetation for preventing soil erosion
- Public reporting of water quality issues
- Community activities (monitoring programs, environmental protection organization activities, etc.)
- Pet and other animal wastes

Industrial/Commercial Community

- Automobile repair and maintenance Control measures
- Control measure installation and maintenance
- Lawful disposal of vacuum truck and sweeping equipment waste
- Pollution prevention and safe alternatives
- Snow removal activities
- Using techniques that keep water onsite and/or reduce imperviousness (rain barrels, rain gardens, porous pavers, permeable concrete, porous asphalt, etc.)
- Equipment and vehicle maintenance and repair
- Importance of good housekeeping (e.g. sweeping impervious surfaces instead of hosing)
- Illicit discharge detection and elimination observations and follow-up during daily work activities
- Water quality impacts associated with land development (including new construction and redevelopment)
- Water quality impacts associated with road resurfacing and repaving

4. Develop appropriate educational materials (e.g. the materials can utilize various media such as printed materials, billboard and mass transit advertisements, signage at select locations, radio advertisements, television advertisements, websites);
5. Determine methods and process of distribution;
6. Evaluate the effectiveness of the program; and
7. Utilize public input (e.g., the opportunity for public comment, or public meetings) in the development of the program.

b. During the term of the permit, the permittee must distribute the educational materials, using whichever methods and procedures determined appropriate by the permittee, in such a way that is designed to convey the program's message to [*insert percentage or other appropriate numeric threshold, e.g., 20%*] of the target audience each year.

c. Within [*insert deadline, e.g., within the permit term*], the permittee must assess changes in public awareness and behavior resulting from the implementation of the program such as using a statistically valid survey and modify the education/outreach program accordingly.

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d. The permittee must assess its stormwater education/outreach program annually as specified in Part 8.3 of this permit. The permittee must adjust its educational materials and the delivery of such materials to address any shortcomings found as a result of this assessment.

e. Written procedures for implementing this program must be incorporated into the SWMP document.

Example Permit Requirement Rationale for the Fact Sheet

Without a focused and comprehensive program, outreach and education efforts will likely be poorly coordinated and possibly ineffective. The permit the permittee to develop an education/outreach program that addresses the six steps listed and also found in EPA's *Getting In Step: A Guide to Effective Outreach in Your Watershed (www.epa.gov/watertrain/gettinginstep/)*. This guide explains the steps in developing an outreach plan, presents information on creating outreach materials, and provides tips in working with the media. The permittee is encouraged to follow this guide in developing its outreach strategy.

The public education and outreach program must be tailored and targeted to specific water quality issues of concern in the relevant community. These community-wide and targeted issues must then guide the development of the comprehensive outreach program, including the creation of appropriate messages and educational materials. The permit includes a list of potential residential and commercial issues, but the permittee may also choose other issues that contribute significant pollutant loads to stormwater.

The permittee is encouraged to use existing public educational materials in its program. Examples of public educational materials for stormwater are available at EPA's *Nonpoint Source Outreach Toolbox (www.epa.gov/nps/toolbox)*. The permittee is also encouraged to leverage resources with other agencies and municipalities with similar public education goals.

Finally, the underlying principle of any public education and outreach effort is to change behaviors. The permittee must develop a process to assess how well its public education and outreach programs is changing public awareness and behaviors and to determine what changes are necessary to make its public education program more effective. This assessment of public education programs is typically conducted via phone surveys, but other assessment methods that quantify results can be used. The permittee is encouraged to use a variety of assessment methods to evaluate the effectiveness of different public education activities. The permit requires that the first evaluation assessment be conducted before the final year of the permittee's coverage under this permit, before the next permit is issued. The allows the permittee to make changes as appropriate before the next permit application is due, EPA's *Getting In Step: A Guide to Effective Outreach in Your Watershed (www.epa.gov/watertrain/gettinginstep/)* can provide useful information on setting up and conducting the evaluations.

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Recommendations for the Permit Writer

EPA recommends that the requirement to identify high priority community-wide issues and targeted issues be set at least 3 to 6 months before the stormwater education/outreach program is to be implemented, so the permitting authority can review the issues and provide any feedback before the plan is completed.

The permit can be a means for increasing public awareness and understanding of stormwater impacts on local watersheds, including high quality watersheds that need protecting. EPA recommends that the permit writer consider requiring permittees to identify and describe issues, such as specific pollutants, the sources of those pollutants, impacts on biology, and the physical attributes of stormwater runoff, in their education/outreach program, which affect local watershed(s). Where applicable, the education/outreach program should identify and describe high quality watersheds in need of protection and the issues that may threaten the quality of these waters.

The list in Part 2.1.1.a(3) is not all-inclusive. Therefore, EPA recommends that the permit be written to allow the permittee to indentify priority issue(s) not listed that may contribute a significant pollutant load to stormwater. For Phase I, individual permits, it may be appropriate for the permit writer to specify the priority issues based on known issues, monitoring data, historical trends, etc. Phase II general permits will likely need to allow for more flexibility in selecting priority issues.

In addition, the permit writer will need to consider that DOTs and other "non-traditional" MS4s will likely have different priority concerns than the ones identified in the categories above. In fact, the categories (residential and commercial/industrial) may also need to be changed. In these instances, the permit writer may want to consider having the non-traditional permittees work together with any local government MS4s in their area to maximize the program and cost effectiveness of the outreach.

The permit writer may consider specifying the mechanism the permittee is required to use to measure the awareness of and behavior related to issues concerning stormwater runoff by the general public, or targeted audiences within the general public. Examples of evaluations could include:

- Direct Evaluations
- Surveys
- Tracking the number of attendees
- Interviews
- Review of media clippings
- Tracking the number of stormwater-related calls/emails/letters received

Permit writers should consider whether it is appropriate to require a baseline assessment of the public's awareness of stormwater issues, for example in the second year of the permit term, so that comparisons may be drawn in reference to the baseline. This would likely require the permittee to conduct two assessments in the first permit term that the assessment is required.

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2.2 Involving the Public in Planning and Implementing the SWMP

Example Permit Provision

2.2.1 The permittee is required to involve the public in the planning and implementation of activities related to the development and implementation of the SWMP. At a minimum, the permittee must:

a. Establish a citizen advisory group or utilize existing citizen organizations. The permittee may establish a stand-alone group or utilize an existing group or process. The advisory group must consist of a balanced representation of all affected parties, including residents, business owners, and environmental organizations in the MS4 area and/or affected watershed. The permittee must invite the citizen advisory group to participate in the development and implementation of all parts of the community's SWMP.

b. Create opportunities for citizens to participate in the implementation of stormwater controls (e.g., stream clean-ups, storm drain stenciling, volunteer monitoring, and educational activities).

c. Ensure the public can easily find information about the permittee's SWMP.

2.2.2 Written procedures for implementing this program must be incorporated into the SWMP document.

Example Permit Requirement Rationale for the Fact Sheet

Stormwater management programs can be greatly improved by involving the community throughout the entire process of developing and implementing the program. Involving the public benefits both the permittee itself as well as the community. B y listening to the public's concerns and coming up with solutions together, the permittee will gain the public's support and the community will become invested in the program. The permittees will likewise gain even more insight into the most effective ways to communicate their messages.

This permit requires the involvement of the public, which includes a citizen advisory group or process to solicit feedback on the stormwater program, and opportunities for citizens to participate in implementation of the stormwater program. The citizen advisory group should meet with the local land use planners and provide input on land use code or ordinance updates so that land use requirements incorporate provisions for better management of stormwater runoff and watershed protection. Public participation in implementation of the stormwater program can include many different activities such as stream clean-ups, storm drain markings, and volunteer monitoring.

Permittees are encouraged to work together with other entities that have an impact on stormwater (for example, schools, homeowner associations, DOTs, other MS4 permittees). Permittees are also encouraged to use existing advisory groups or processes in order to implement these public involvement requirements.

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Recommendations for the Permit Writer

Especially for Phase I permittees, permit writers may consider requiring more specific information such as requiring at least one contact that the public can reach (including phone number and/or e-mail address) be clearly posted on the website. The contact may be a general contact or a specific person. The permitting authority may want the MS4 to have a mechanism for the public to comment year round, not just at public meetings. This could be facilitated by a webpage and email or a stormwater hotline.

Some Phase II permittees may find it more difficult to establish and maintain a formal citizen advisory group simply because they tend to have smaller populations. The permit writer may want to provide flexibility for the Phase II permittees to utilize the public involvement mechanism which best suits their individual community. For example, groups which are already involved with other aspects of municipal governance or established events where input could be solicited (i.e. farmers markets, festivals) may serve to meet the objective of this section.

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CHAPTER 3: ILLICIT DISCHARGE DETECTION AND ELIMINATION

Introduction

Phase I (see 40 CFR 122.26 (d)(1)(v)(B) and (d)(1)(iv)(B)) and Phase II stormwater management programs (see 40 CFR 122.26(d)(2)(iv)(B)) are required to address illicit discharges into the MS4 system. An illicit discharge is defined as any discharge to a municipal separate storm sewer system that is not composed entirely of stormwater, except allowable discharges pursuant to an NPDES permit (40 CFR 122.26(b)(2)). In addition to requiring permittee to have the legal authority to prohibit non-stormwater discharges from entering storm sewers (CWA Section 402(p)(3)(B)) (see Chapter I), MS4 permits must also require the development of a comprehensive, proactive Illicit Discharge Detection Elimination (IDDE) program.

Included Concepts

- IDDE program development
- MS4 mapping
- Identification of priority areas
- Field screening
- IDDE source investigations and elimination
- Public reporting of non-stormwater discharges and spills
- Illicit discharge education and training

An effective IDDE program is more than just a program to respond to complaints about illicit discharges or spills. Permittees must proactively seek out illicit discharges, or activities that could result in discharges, such as illegal connections to the storm sewer system, improper disposal of wastes, or dumping of used motor oil or other chemicals.

In order to trace the origin of a suspected illicit discharge or connection, the permittee must have an updated map of the storm drain system and a formal plan of how to locate illicit discharges and how to respond to them once they are located or reported. The permittee must provide a mechanism for public reporting of illicit discharges and spills, as well as an effective way for staff to be alerted to such reports. Regular field screening of outfalls for non-stormwater discharges needs to occur in areas determined to have a higher likelihood for illicit discharges and illegal connections. Proper investigation and enforcement procedures must be in place to eliminate the sources of the discharges, as well. Finally, in order for the permittee to adequately detect and eliminate sources of illicit discharges, both field and office staff must be properly trained to recognize and report the discharges to the appropriate parties.

EPA recommends that permittees refer to the Center for Watershed Protection's guide on *Illicit Discharge Detection and Elimination (IDDE): A Guidance Manual for Program Development and Technical Assistance* (IDDE Manual, available at www.cwp.org) when developing an IDDE program.

3.1 IDDE Program Development

Example Permit Provision

3.1.1 The permittee must continue to implement a program to detect, investigate, and eliminate non-stormwater discharges (see Part 1.2.2), including illegal dumping, into its system. The IDDE program must include the following:

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a. An up-to-date storm sewer system map (see Part 3.2).

b. Procedures for identifying priority areas within the MS4 likely to have illicit discharges, and a list of all such areas identified in the system (see Part 3.3)

c. Field screening to detect illicit discharges (see Part 3.4)

d. Procedures for tracing the source of an illicit discharge (see Part 3.5)

e. Procedures for removing the source of the discharge (see Part 3.5)

f. Procedures for program evaluation and assessment (see Part 8.3)

g. Procedures to prevent and correct any on-site sewage disposal systems that discharge into the MS4. [3]

3.1.2 In implementing the IDDE program, the permittee may conduct such investigations, contract for investigation, coordinate with storm drain investigation activities of others, or use any combination of these approaches.

3.1.3 For non-traditional MS4 permittees, if illicit connections or illicit discharges are observed related to another operator's municipal storm sewer system then the permittee must notify the other operator within [*insert applicable deadline, e.g., within 48 hours*] of discovery.

3.1.4 If another operator notifies the permittee of an illegal connection or illicit discharge to the municipal separate storm sewer system then the permittee must follow the requirements specified in Part 3.5.4.

3.1.5 Written procedures for implementing this program, including those components described in Parts 3.1 – 3.7 must be incorporated into the SWMP document.

Example Permit Requirement Rationale for the Fact Sheet

EPA stormwater regulations define "illicit discharge" as "any discharge to a municipal separate storm sewer that is not composed entirely of stormwater" except discharges resulting from fire fighting activities and discharges from NPDES permitted sources (see 122.26(b)(2)). The applicable regulations state that the following non-stormwater discharges may be allowed if they are not determined to be a significant source of pollutants to the MS4 : water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water. If, however, these discharges are determined to be a significant source of pollution then they are prohibited.

Examples of common sources of illicit discharges in urban areas include apartments and homes, car washes, restaurants, airports, landfills, and gas stations. These so called "generating sites" discharge sanitary wastewater, septic system effluent, vehicle wash water, washdown from

[3] Vermont Phase II General Permit (www.vtwaterquality.org/stormwater/htm/sw_ms4.htm)

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grease traps, motor oil, antifreeze, gasoline and fuel spills, among other substances. Although these illicit discharges can enter the storm drain system in various ways, they generally result from either direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g., infiltration into the storm drain system, spills, or "midnight dumping"). Illicit discharges can be further divided into those discharging continuously and those discharging intermittently.

One way of locating these dry weather discharges is to perform field screening of outfalls. If no rain has occurred prior to the screening then it is likely that any flow observed at an outfall is either groundwater or an illicit discharge. It is important to utilize resources effectively and to target field screening activities in priority areas that are the most common sources of illicit discharges. For example, municipalities with older neighborhoods should prioritize those areas for targeted investigation due to the likelihood of cross connections with the sanitary sewer. Older parts of the storm drain system may also be deteriorating and require repair or replacement.

In addition, it is important that permittees establish clear policies and procedures for tracing and eliminating illicit discharges to ensure that individual incidents are addressed consistently. These policies should include procedures to notify neighboring localities if a discharge is discovered either originating on or discharging to the neighboring storm sewer system.

Additional information is available in the Center for Watershed Protection's *IDDE Manual.*

Recommendations for the Permit Writer

In some instances the permit writer may choose to include more specific requirements. For example, if the priority areas are already known, then Part 3.1.1.a may be more specifically worded. In addition, regulations governing Phase I MS4 permits have somewhat different requirements including specific field screening procedures (40 CFR 122.26(d)(1)(iii)(D) and 122.26(d)(2)(iii)) and a program to detect and remove illicit discharges and improper disposal into the storm sewer (40 CFR 122.26(d)(2)(iv)(B).

3.2 MS4 Mapping

Example Permit Provision

3.2.1 The permittee must maintain an up-to-date and accurate storm sewer system map.

a. The storm sewer system map must show the following, at a minimum:

1. The location of all MS4 outfalls and drainage areas contributing to those outfalls that are operated by the permittee, and that discharge within the permittee's jurisdiction to a receiving water
2. The location (and name, where known to the permittee) of all waters receiving discharges from those outfall pipes. Each mapped outfall must be given an individual alphanumeric identifier, which must be noted on the map. When possible, the outfalls must be located using a geographic

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position system (GPS) and photographs should be taken to provide baseline information and track operation & maintenance needs over time.[4]

3. Priority areas identified under Part 3.3
4. Field screening stations identified under Part 3.4.2.a

b. A copy of the storm sewer system map must be available onsite for review by the permitting authority.

Example Permit Requirement Rationale for the Fact Sheet

In order to trace the origin of a suspected illicit discharge or connection, the permittee must have an up-to-date map of its storm drain system. This is critical in order to isolate the potential source of the non-stormwater discharges and the areas of potential impact. Ideally, the information would be available as a geographic information system (GIS) layer in a geo-locational database, however, paper maps are sufficient providing they have the necessary reference information.

The permit primarily requires the mapping of outfalls, drainage areas contributing to those outfalls, and receiving waters. The municipal facility inventory created to comply with the pollution prevention/good housekeeping requirements (see Part 6.1) must also be included either on this sewer system map or on a separate MS4 map.

Recommendations for the Permit Writer

Both Phase I and Phase II regulations require permittees to develop a map indicating outfalls and the waters that receive the MS4 discharges. This map is to be used to identify priority areas that have a reasonable potential for illicit discharges. The mapping requirements should be adjusted based on any existing mapping of the MS4 that has already been completed. For example, Phase I mapping should have been initiated during the initial permit application process. This map should not be static, however, since it would need to be updated as development patterns change and new collection and discharge components of the MS4 are added. The mapping requirement could be supplemented by adding a requirement to "modify existing maps to clearly identify all receiving waters."

3.3 Identification of Priority Areas

Example Permit Provision

3.3.1 The permittee must continue to identify the following as priority areas [*insert areas that may be more applicable to the jurisdiction*]:

a. Areas with older infrastructure that are more likely to have illicit connections;

[4] New Jersey Phase II General Permit (www.state.nj.us/dep/dwq/pdf/Tier_A_final.pdf), with modifications

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b. Industrial, commercial, or mixed use areas;

c. Areas with a history of past illicit discharges;

d. Areas with a history of illegal dumping;

e. Areas with onsite sewage disposal systems;

f. Areas with older sewer lines or with a history of sewer overflows or cross-connections; and

g. Areas upstream of sensitive waterbodies.

3.3.2 The permittee must document the basis for its selection of each priority area and create a list of all priority areas identified in the system. This priority area list must be updated [*insert frequency, e.g., annually*] to reflect changing priorities and be available for review by the permitting authority.

Example Permit Requirement Rationale for the Fact Sheet

The permit requires an evaluation of the permittee's neighborhoods and land uses to identify areas that are more likely to have illicit discharges. These areas must be prioritized for more frequent screening and investigations. Each permittee will have a different set of priority areas: newer communities with modern infrastructure are less likely to have sewer cross-connections and illegal connections to the storm drain system, whereas towns with rural areas may place an emphasis on illegal dumping and onsite sewage disposal systems. Prioritization must be based not only on land use but also on prior history and frequency of problems.

The identification of priority areas must include "hotspots" or areas where dumping, spills, or other illicit discharges are a common occurrence. These hotspots will help identify potential field screening locations and may help target educational activities. For example, if evidence of motor oil dumping is found quite frequently and traced to the same apartment complex, information about motor oil disposal could be distributed to residents in response.

Recommendations for the Permit Writer

Phase I permittees should have been documenting information regarding high priority areas for several permit terms. In these instances the permit writer should require the permittee to continually evaluate and update the priority areas as development patterns change or new "hotspot" areas are found. If the permit writer has information regarding priority areas which are specific to the Phase I permittee (e.g. certain high priority watersheds or land use types which typically discharge a pollutant of concern) then those specific areas should be specified as high priority.

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3.4 Field Screening

Example Permit Provision

3.4.1 The permittee must continue to implement and revise if necessary within [*specify deadline for completion*] a written dry weather field screening and analytical monitoring procedures to detect and eliminate illicit discharges to the MS4. These procedures must be included as part of the IDDE program, and incorporated into the permittee's SWMP document. Dry weather field screening and analytical monitoring consists of (1) field observations; (2) field screening monitoring; and (3) analytical monitoring at selected stations.

3.4.2 Conduct dry weather field screening and analytical monitoring. At a minimum, the permittee must:

a. Identify a minimum of [*specify number*] stations within the priority areas it identified in Part 3.3.1 at which field screening and analytical monitoring will take place. In addition, if the permittee is made aware of non-stormwater discharges that occur during the permit term outside of the priority areas, the permittee must include field screening stations in those areas;

b. Conduct dry weather field screening and analytical monitoring at each station identified above at least once [*insert timeframe for dry part of year, or specify annually*].

c. Sample runoff according to requirements outlined in (1) and (2) below if flow or ponded runoff is observed at a field screening station and there has been at least seventy-two (72) hours of dry weather. The permittee must also record general information such as time since last rain, quantity of last rain, site descriptions (e.g., conveyance type, dominant watershed land uses), flow estimation (e.g., width of water surface, approximate depth of water, approximate flow velocity, flow rate), and visual observations (e.g., odor, color, clarity, floatables, deposits/stains, vegetation condition, structural condition, and biology).

1. Field screening requirements: The permittee is required to conduct a field screening analysis for the following constituents. Samples must be collected and analyzed consistent with the procedures required by 40 CFR Part 136.

   [*insert specific indicator pollutants that the permittee is required to monitor for.]*

2. Analytical monitoring requirements: In addition to field screening, the permittee is required to collect samples for analytical laboratory analysis of the following constituents for a minimum of [*insert percentage*] of the samples taken. Samples must be collected and analyzed consistent with the procedures required by 40 CFR Part 136.

   [*insert specific pollutants of concern that the permittee is required to monitor for*]

3. Develop benchmark concentration levels for dry weather field screening and analytical monitoring results whereby exceedance of the benchmark will

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require follow-up investigations to be conducted to identify and eliminate the source causing the exceedance of the benchmark.

d. Conduct a follow-up investigation under Part 4.5 if the benchmarks associated with the constituents listed above in Part 3.4.2.c(1) and (2) are exceeded; and

e. Make and record all applicable observations and select another station from the list of alternate stations for monitoring if, after two subsequent field screening tests have been completed, the field screening station is dry (i.e., no flowing or ponded runoff).

3.4.3 The permittee must assess its IDDE program every [*specify deadline for completion, e.g., once per permit term*] to determine if updates are needed. Where updates are found to be necessary, the permittee must make such changes [*insert deadline for finalizing changes*].

Example Permit Requirement Rationale for the Fact Sheet

The permit requires the development of a dry weather field screening and analytical monitoring program. The program must identify stations (e.g., outfalls) within the identified "priority areas" where the field screening will be conducted. At a frequency set by the permitting authority, the permittee must screen outfalls during dry weather and, if flow or ponded water is observed, collect a sample for field screening and analytical monitoring.

Visually screening outfalls during dry weather and conducting field tests, where flow is occurring, of selected chemical parameters as indicators of the discharge source will assist permittees in determining the source of illicit discharges. For example, the presence of surfactants is an indicator that sewage could be present in the discharge (e.g., soaps being discharged into sewer system as an indicator that wastewater is being discharged). Specific conductivity, fluoride and/or hardness concentration, ammonia and/or potassium concentration, surfactant and/or fluorescence concentration, chlorine concentration, pH, and other chemicals may similarly be indicative of industrial sources.

The permit requires the permittee to develop benchmarks for dry weather screening and analytical monitoring results. An exceedance of the benchmark concentration level indicates the need to conduct a follow-up investigation. The results will help the permittee narrow down the possible sources causing the benchmark to be exceeded so that they can then be eliminated. This is a common protocol to trigger additional monitoring and/or implementation of BMPs at stormwater discharges (e.g. MSGP has sector-specific benchmark monitoring requirements).

Recommendations for the Permit Writer

There are many options for field screening programs available to the permit writer that will meet the requirements of the regulations. Phase I regulations require that permittees conduct initial field screening of the entire MS4 during the permit application process as well as on-going field screening activities during the life of the permit. Based on this historical information and data, permit writers may want to specify in Phase I individual permits which priority areas must be screened. They may

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also want to specify how many outfalls or what percentage of the outfalls should be inspected during the permit term.

In addition, for new Phase II permittees, permit writers may want to require screening of all priority areas during the first permit term and then require on-going screening in the areas where illicit discharges were identified.

This permit language includes analytical monitoring at dry weather field screening locations. The monitoring required during field screening (Part 3.4.2.c.1.) should include appropriate indicator pollutants, i.e. pollutants that will indicate the presence of some sort of illicit discharge. For example, Phase II NPDES regulations suggest sampling for specific conductivity, ammonia, surfactant and/or fluorescence concentration, pH and other chemicals indicative of industrial sources.

Permit writers should select the additional pollutants to be monitored based upon specific pollutants of concern for the receiving water(s) and/or specific indicator pollutants which can assist the MS4 in the location of particular discharges of concern and the potential water quality impact of the discharge. For example, the Phase I San Diego MS4 Permit requires that permittees monitor the following parameters during field screening: total hardness, oil and grease, diazinon and chlorpyrifos, cadmium (dissolved), lead (dissolved), zinc (dissolved), copper (dissolved), Enterococcus bacteria, total coliform bacteria, and fecal coliform bacteria.

Permit writers should encourage or even require permittees to use the CWP *IDDE Manual* and/ or EPA's 2008 Multi-Sector General Permit (www.epa.gov/npdes/stormwater/msgp) to develop benchmarks for each parameter.

In the *IDDE Manual* it is strongly recommended that benchmarks be developed specifically for each area. As an example, the *IDDE Manual* lists the following benchmark concentrations (Table 3-1) to identify industrial discharges:

Table 3-1. Benchmark concentrations to identify Industrial Discharges (from CWP IDDE Manual, Table 45)

Indicator Parameter	**Benchmark Concentration**
Ammonia	>= 50 mg/L
Color	>= 500 units
Conductivity	>= 2,000 µS/cm
Hardness	<= 10 mg/L as CaCO3 or >= 2,000 mg/L as CaCO3
pH	<= 5
Potassium	>= 20 mg/L
Turbidity	>= 1,000 NTU

For comparison purposes, the chemical fingerprint for different flow types in Alabama is presented in Table 3-2. The chemical fingerprint for each flow type can differ regionally, so permittees should develop their own "fingerprint" library by sampling each flow type.

Table 3-2. Comparative "Fingerprint" (Mean Values) of Flow Types (from CWP IDDE Manual, Table 1)

Flow Type	Hardness (mg/L as CaCO3)	NH3 (mg/L)	Potassium (mg/L)	Conductivity (µS/cm)	Fluoride (mg/L)	Detergents (mg/L)
Sewage	50 (0.26)	25 (0.53)	12 (0.21)	1215 (0.45)	0.7 (0.1)	9.7 (0.17)
Septage	57 (0.36)	87 (0.4)	19 (0.42)	502 (0.42)	0.93 (0.39)	3.3 (1.33)

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Table 3-2. Comparative "Fingerprint" (Mean Values) of Flow Types (from CWP IDDE Manual, Table 1)

Laundry Washwater	45 (0.33)	3.2 (0.89)	6.5 (0.78)	463.5 (0.88)	0.85 (0.4)	758 (0.27)
Car Washwater	71 (0.27)	0.9 (1.4)	3.6 (0.67)	274 (0.45)	1.2 (1.56)	140 (0.2)
Plating Bath (Liquid Industrial Waste)	14330 (0.32)	66 (0.66)	1009 (1.24)	10352 (0.45)	5.1 (0.47)	6.8 (0.68)
Radiator Flushing (Liquid Industrial Waste)	5.6 (1.88)	26 (0.89)	2801 (0.13)	3280 (0.21)	149 (0.16)	15 (0.11)
Tap Water	52 (0.27)	<0.06 (0.55)	1.3 (0.37)	140 (0.07)	0.94 (0.07)	0 (NA)
Groundwater	38 (0.19)	0.06 (1.35)	3.1 (0.55)	149 (0.24)	0.13 (0.93)	0 (NA)
Landscape Irrigation	53 (0.13)	1.3 (1.12)	5.6 (0.5)	180 (0.1)	0.61 (0.35)	0 (NA)

The number in parentheses after each concentration is the Coefficient of Variation.
Source: Robert Pitt data from CWP IDDE Manual

The permit writer may also want to require the permittee to analyze a certain number of discharge samples to characterize the concentration of certain pollutants in the different drainage areas. This characterization sampling would be in addition to any characterization sampling completed for the Phase I permit application. This type of sampling would not necessarily aid in the elimination of the source of the discharge, however, the data would be useful in characterizing the discharge from the MS4.

For those areas that have ponding or flow during dry weather, permit writers may consider allowing permittees the flexibility to look for indicators of an illicit discharge before conducting water quality tests due to baseline flow (e.g. baseflow, groundwater flow, irrigation return flows) in certain areas. In these cases, permit writers could require that sensory indicators (i.e. odor, color, turbidity, and floatables) be evaluated.

For additional guidance on field screening, the *IDDE Manual* describes an outfall reconnaissance inventory (ORI) to assess outfalls and conduct indicator monitoring to help identify illicit discharges.

Regardless of the field screening scheme, it is also very important to emphasize in the permit conditions that monitoring must be done in compliance with 40 CFR 136.

3.5 IDDE Source Investigation and Elimination

Example Permit Provision

3.5.1 The permittee is required to develop written procedures for conducting investigations into the source of all identified illicit discharges, including approaches to requiring such discharges to be eliminated.

3.5.2 Minimum Investigation Requirements – At a minimum, the permittee is required to conduct an investigation(s) to identify and locate the source of any continuous or

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intermittent non-stormwater discharge within [*specify time period*] of becoming aware of the illicit discharge.

a. Illicit discharges suspected of being sanitary sewage and/or significantly contaminated must be investigated first.

b. Investigations of illicit discharges suspected of being cooling water, wash water, or natural flows may be delayed until after all suspected sanitary sewage and/or significantly contaminated discharges have been investigated, eliminated and/or resolved.

c. The permittee must report immediately the occurrence of any dry weather flows believed to be an immediate threat to human health or the environment to [*insert state water quality emergency contact phone number*].

d. The permittee must track all investigations to document at a minimum the date(s) the illicit discharge was observed; the results of the investigation; any follow-up of the investigation; and the date the investigation was closed.

3.5.3 Determining the Source of the Illicit Discharge –The permittee is required to determine and document through its investigations, carried out in Part 3.5.1, the source of all illicit discharges. If the source of the illicit discharge is found to be a discharge authorized under [*insert NPDES discharge permit reference*] of an NPDES permit, no further action is required.

a. If an illicit discharge is found, but within six (6) months of the beginning of the investigation neither the source nor the same non-stormwater discharge has been identified/observed, then the permittee must maintain written documentation for review by the permitting authority.

b. If the observed discharge is intermittent, the permittee must document that a minimum of three (3) separate investigations were made to observe the discharge when it was flowing. If these attempts are unsuccessful, the Permittee must maintain written documentation for review by the permitting authority. However, since this is an ongoing program, the Permittee should periodically recheck these suspected intermittent discharges.[5]

3.5.4 Corrective Action to Eliminate Illicit Discharge – Once the source of the illicit discharge has been determined, the permittee must immediately notify the responsible party of the problem, and require the responsible party to conduct all necessary corrective actions to eliminate the non-stormwater discharge within [*specify deadline*]. Upon being notified that the discharge has been eliminated, the permittee must conduct a follow-up investigation and field screening, consistent with Part 3.4, to verify that the discharge has been eliminated. The permittee is required to document its follow-up investigation. The permittee may seek recovery and remediation costs from responsible parties consistent with Part 1.2, or require compensation for the cost of field screening and investigations. Resulting enforcement actions must follow the SWMP ERP.

[5] New Jersey Phase II Permit (www.state.nj.us/dep/dwq/pdf/Tier_A_final.pdf)

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Example Permit Requirement Rationale for the Fact Sheet

The Clean Water Act, section 402(p)(3)(B)(ii) requires MS4 permits to "effectively prohibit non-stormwater discharges into the storm sewers." The permit implements this requirement, in part by requiring the development of procedures to investigate and eliminate illicit discharges. The permittee must develop a clear, step-by-step procedure for conducting the investigation of illicit discharges. The procedure must include an investigation protocol that clearly defines what constitutes an illicit discharge "case" and when a case is considered "closed." In many circumstances, sources of intermittent, illicit discharges are very difficult to locate, and these cases may remain unresolved. The permit requires that each case be conducted in accordance with the SOPs developed to locate the source and conclude the investigation, after which the case may be considered closed. A standard operating procedure (SOP) document is required in order to provide investigators with guidance and any necessary forms to ensure that consistent investigations occur for every illicit discharge incident.

Physical observations and field testing can help narrow the identification of potential sources of a non-stormwater discharge; however it is unlikely that either will pinpoint the exact source. Therefore, the permittee will need to perform investigations "upstream" to identify illicit connections to systems with identified problem outfalls.

Once the source of the non-stormwater discharge is determined through investigation, corrective action is required to eliminate the problem source. Resulting enforcement actions must follow the SWMP ERP. The permittee may conduct remediation activities on its own, in which case the permittee must require compensation for any and all costs related to eliminating the non-stormwater discharge. Non-traditional MS4 permittees may be limited in their ability to seek recovery.

Recommendations for the Permit Writer

Both Phase I and Phase II regulations require permittees to develop a process to trace the source of illicit discharges and eliminate them. The regulations also state that appropriate enforcement procedures and actions must be included in this process.

3.6 Public Reporting of Non-Stormwater Discharges and Spills

Example Permit Provision

3.6.1 The permittee must promote, publicize, and facilitate public reporting of illicit discharges or water quality impacts associated with discharges into or from MS4s through a central contact point, including phone numbers for complaints and spill reporting, and publicize to both internal permittee staff and the public. If 911 is selected, the permittee must also create, maintain, and publicize a staffed, non-emergency phone number with voicemail, which is checked daily.

3.6.2 The permittee must develop a written spill/dumping response procedure, and a flow chart or phone tree, or similar list for internal use, that shows the procedures for responding to public notices of illicit discharges, the various responsible agencies

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and their contacts, and who would be involved in illicit discharge incidence response, even if it is a different entity other than the permittee.

3.6.3 The permittee must conduct reactive inspections in response to complaints and follow-up inspections as needed to ensure that corrective measures have been implemented by the responsible party to achieve and maintain compliance.[6]

Example Permit Requirement Rationale for the Fact Sheet

This provision serves to implement, in part, the statutory requirement that MS4 permits effectively prohibit non-stormwater discharges. Spills, leaks, sanitary sewer overflows, and illicit dumping or discharges can introduce a range of stormwater pollutants into the storm system. Prompt response to these occurrences is the best way to prevent or reduce negative impacts to waterbodies. The permittee must develop a spill response SOP that includes an investigation procedure similar to or in conjunction with the investigation SOP developed for illicit discharges in general (see Section 3.5). Often, a different entity might be responsible for spill response in a community (i.e. fire department), therefore, it is imperative that adequate communication exists between stormwater and spill response staff to ensure that spills are documented and investigated in a timely manner.

A stormwater hotline can be used to help permittees become aware of and mitigate spills or dumping incidents. Spills can include everything from an overturned gasoline tanker to sediment leaving a construction site to a sanitary sewer overflow entering into a storm drain. Permittees must set up a hotline consisting of any of the following (or combination thereof): a dedicated or non-dedicated phone line, E-mail address, or website.

Recommendations for the Permit Writer

Spills which occur due to municipal staff activities are considered illicit discharges, but, spill prevention could also be addressed in the municipal operations/good-housekeeping portion of the permit as in this Guide (Chapter 6).

Facilitating public reporting of illicit discharges is specifically required in the Phase I regulations and as a part of the plan to detect and address illicit discharge, EPA recommends that Phase II permittees also develop a venue to promote, publicize, and facilitate public reporting of these discharges.

It is also noteworthy that smaller Phase II MS4s may utilize outside agency resources for spill response and/or they may use a neighboring locality. In this case, permittees will need to coordinate with these agencies to ensure appropriate spill response occurs and the necessary documentation is completed.

[6] San Francisco Municipal Regional Stormwater permit (www.swrcb.ca.gov/sanfranciscobay/board_decisions/adopted_orders/2009/R2-2009-0074.pdf), with modifications

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3.7 Illicit Discharge Education & Training

Example Permit Requirement

3.7.1 The permittee must continue to implement a training program for all municipal field staff, who, as part of their normal job responsibilities, may come into contact with or otherwise observe an illicit discharge or illicit connection to the storm sewer system. Contact information, including the procedure for reporting an illicit discharge, must be included in the permittee's fleet vehicles that are used by field staff. Training program documents must be available for review by the permitting authority.

3.7.2 By no later than [*insert applicable deadline, e.g., 6 months after permit authorization*], the permittee must train all staff identified in Section 3.7.1 above on the identification of an illicit discharge or connection, and on the proper procedures for reporting and responding to the illicit discharge or connection. Follow-up training must be provided as needed to address changes in procedures, techniques, or staffing. The permittee must document and maintain records of the training provided and the staff trained. [7]

Example Permit Requirement Rationale for the Fact Sheet

The permit requires the permittee to train field staff, who may come into contact or observe illicit discharges, on the identification and proper procedures for reporting illicit discharges. Field staff to be trained may include, but are not limited to, municipal maintenance staff, inspectors, and other staff whose job responsibilities regularly take them out of the office and into areas within the MS4 area. Permittee field staff are out in the community every day and are in the best position to locate and report spills, illicit discharges, and potentially polluting activities. With proper training and information on reporting illicit discharges easily accessible, these field staff can greatly expand the reach of the IDDE program.

Recommendations for the Permit Writer

Permit writers may wish to require training of office staff (or all permittee staff), as well as field staff, as they can act as additional "eyes and ears" since they typically live in the community. The training should consist of how to identify illicit discharges and dumping, as well as the appropriate people to contact based on the type of discharge that is occurring.

Existing permittees (Phase I and Phase II) may have been training staff for several permit terms. For this reason, the permit writer may want the permittee to focus on annual "refresher" trainings for existing staff and new employees within a certain time of their hire date.

[7] Washington State Phase I Permit (www.ecy.wa.gov/programs/wq/stormwater/municipal/phaseIpermit/MODIFIEDpermitDOCS/PhaseIpermitSIGNED.pdf)

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CHAPTER 4: CONSTRUCTION

Introduction

MS4 permits must address construction-related requirements (and often more specific state requirements) found in the following Federal regulations – Phase I MS4 Regulations 40 CFR 122.26(d)(2)(iv)(D) and Phase II MS4 Regulations 40 CFR 122.34(b)(4). Specific Permit Requirements should vary based on state requirements, rainfall amounts or other site-specific factors, but, in general, the requirements imposed on MS4 permittees for stormwater management of discharges associated with construction activities consist of several common requirements.

Included Concepts

- ► Construction requirements and control measures
- ► Construction site inventory
- ► Construction plan review procedures
- ► Construction site inspections and enforcement
- ► MS4 staff training
- ► Construction site operator education and public involvement

Permits must require that the permittee enact, to the extent allowed by State, Tribal or local law, an ordinance or other regulatory mechanism as part of the construction program that controls runoff from construction sites with a land disturbance of greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. As part of the ordinance or other regulatory mechanism, the permittee should provide commonly understood and legally binding definitions. These terms should be defined consistently across other related guidance and regulatory documents. Note that EPA's recommended definitions addressing this requirement are included in Appendix B.

Permits must require that MS4 permittees ensure that construction site operators select and implement appropriate erosion and sediment control measures to reduce or eliminate the impacts to receiving waters. The permit can require that permittees develop their own standards and specifications, but often it is preferable to require the permittees to utilize existing guidance that is approved by the permitting authority.

The permit must require that the permittee establish review procedures for construction site plans to determine potential water quality impacts and ensure the proposed controls are adequate. These procedures must include the review of individual pre-construction site plans to ensure consistency with local sediment and erosion control requirements. In addition, the permit must include requirements for inspection and enforcement of erosion and sediment control measures once construction begins.

Finally, Phase I MS4 permits must require the development of educational materials and training for construction site operators, and EPA recommends that training on stormwater controls for construction site operators be mandated in Phase II MS4 permits as well. Training should address site requirements for control measures, local stormwater requirements, enforcement activities, and penalties for non-compliance.

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4.1 Construction Requirements and Control Measures

Example Permit Provision

4.1.1 The permittee must continue to implement a program which requires operators of public or private "construction activities" to select, install, implement, and maintain stormwater control measures that comply with [*Insert reference to documents including any and all applicable erosion and sediment control, pollution prevention, and other stormwater requirements, including applicable CGP, State, and local requirements*.] "Construction activity" for this permit includes, at a minimum, all public and private construction sites that result in a total land disturbance of [*insert disturbance threshold – either one or more acres or that result in a total land disturbance of less than one acre if part of a larger common plan or development or sale, or an alternative threshold that includes disturbances of less than one acre*]. Written procedures for implementing this program, including the components described in Parts 4.2 – 4.6, must be incorporated into the SWMP document. The permittee's construction program must ensure the following minimum requirements are effectively implemented for all construction activity discharging to its MS4:

[*Insert specific minimum requirements, such as:*

a. **Erosion and Sediment Controls**. Design, install and maintain effective erosion controls and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed and maintained to:

(1) Control stormwater volume and velocity within the site to minimize soil erosion;

(2) Control stormwater discharges, including both peak flowrates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and streambank erosion;

(3) Minimize the amount of soil exposed during construction activity;

(4) Minimize the disturbance of steep slopes;

(5) Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site;

(6) Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration, unless infeasible; and

(7) Minimize soil compaction and, unless infeasible, preserve topsoil.

b. **Soil Stabilization**. Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating or other earth disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Stabilization must be completed within a period of

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time determined by the permittee. In arid, semiarid, and drought-stricken areas where initiating vegetative stabilization measures immediately is infeasible, alternative stabilization measures must be employed as specified by the permittee.

c. **Dewatering**. Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited unless managed by appropriate controls.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented and maintained to:

(1) Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;

(2) Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to stormwater; and

(3) Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited Discharges**. The following discharges are prohibited:

(1) Wastewater from washout of concrete, unless managed by an appropriate control;

(2) Wastewater from washout and cleanout of stucco, paint, from release oils, curing compounds and other construction materials;

(3) Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and,

(4) Soaps or solvents used in vehicle and equipment washing.

f. **Surface Outlets**. When discharging from basins and impoundments, utilize outlet structures that withdraw water from the surface, unless infeasible.

Example Permit Requirement Rationale for the Fact Sheet

Stormwater discharges from construction sites generally includes sediment and other pollutants such as phosphorus and nitrogen, turbidity, pesticides, petroleum derivatives, construction chemicals, and solid wastes that may become mobilized when land surfaces are disturbed. The permit requires MS4 permittees to require construction site operators at defined sites to meet certain minimum stormwater requirements relating to erosion and sediment control and pollution prevention, and to meet other restrictions imposed on them by the State, or local regulations. These minimum requirements clearly specify the expectations for addressing

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erosion control, sediment control, and pollution prevention control measures at construction sites.

EPA's Effluent Limitations Guidelines and Standards for the Construction and Development Point Source Category (74 FR 62996, December 1, 2009) require construction site owners and operators to implement a range of erosion and sediment control measures and pollution prevention practices to control pollutants in discharges from construction sites. These standards will be required in state construction general permits as they are reissued. These standards are broadly applicable to all construction activity disturbing one or more acres. They provide an objective means of describing appropriate erosion and sediment control best management practices, pollution prevention controls on construction site waste and storage of building materials and other reasonable components of the permittee's program to reduce pollutants to the maximum extent practicable in stormwater from construction sites that discharge through the MS4.

Recommendations for the Permit Writer

The Phase II stormwater regulations require permittees to develop a construction site program addressing "land disturbance of greater than or equal to one acre." However, some states may have more stringent requirements that apply to some permittees, or the permit writer may have discretion to lower the one acre threshold if this threshold is too high for particular permittees. For example, smaller, built-out cities may have many small redevelopment projects that fall below the one acre threshold. In such cases, controlling construction site stormwater entering the MS4 to the maximum extent practicable may require stormwater controls at smaller sites. Permit writers should review available construction and planning data from the MS4 to determine an appropriate project size threshold.

The example permit provision's list of minimum requirements for erosion controls, sediment controls, and pollution prevention measures is intended to establish specific requirements to implement the broader requirements in the Phase II rule (40 CFR 122.24(b)(4)). The list of minimum requirements in the example permit provision are from EPA's Construction and Development Effluent Guidelines (published December 1, 2009) which will eventually be required in all NPDES stormwater permits issued to construction site operators. At a minimum, the permit should reference the applicable state standards and, where appropriate, any local standards as well. Permit writers may wish to modify these specific requirements based on current standards or guidance on construction site stormwater controls in the State.

4.2 Construction Site Inventory

Example Permit Provision

4.2.1 The permittee must continue to maintain an inventory of all active public and private construction sites that result in a total land disturbance of [*insert disturbance threshold from Part 4.1.1.*]. The inventory must be continuously updated as new projects are permitted and projects are completed. The inventory must contain

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relevant contact information for each project (e.g., name, address, phone, etc.), the size of the project and area of disturbance, whether the project has submitted for permit coverage under [*insert name of applicable NPDES general construction permit*], the date the permittee approved the [*insert name of local erosion and sediment control/stormwater plan]* in accordance with Part 4.3, and the permit tracking number issued by [*insert name of permitting authority*]. The permittee must make it available to the permitting authority upon request.

Example Permit Requirement Rationale for the Fact Sheet

To effectively conduct inspections, the permittee must know where construction activity is occurring. A construction site inventory tracks information such as project size, disturbed area, distance to any waterbody or flow channel, when the erosion and sediment control/stormwater plan was approved by the Permittee, and whether the project is covered by the permitting authority's construction general permit. This inventory will allow the permittee to track and target its inspections.

Recommendations for the Permit Writer

Because of state or local construction permitting requirements, many permittees have some system in place to track construction activity in their jurisdiction. If this is the first MS4 permit issued to the permittee, the permit writer should include a deadline for the development of the initial inventory.

Permit writers may want to request electronic copies of the inventory quarterly or yearly, if that information will be used by the State permitting or inspection staff.

4.3 Construction Plan Review Procedures

Example Permit Provision

4.3.1 The permittee must continue to require each operator of a construction activity to prepare and submit a [*insert name of local erosion and sediment control/stormwater plan*] prior to the disturbance of land for the permittee's review and written approval prior to issuance of a [*insert appropriate permit, i.e. grading or construction*]. The permittee must make it clear to operators of construction activity that they are prohibited from commencing construction activity until they receive receipt of written approval of the the plans. If the [*insert name of local erosion and sediment control/stormwater plan*] is revised, the permittee must review and approve those revisions.

4.3.2 The permittee must continue to implement site plan review procedures that meet the following minimum requirements:

a. The permittee must not approve any [*insert name of local erosion and sediment*

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control/stormwater plan] unless it contains appropriate site-specific construction site control measures that meet the minimum requirements in Part 4.1.1 of this permit.

b. The stormwater pollution prevention plan (SWPPP) developed pursuant to [*insert name of applicable NPDES general construction permit*] may substitute for the [*insert name of local erosion and sediment control/stormwater plan*] for projects where a SWPPP is developed. The permittee is responsible for reviewing those portions of the SWPPP that comply with the [*insert name of local erosion and sediment control/stormwater plan*].

c. The [*insert name of local erosion and sediment control/stormwater plan*] must include the rationale used for selecting control measures, including how the control measure protects a waterway or stormwater conveyance.

d. The permittee must use qualified individuals, knowledgeable in the technical review of [*insert name of local erosion and sediment control/stormwater plan*] to conduct such reviews.

e. The permittee must document its review of each [*insert name of local erosion and sediment control/stormwater plan*] using a checklist or similar process. [8]

Example Permit Requirement Rationale for the Fact Sheet

The permit requires the review and prior approval of all local erosion and sediment control plans/stormwater plans to ensure that construction activities adhere to the permittee's minimum stormwater control requirements. Adequate review of erosion and sediment control/stormwater plans is necessary to verify compliance with all applicable requirements in the permittee's ordinance or other regulatory mechanism, as well as compliance with control measure standards and specifications. A formalized review procedure ensures consistent review of plans by specifying the requirements for plans being submitted, the schedule for review, and general conditions for approval. The site plan review process also provides a way to track construction activities and enforce standards.

A good site plan review process provides the permittee with the opportunity to comment – early and often – on a project's proposed number, type, location, and sizing of stormwater control measures that will be in place prior to, during, and at the conclusion of active construction. It is important to keep in mind that a site plan is a "living document" that may change during the life of the project; however, it is critical that the site plan be adequately reviewed and initially based on established policy, guidelines, and standards. The plan is the framework for stormwater control implementation, as well as the basis of any enforcement action on a project site.

The permit requires the permittee to review plans before construction activity begins to ensure that the plans are consistent with the standards specified in Part 4.1.1. The permit language also includes some key requirements during the plan review process:

[8] 2009 Ventura County, CA Phase I MS4 Permit (www.swrcb.ca.gov/rwqcb4/water_issues/programs/stormwater/municipal/ventura_ms4/09-0057/Transmittal%20Letter%20and%20MS4%20Permit%20Order%20No%2009%200057.pdf)

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- If a SWPPP is developed for the State construction general permit, that plan may substitute for the local plan if it also includes/addresses the local requirements.
- The plan must include the rationale used for selecting or rejecting control measures (for example, why a silt fence was selected or why a sediment trap was not included).
- Finally, plan reviewers must be trained and must document their review. For example, this can be done by using a checklist or similar process.

Recommendations for the Permit Writer

Some MS4 permits include a requirement that, prior to approval of local permits, the permittee must verify that the construction site operator has existing coverage under the State's Construction General Permit, if necessary. This requirement helps to reduce the number of non-filers for the State general permit by providing a check for NPDES CGP permit coverage at the local level.

4.4 Construction Site Inspections and Enforcement

Example Permit Provision

4.4.1 The permittee must continue to implement procedures for inspecting public and private construction projects in accordance with the frequency specified in Table 4-1 below:

Table 4-1: Inspection Frequencies

<table>
<tr><th>Site</th><th>Inspection Frequency</th></tr>
<tr><td>a. All sites [insert a size threshold that is considered large for the MS4 if large projects are common, e.g. 5 acres] or larger in size</td><td rowspan="3">Inspection must occur within [insert number of days/hours, e.g. 48 hours] of a [insert significant rain event size, e.g. ½ inch rain event] and no less than biweekly (every 2 weeks)]</td></tr>
<tr><td>b. All sites one (1) acre or larger that discharge to a tributary listed by the state/tribe as an impaired water for sediment or turbidity under the CWA section 303(d)</td></tr>
<tr><td>c. Other sites one (1) acre or more determined by the permittee or permitting authority to be a significant threat to water quality*</td></tr>
<tr><td>d. All other construction sites with one (1) acre or more of soil disturbance not meeting the criteria specified in (A),(B), or (C) above</td><td>Inspection must occur at least monthly</td></tr>
<tr><td>e. Construction sites less than one (1) acre in size</td><td>Inspection must occur as needed based on the evaluation of the factors that are a threat to water quality*</td></tr>
<tr><td colspan="2">*In evaluating the threat to water quality, the following factors must be considered: soil erosion potential; site slope; project size and type; sensitivity of receiving waterbodies; proximity to receiving waterbodies; non-stormwater discharges; past record of non-compliance by the operators of the construction site; and [insert other factors relevant to particular MS4].</td></tr>
</table>

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4.4.2 The permittee must adequately inspect all phases of construction.

a. Prior to Land Disturbance: Prior to allowing an operator to commence land disturbance, the permittee must perform an inspection to ensure all necessary erosion and sediment controls are in place.

b. During Active Construction: During active construction, the permittee is required to conduct inspections in accordance with the frequencies specified in Table 4-1 in Part 4.4.1.

c. Following Active Construction: At the conclusion of the project, the Permittee must inspect all projects to ensure that all graded areas have reached final stabilization and that all temporary control measures are removed (e.g., silt fence).

4.4.3 The permittee must have trained and qualified inspectors (See Part 4.5). The permittee must also continue to follow, and revise as necessary, written procedures outlining the inspection and enforcement procedures. Inspections of construction sites must, at a minimum:

a. Check for coverage under the [*insert name of applicable NPDES general construction permit*] by requesting a copy of any application or Notice of Intent (NOI) or other relevant application form during initial inspections.

b. Review the applicable [*insert name of local erosion and sediment control/stormwater plan*] and conduct a thorough site inspection to determine if control measures have been selected, installed, implemented, and maintained according to the plan.

c. Assess compliance with the permittee's ordinances and permits related to stormwater runoff, including the implementation and maintenance of designated minimum control measures.

d. Assess the appropriateness of planned control measures and their effectiveness.

e. Visually observe and record non-stormwater discharges, potential illicit connections, and potential discharge of pollutants in stormwater runoff.

f. Provide education and outreach on stormwater pollution prevention, as needed.

g. Provide a written or electronic inspection report generated from findings in the field

4.4.4 The permittee must track the number of inspections for the inventoried construction sites throughout the reporting period to verify that the sites are inspected at the minimum frequencies required. Inspection findings must be documented and maintained for review by the permitting authority.

4.4.5 Based on site inspection findings, the permittee must take all necessary follow-up actions (i.e., re-inspection, enforcement) to ensure compliance in accordance with the permittee's enforcement response plan required in Part 1.3. These follow-up and enforcement actions must be tracked and maintained for review by the permitting authority. [9]

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[9] 2007 San Diego Phase I MS4 Permit (www.swrcb.ca.gov/rwqcb9/water_issues/programs/stormwater/docs/sd_permit/r9_2007_0001/2007_0001final.pdf)

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Example Permit Requirement Rationale for the Fact Sheet

The permit requires inspections of construction sites based on a prioritized ranking of sites (see 40 CFR 122.26(d)(2)(iv)(D)(3) and 122.34(b)(4)(ii)(F)). Larger construction sites and sites that discharge to a sediment impaired waterbody are inspected more frequently than small sites. In addition to inspections at a regular interval, inspections are required within a certain timeframe after a rain event.

Inspections are required before land disturbance to ensure erosion and sediment controls are in place and a plan has been developed, during active construction, and after the site has been stabilized. The permit language also contains specific requirements on what the inspection must include (such as a comparison of control measures in the approved plan to measures installed in the field).

Without adequate implementation and maintenance, stormwater controls will not function as designed. In order to ensure proper implementation and maintenance by site operators, a rigorous inspection protocol is necessary. This protocol must include a written SOP for site inspections and enforcement to ensure inspections and enforcement actions are conducted in a consistent manner. The SOP must include steps to identify priority sites for inspection and enforcement based on the nature and extent of the construction activity, slope of the site, proximity to receiving waters, the characteristics of soils, and the water quality status of the receiving water. This will allow inspection resources and staff time to be used most effectively. Documentation of inspections is critical to track noncompliance and enforcement. Regularly scheduled inspections, as well as post-storm event inspections, are necessary to be sure that regular maintenance occurs as well as repairs after storm events.

Recommendations for the Permit Writer

Selecting an appropriate inspection frequency is, by necessity, a case-by-case exercise. Inspection frequencies for one permittee will not necessarily be appropriate for other permittees. For example, appropriate inspection frequencies may vary among different permittees depending on such factors as topography and rainfall patterns, including whether the MS4 is located in a wet or arid region and/or has distinct wet and dry seasons. Appropriate inspection frequencies may also vary seasonally or geographically within a single MS4 based on seasonal variations in rainfall or snowfall, or differing topographical or geographic conditions in different parts of the MS4 area.

For individual MS4 permits, permit writers should consider seasonal rainfall patterns, the presence and location of impaired streams or sensitive habitats, soils, topography, and other MS4-specific factors. In addition, permit writers should review current inspection frequencies, as well as inspection and enforcement records.

The permit writer should also note that the permit language will need to be modified if the permittee was not previously required to develop written procedures for the inspection and enforcement conducted at construction sites.

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4.5 MS4 Staff Training

Example Permit Provision

4.5.1 The permittee must ensure that all staff whose primary job duties are related to implementing the construction stormwater program, including permitting, plan review, construction site inspections, and enforcement, are trained to conduct these activities. The training can be conducted by the permittee or outside training can be attended, however, this training must include, at a minimum:

a. Erosion and Sediment Control/Stormwater Inspectors:

1. Initial training, held within the first permit year, regarding proper control measure selection, installation, implementation, and maintenance, as well as administrative requirements such as inspection reporting/tracking and use of the permittee's enforcement responses; and
2. Annual refresher training for existing inspection staff to update them on preferred controls, regulation changes, permit updates, and policy or standards updates. Throughout the year, e-mails and/or memos must be sent out to update the inspectors as changes happen.

b. Other Construction Inspectors: Initial training must be held within the first permit year, on general stormwater issues, basic control measure implementation information, and procedures for notifying the appropriate personnel of noncompliance. Refresher training held at least once every two years.

c. Plan Reviewers:

1. Initial training, held within the first permit year, regarding control measure selection, design standards, and review procedures; and
2. Annual training regarding new control measures, innovative approaches, permit updates, regulation changes, and policy or standard updates.

d. Third-Party Inspectors and Plan Reviewers: If the permittee utilizes outside parties to conduct inspections and/or review plans, these outside staff must be trained per the requirements listed in Part 4.5.1.a (above).

Example Permit Requirement Rationale for the Fact Sheet

By setting up training for the permittee staff, the permittee can ensure that the erosion and sediment control requirements are understood and consistently applied since all staff will have been trained on the same information. The permit requires staff whose primary job duties are related to implementing the construction stormwater program to be trained. The training requirements vary by the type of staff. F or example, erosion and sediment control inspectors must be trained annually on a range of topics, while other construction inspectors (such as building inspectors) will receive more general training.

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The permittee can conduct the training or the training can be provided by another entity (such as a State erosion and sediment control class). Ideally, the training should include classroom presentations, in-field training, and follow-up evaluations to determine whether the training was effective.

Also, the permittee should consider providing training to other in-field municipal staff so that problems associated with flooding and sedimentation from construction sites can be properly reported and addressed.

4.6 Construction Site Operator Education & Public Involvement

Example Permit Provision

4.6.1 Construction Operator Education. The permittee must develop and distribute educational materials to construction site operators as follows:

a. Each year, the permittee must either provide information on existing training opportunities or develop new training for construction operators on control measure selection, installation, implementation, and maintenance as well as overall program compliance.

b. The permittee must develop or utilize existing outreach tools (i.e. brochures, posters, website, plan notes, manuals etc.) aimed at educating construction operators on appropriate selection, installation, implementation, and maintenance of stormwater controls, as well as overall program compliance.

c. The permittee must make available appropriate outreach materials to all construction operators who will be disturbing land within the MS4 boundary. The permittees' contact information and website must be included in these materials.

d. The permittee must include information on appropriate selection, installation, implementation, and maintenance of controls, as well as overall program compliance, on the permittee's existing website.

4.6.2 Public Involvement.

a. The permittee must adopt and implement procedures for receipt and consideration of information submitted by the public regarding construction projects. This includes, but is not limited to, the public reporting mechanisms described in Part 3.6.

b. The permittee must hold public meetings for all public projects that have planned disturbance greater than or equal to an acre. [10]

[10] Eastern Washington MS4 Phase II Permit (Part 2 only) (www.ecy.wa.gov/programs/wq/stormwater/municipal/phaseiiEwa/MODIFIEDpermitDOCS/EWpermitMODsigned.pdf)

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Example Permit Requirement Rationale for the Fact Sheet

Education of construction site operators regarding stormwater management and regulatory requirements is an essential part of controlling stormwater discharges from construction sites. Making brochures, guidance documents and trainings available will increase the knowledge of operators and compliance in the field and can help them choose the correct structural control and processes, correctly install the controls, and successfully implement control measures. The permit requires the permittee to provide appropriate outreach materials to construction site operators. These materials can be made available during the normal course of business (i.e. in BMP manuals, in plan notes, during meetings) or via brochures or websites. In addition, the permittee must either provide training or notify the operators of available training opportunities.

Public involvement requirements include the development of a hotline or other telephone number for the public to call regarding stormwater concerns at construction sites.

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CHAPTER 5: POST-CONSTRUCTION OR PERMANENT/LONG-TERM STORMWATER CONTROL MEASURES

Introduction

Phase I MS4s are required to address new development and significant redevelopment in their SWMPs through controls to reduce pollutants in stormwater discharges after construction is completed. See 40 CFR 122.26(d)(2)(iv)(A)(2).

Included Concepts

► Post-construction stormwater management program

► Site performance standards

► Site plan review

► Long-term maintenance of post-construction stormwater control measures

► Watershed protection

► Tracking of post-construction stormwater control measures

► Inspections and enforcement

► Retrofit plan

The Phase II regulations require regulated small MS4 operators to develop, implement, and enforce a program to address stormwater discharges from new development and redevelopment sites that disturb greater than or equal to one acre to the MS4 (including projects that disturb less than one acre that are part of a larger common plan of development or sale). The regulations also require that the MS4 ensure that control measures are installed and implemented that prevent or minimize water quality impacts. See 40 CFR 122.34(b)(5)(i)

As part of these Phase II requirements, the MS4 must:

- Develop and implement approaches to addressing post-construction stormwater discharges that include a combination of structural and/or non-structural controls;
- Adopt adequate legal authority to enable the MS4 to address post-construction stormwater discharges from new development and redeveloped sites; and
- Ensure adequate long-term operation and maintenance of applicable post-construction control measures. See 40 CFR 122.34(b)(5)(ii).

As of April 2010, most MS4 permits only require permittees to adopt a post-construction program with enforceable requirements designed to reduce stormwater impacts from new development and redevelopment, without specifying a performance standard. To meet this requirement many MS4s have adopted criteria in ordinances or other legally enforceable mechanisms based on already promulgated flood-control based standards (i.e., focused only on discharge rates). However, performance standards can be a very useful and meaningful mechanism in the post-construction toolbox to ensure that water quality objectives are met.

The example permit provisions that follow present the current thinking on how to strengthen the effectiveness of the permittee's stormwater program by preventing the harmful effects of increased stormwater flows and pollutant loads from new development and redeveloped sites on receiving waterbodies. EPA recognizes that there are a wide variety of approaches that some states have already

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taken to control discharges from new development and redeveloped sites, some of which are more stringent than the permit language recommended below. The language below includes components that EPA believes would provide focus and enforceability, and would bring about significant improvements in stormwater controls on site. However, the "maximum extent practicable" may be greater than is reflected in the example permit language below for some MS4s, and EPA encourages states, where possible, to go beyond these example provisions and to achieve even better watershed planning and water quality outcomes. For these reasons, this chapter presents the minimum permit provisions EPA currently recommends to be included in permits in order for permittees to reduce their discharges to the maximum extent practicable as well as the optional, more stringent, requirements.

5.1 Post-Construction Stormwater Management Program

Example Permit Provision

5.1.1 The permittee must continue to implement a program to control stormwater discharges from new development and redeveloped sites that disturb at least one acre (including projects that disturb less than one acre that are part of a larger common plan of development or sale) that discharge into an MS4 [*or insert smaller alternative size*]. The program must apply to private and public development sites, including roads.

5.1.2 The program must require that controls are in place that will infiltrate, evapotranspire, or harvest and use stormwater from the site to meet the performance standards in Part 5.2 to protect water quality.

5.1.3 Written procedures for implementing this program, including the components described in Parts 5.2 – 5.8, must be incorporated into the SWMP document.

Example Permit Requirement Rationale for the Fact Sheet

The stormwater regulations require that an MS4 develop and implement a program to address post-construction discharges from new development and redeveloped sites, and ensure the long-term operation and maintenance of these controls (see Part 5.4 for the maintenance requirements). (See 40 CFR 122.34(b)(5)). The permit requires the use of specific stormwater controls, i.e., those that infiltrate, evapotranspire, or harvest and use stormwater, with the aim of maintaining or restoring the pre-development stormwater runoff conditions at the site.

Many traditional stormwater management practices, and the permit language that drives them, fail to address the hydrologic modifications that increase the quantity of stormwater discharges, and cause excessive erosion and stream channel degradation. Frequently the volume, duration, and velocity of stormwater discharges cause degradation to aquatic systems. Protecting and restoring the physical, chemical and biological integrity of receiving waters must be a central issue in stormwater permits. The recent report of the National Research Council (*Urban Stormwater Management in the United States*, National Academies Press, 2008, www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf) recommends that the NPDES stormwater

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program examine the impacts of stormwater flow, treat flow as a surrogate for other pollutants, and includes the necessary control requirements in stormwater permits. Specifically the report recommends that the volume retention practices of infiltration, evapotranspiration and rainwater harvesting be used as primary stormwater management mechanisms. For this reason, EPA recommends use of a permit condition that is based on maintaining or restoring predevelopment hydrology although other forms of this permit condition maybe appropriate as well.

Additional information on the development of a post-construction program for Phase II permittees can be found in the Center for Watershed Protection's *Managing Stormwater In Your Community: A Guide for Building an Effective Post-Construction Program* (available at www.cwp.org/postconstruction). Also, EPA's green infrastructure website includes information on post-construction controls and programs (see www.epa.gov/greeninfrastructure).

5.2 Site Performance Standards

Example Permit Provision

5.2.1 The permittee must establish, implement and enforce a requirement that owners or operators of new development and redeveloped sites discharging to the MS4, which disturb greater than or equal to one acre (including projects that disturb less than one acre that are part of a larger common plan of development or sale), design, install, implement, and maintain stormwater control measures that infiltrate, evapotranspire, harvest, and use stormwater discharges.

5.2.2 Within [*insert deadline, e.g., 12 months, 24 months, etc*.] the permittee must require that stormwater discharges from such new development and redevelopment sites be managed such that post-development hydrology does not exceed the pre-development hydrology at the site, in accordance with the performance standard set forth in this paragraph. The SWMP must describe the site design strategies, control measures, and other practices deemed necessary by the permittee to maintain or improve pre-development hydrology.[11] [*Insert a new development performance standard, such as one or a combination of the following:*

Basis for Performance Standard	***Description***	***Performance Standard***
Rainfall	*Minimum storm volume to be retained on site.*	*Design, construct, and maintain stormwater management practices that manage rainfall on-site, and prevent the off-site discharge of the precipitation from [insert standards, such as "the first one inch of rainfall from a 24-hour storm preceded by 48 hours of no measurable precipitation"]. Discharge volume reduction can be achieved by canopy interception, soil amendments, evaporation, rainfall harvesting, engineered infiltration, extended filtration and/or evapotranspiration and any combination of the aforementioned practices. This first one inch of rainfall*

[11] *Big Darby Creek Watershed CGP, Part III.G.2.d.* *(web.epa.ohio.gov/dsw/permits/DarbyStormWater_Final_GP_sep06.pdf)*

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		must be 100% managed with no discharge to surface waters, except when the permittee chooses to implement the conditions in Part 5.2.5.d below.[12]
Rainfall	*Minimum storm size to be retained on site.*	*Design, construct, and maintain stormwater management practices that manage rainfall on-site, and prevent the off-site discharge of the precipitation from all rainfall events less than or equal to [insert standards, such as "the 95th percentile rainfall event"]. This objective must be accomplished by the use of practices that infiltrate, evapotranspire and/or harvest and reuse rainwater. The 95th percentile rainfall event is the event whose precipitation total is greater than or equal to 95 percent of all storm events over a given period of record.*[13]
Recharge/Runoff	*Hydrologic analysis.*	*Design, construct, and maintain stormwater management practices that preserve the pre-development runoff conditions following construction. The post-construction rate, volume, duration and temperature of discharges must not exceed the pre-development rates and the pre-development hydrograph for 1, 2, 10, 25, 50 and 100 year storms must be replicated through site design and other appropriate practices. These goals must be accomplished through the use of infiltration, evapotranspiration, and/or rainwater harvesting and reuse practices. Defensible and consistent hydrological assessments and modeling methods must be used and documented.* [14]
Recharge	*Groundwater recharge requirement.*	*Any "major development" project, which is one that disturbs [insert standards, such as at least one (1) acre of land or creates at least 0.25 acres of new or additional impervious surface], must comply with one of the following two groundwater recharge requirements:* • *Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100 percent of the average annual pre-construction groundwater recharge volume for the site; or* • *Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater discharges volume from pre-construction to post-construction for the two-year storm is infiltrated.*[15]
Impervious Cover	*Limiting total impermeable surface (or effective impermeable surface)*	*Minimize total impervious cover resulting from new development and redevelopment to [insert standards, such as <10% of disturbed land cover and/or limit total amount of effective impervious surface to no more than 5% of the landscape].*

[12] *West Virginia Small MS4 Permit (www.wvdep.org/Docs/17444_SW_WV%20MS4%20permit%202009.pdf)*
[13] *Section 438, Energy Independence & Security Act (EISA) Guidance (www.epa.gov/owow/NPS/lid/section438/pdf/final_sec438_eisa.pdf)*
[14] *Section 438, Energy Independence & Security Act (EISA) Guidance (www.epa.gov/owow/NPS/lid/section438/pdf/final_sec438_eisa.pdf)*
[15] *New Jersey Stormwater Management Rules, N.J.A.C. 7:8 (www.nj.gov/dep/rules/adoptions/2004_0202_njpdes.pdf)*

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5.2.3 Incentives for Redeveloped Sites. When considered at the watershed scale, certain types of developed sites can either reduce existing impervious surfaces, or at least create less 'accessory' impervious surfaces. The Permittee may develop a program to allow adjustments to the performance standard for new development or redevelopment sites that qualify. A reduction of [*insert the amount of stormwater the Permittee can reduce for utilizing redevelopment principles, e.g. 0.2 inches from the one inch runoff reduction standard*] may be applied to any of the following types of development. Reductions are additive up to a maximum reduction of [*insert amount, such as 0.75 inches*] for a project that meets four or more criteria. The permittee may choose to be more restrictive and allow a reduction of less than [*insert amount, such as 0.75 inches*] if they choose. In no case will the reduction be greater than [*insert amount, such as 0.75 inches*].

1. Redeveloped sites
2. Brownfield redeveloped site
3. High density (>7 units per acre)
4. Vertical Density, (Floor to Area Ratio (FAR) of 2 or >18 units per acre)
5. Mixed use and Transit Oriented Development (within ½ mile of transit)[16]

5.2.4 Additional Requirements and Exceptions: The permittee must implement the following additional requirements where applicable:

a. A site that is a potential hot spot with the reasonable potential for contaminating underground sources of drinking water must provide treatment for associated pollutants (e.g., petroleum hydrocarbons at a vehicle fueling facility).

b. A site that discharges or proposes to discharge to any surface water or ground water that is used as a source of drinking water must comply with all applicable requirements relating to source water protection and must not cause an exceedance of drinking water standards.[17]

c. Sites may not infiltrate stormwater in areas of soil contamination.

d. For projects that cannot meet 100% of the performance standard in Part 5.2.2 on site, two alternatives are available: off-site mitigation and payment in lieu. If these alternatives are chosen, then the permittee must develop and fairly apply criteria for determining the circumstances under which these alternatives will be available and establish reasonable schedules for mitigation and require payment in lieu of prior to project inception. A determination that standards cannot be met on site must include multiple criteria that would rule out fully meeting the performance standard in Part 5.2.2, such as: too small a lot outside of the building footprint to create the necessary infiltrative capacity even with amended soils; soil instability as documented by a thorough geotechnical

[16] *West Virginia Small MS4 Permit (Section C.b.5.a.ii.A.3) (www.wvdep.org/Docs/17444_SW_WV%20MS4%20permit%202009.pdf)*
[17] *West Virginia Small MS4 Permit (Section C.b.5.a.ii.A.2) (www.wvdep.org/Docs/17444_SW_WV%20MS4%20permit%202009.pdf)*

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analysis; a site use that is inconsistent with capture and reuse of stormwater; or too much shade or other physical conditions that preclude adequate use of plants. Sites must still maximize stormwater retention on-site, before applying the remaining stormwater to one of the alternatives. In instances where alternatives are chosen, technical justification as to the infeasibility of on site management is required to be documented.[18]

Example Permit Requirement Rationale for the Fact Sheet

Developed land changes the hydrology of sites, leading to higher stormwater discharge volumes and higher pollutant loads. The purpose of this standard is to maintain or restore stable hydrology in receiving waters thereby protecting water quality by having post-construction hydrology mimic the natural hydrology of the area.

A simpler, but reasonably approximate 'mimicking the natural hydrograph' approach can typically be accomplished by retaining (as opposed to detaining stormwater for later discharge) on a developed site the volume of water that was retained prior to development, through the mechanisms of infiltration, evapotranspiration, and capture and use. By significantly reducing the volume of stormwater discharges, these mechanisms significantly reduce the discharge of pollutants in stormwater, making discharge volumes the ideal all-around focus and metric for stormwater management. These provisions must be clear about the retention requirement, e.g., an underdrained rain garden likely functions more as a detention and filtration system than an infiltration system.

In Part 5.2.3, the five types of development which qualify for incentives are redevelopment, brownfield redevelopment, high density, vertical density, and mixed use with transit oriented development. Redeveloping already degraded sites can reduce regional land consumption and minimize new land disturbance. Minimizing land disturbance and impervious cover is critical to maintaining watershed health. In addition to water quality benefits, cleaning up and reinvesting in brownfield properties increases local tax bases, facilitates job growth, utilizes existing infrastructure, takes development pressures off of undeveloped, open land, and both improves and protects the environment. The effect of low-density urbanization on watersheds and the hydrologic cycle is substantial. High-density development, including vertical density, slows land consumption rates and accommodates more land uses on a smaller footprint. Finally, mixing land uses and promoting transit-oriented development can directly reduce runoff since mixed-use developments have the potential to use surface parking lots and transportation infrastructure more efficiently, requiring less pavement.[19]

In Part 5.2.4.d, the permittee must establish clear and stringent criteria for the conditions under which payment in lieu and off-site mitigation could be used. These criteria must be related to physical constraints such as a combination of soils which limit infiltration opportunities, space or light limited situations restricting the amount of vegetation that can be used, and a land use that is not conducive to capture and use of stormwater. Further, appropriate schedules for

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[18] *West Virginia Small MS4 Permit (Section C.b.5.a.ii.A.4) (www.wvdep.org/Docs/17444_SW_WV%20MS4%20permit%202009.pdf)*

[19] Adapted from the WV Phase II MS4 Fact Sheet (www.dep.wv.gov/WWE/Programs/stormwater/MS4/permits/Pages/default.aspx)

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payment and implementation of mitigation measures must be established to ensure stormwater impacts are addressed in a timely manner.

Recommendations for Permit Writer

Many communities have adopted criteria based on already promulgated flood-control based standards (i.e., focused only on discharge rates). This example permit language instead promotes the concept that effective standards should be based on the objective of maintaining or restoring stable hydrology to protect the quality of receiving waters by having post-construction hydrology mimic the natural hydrology of the area. The permit language provides a number of example standards that can be used to achieve this objective.

Performance standards should take into account the wide variability in hydrologic conditions in different areas. Ideally, standards should reflect the local naturally-occurring hydrology with respect to runoff, infiltration, evapotranspiration, and storage – that is, the water balance that would be present in the absence of development. Key parameters, such as rainfall patterns, soil characteristics, and topography, can be used to establish likely 'natural' hydrology. Where maintaining or reestablishing such hydrologic conditions is infeasible, off-site mitigation, payment-in-lieu, or fee programs may be used. Based on current (2010) information, EPA recommends that permits allow for a combination of techniques that utilize infiltration, capture and use, and evapotranspiration as appropriate, rather than relying only on infiltration or some other technique alone to meet performance standards.

The permit writer could include a performance standard that stipulates that predevelopment hydrographs match post-development hydrographs. In order for this type of performance standard to be effective, the permit writer should make sure that the permit clearly spells out all variables of the hydrograph (volume, rate, duration, frequency) to be matched, and not just the discharge rate. Many current pre-post hydrology standards focus only on discharge rate, which is primarily a flood control approach. In addition, a pre-development condition should also be defined, and that condition should be one that is reasonably 'natural', rather than simply the conditions (perhaps already fairly impervious) that existed immediately prior to the current developed site. A calculator tool based on key hydrologic parameters (soil, rainfall, slope, and vegetation) or an on-site rainfall retention standard that is appropriate for that area can help the permittee determine what constitutes pre-development hydrology and the means by which it may be matched.

As contemplated in the example permit provisions, permit writers may want to consider the difference between new development and redevelopment sites, as well as differences among some types of developed sites, in establishing performance standards. From the standpoint of imperviousness at a watershed scale, redeveloped sites are usually more desirable than new development sites, which replace relatively naturally functioning green spaces with impervious surfaces such as roads, and parking lots. Certain types of development generate less impervious surfaces than others. For example, typically, there is little or no increase in net stormwater discharges when redeveloping underused properties such as vacant properties, brownfield sites, or greyfield sites, since new impervious cover replaces existing impervious cover. The net discharge increase from already developed properties would likely be zero since the site was already predominately impervious cover. In many cases, redeveloped sites break up or remove some portion of the impervious cover, converting it to pervious cover and allowing for some stormwater infiltration. Redevelopment sites can produce a net improvement in regional water quality by decreasing total impervious area and its

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associated stormwater discharges. Redeveloped sites can also reduce regional land consumption. By building on underused, already degraded land, the pressure to convert previously undeveloped land is reduced. Therefore differential standards for new development and redeveloped sites, as well as for different types of developed sites, may be reasonable. However, they should be crafted to minimize creation of imperviousness at the watershed scale, and still include some reasonable level of stormwater management at the site scale.

Redevelopment is the act of improving by renewing or restoring any developed property that results in the land disturbance of one acre or greater, and that has one of the following characteristics:

- Land that currently has an existing structure, such as buildings or houses, or
- Land that is currently covered with an impervious surface, such as a parking lot or roof, or
- Land that is currently degraded and is covered with sand, gravel, stones, or other non-vegetative covering.

Infiltration may not be appropriate in all cases. For example, a site that is a potential hot spot with the reasonable potential for significant pollutant loading(s) may not be appropriate for stormwater infiltration. Hot spots may include commercial, industrial, institutional, municipal, or transportation related operations that may produce higher levels of stormwater pollutants, and/or present a higher level or risk for spills, leaks, or illicit discharges such as: gas stations, petroleum wholesalers, vehicle maintenance and repair, auto recyclers, recycling centers and scrap yards, landfills, solid waste facilities, wastewater treatment plants, airports, railroad stations and associated maintenance facilities, and highway maintenance facilities.

In addition, the permit writer may want to consider what type of flexibility to afford sites where the owner/operator is not able to meet the performance standard on site. For instance, if a site is constrained by size or previous impervious surfaces, such that the use of control measures that infiltrate stormwater is severely limited, the permit could allow alternatives for meeting the performance standard in other ways such as payment in lieu and off-site mitigation within the same watershed.

Off-site mitigation and payment in lieu programs are options that can be used in these instances. Off-site mitigation generally means that control measures may be implemented at another location, in the same sewershed/watershed as the original project, and as approved by the regulatory agency. Payment in lieu programs generally mean that the developer pays a fee to the permittee which will then be applied to a stormwater control project, in lieu of installing the required control measures.

If the permit writer chooses to include an off-site mitigation or payment in lieu program in the permit, the permit writer could specify that the programs meet several criteria, for example, those described in the 2009 West Virginia Phase II General Permit Fact Sheet (www.dep.wv.gov/WWE/Programs/stormwater/MS4/permits/Pages/default.aspx):

1. The permittee must establish clear and stringent criteria for the conditions under which these options are available that must be related to real physical constraints such as a combination of soils limiting infiltration opportunities, space or light limited situations restricting the amount of vegetation that can be used, and a land use that is not conducive to capture and use of

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stormwater. While one or two of these characteristics should not be adequate to qualify for the alternative, the combination of multiple constraints could;

2. A minimal requirement for at least [*0.4 inch*] of stormwater managed on-site;

3. A [*1:1.5 ratio*] of the amount of requisite stormwater not managed on site to the amount of stormwater required to be mitigated at another site, or for which in-lieu payments must be made;

4. If demonstrated to the permittee that it is completely infeasible to manage the remainder [*0.4 inches*], then the ratio for this unmanaged portion is [*1:2*].

5. The necessary tracking systems for both types of programs, including the necessary inventory of public and retrofit projects for off-site mitigation; and,

6. The establishment of a credible valuation structure for payment in lieu, i.e., what is the actual cost for the permittee to provide retrofits for the necessary amount of stormwater, not just a token payment. The purpose of these provisions is to disincentivize the use of alternatives unless really needed, but also to provide a financial foundation for implementation of public stormwater management projects, including retrofits where those needs have been identified.

Additional justification for the development types which qualify for these incentives can be seen in the West Virginia Phase II MS4 Permit Fact Sheet (www.dep.wv.gov/WWE/Programs/stormwater/MS4/permits/Pages/default.aspx).

5.3 Site Plan Review

Example Permit Provision

5.3.1 To ensure that all applicable new development and redeveloped sites conform to the performance standards required in Part 5.2, the permittee must continue to implement project review, approval, and enforcement procedures that include:

a. Procedures for the site plan review and approval process(es) that include inter-departmental consultations, as needed, and a required re-approval process when changes to an approved plan are desired; and

b. A requirement for submittal of ‘as-built’ certifications within 90 days of completion of a project.

5.3.2 The permittee must conduct site plan reviews, using the procedures described in Part 5.3.1, of all new development and redeveloped sites which will disturb greater than or equal to one acre [*or a smaller threshold as set by the permitting authority*] and discharge to the MS4 (including sites that disturb less than one acre that are part of a larger common plan of development or sale). The site plan review must specifically address how the project applicant meets the performance standards in Part 5.2 and how the project will ensure long-term maintenance as required in Part 5.4.

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Example Permit Requirement Rationale for the Fact Sheet

Specific standards are a critical component of a stormwater management program. However, even the best requirements need to be supported by a review program to ensure that the standards are met. The example permit provision would require permittees to fully implement a comprehensive site plan review and approval program. To meet this requirement, the permittee must have the authority to withhold approvals when standards are not met.

Recommendations for the Permit Writer

The permit writer may want to consider adding a requirement for a pre-application concept plan meeting to occur (in addition to the requirement for the project applicant to submit a site plan for review). During this meeting the project land owner or developer, the project design engineer, and municipal planning staff could discuss the conceptual designs that would be used to ensure that they meet the performance standards. This meeting would ensure that stormwater and performance standards are addressed early in the development process. However, if this pre-application concept plan meeting is not consistent with local planning procedures, the permit writer could consider omitting this requirement.

5.4 Long-Term Maintenance of Post-Construction Stormwater Control Measures

Example Permit Provision

5.4.1 All structural stormwater control measures installed and implemented to meet the performance standards of Part 5.2 must be maintained in perpetuity. The permittee must ensure the long-term maintenance of structural stormwater control measures installed according to this Part through one, or both, of the following approaches:

a. Maintenance performed by the Permittee. See part 6.4.

b. Maintenance performed by the owner or operator of a new development or redeveloped site under a maintenance agreement. The permittee must require the owner or operator of any new development or redeveloped site subject to the performance standards in Part 5.2 to develop and implement a maintenance agreement addressing maintenance requirements for any structural control measures installed on site to meet the performance standards. The agreement must allow the permittee, or its designee, to conduct inspections of the structural stormwater control measures and also account for transfer of responsibility in leases and/or deeds. The agreement must also allow the permittee, or its designee, to perform necessary maintenance or corrective actions neglected by the property owner/operator, and bill or recoup costs from the property owner/operator when the owner/operator has not performed the necessary maintenance within thirty (30) days of notification by the permittee or its designee.

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5.4.2 Verification of maintenance responsibilities. The permittee must require that property owners or operators of any new development or redeveloped site subject to the performance standards in Part 5.2 provide verification of maintenance for the approved structural stormwater control measures used to comply with the performance standards. Verification must include one or more of the following as applicable:

a. The owner/operator's signed statement accepting responsibility for maintenance with a provision for transferring maintenance responsibility if the property is legally transferred to another party; and/or

b. Written conditions in the sales or lease agreement that require the recipient to assume responsibility for maintenance; and/or

c. Written conditions in project conditions, covenants and restrictions for residential properties assigning maintenance responsibilities to a home owner's association, or other appropriate group, for maintenance of structural and treatment control stormwater management practices; and/or

d. Any other legally enforceable agreement that assigns permanent responsibility for maintenance of structural or treatment control stormwater management practices.

Example Permit Requirement Rationale for the Fact Sheet

Appropriate operation and maintenance are critical aspects to the function of any suite of controls. In many cases, controls may be located on private property, and it is necessary to establish some provision to assure responsibility and accountability for the operation and maintenance of these controls.

The permittee must ensure maintenance of all structural stormwater control measures. In this Guide, structural controls also include many green infrastructure practices such as rainwater harvesting, rain gardens, permeable pavement, and vegetated swales.

Recommendations for the Permit Writer

Most non-traditional MS4 permittees will probably not have the legal authority to recoup costs where the owner/operator has not completed necessary maintenance. Permit writers may want to be more specific in this requirement to include other options for non-traditional MS4 permittees.

5.5 Watershed Protection

Example Permit Provision

5.5.1 When the Permittee revises its General Plan (or equivalent) or other relevant plans (e.g. Transportation Master, or Community Plan) they must include effective water

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quality and watershed protection elements that require implementation of consistent water quality protection measures for new development and redeveloped sites within [*insert deadline*]. Examples of water quality and watershed protection elements to be considered include the following: [*insert principles and/or policies which are appropriate for the watershed such as,*

- Minimize the amount of impervious surfaces (roads, parking lots, roofs, etc.) within each watershed, by minimizing the creation, extension and widening of parking lots, roads and associated development.
- Preserve, protect, create and restore ecologically sensitive areas that provide water quality benefits and serve critical watershed functions. These areas may include, but are not limited to; riparian corridors, headwaters, floodplains and wetlands.
- Implement management practices that prevent or reduce thermal impacts to streams, including requiring vegetated buffers along waterways, and disconnecting discharges to surface waters from impervious surfaces such as parking lots.
- Prevent disturbances of natural waterbodies and natural drainage systems caused by development, including roads, highways, and bridges.
- Avoid development in areas that are particularly susceptible to erosion and sediment loss.
- Implement standards to protect trees, and other vegetation with important evapotranspirative qualities.
- Implement policies to protect native soils, prevent topsoil stripping, and prevent compaction of soils.
- Implement water conservation policies that will reduce both stormwater and non- stormwater discharges via storm sewer systems.[20]
- Implement policies that encourage stormwater practices close to the source of the runoff rather than downstream and lower in the watershed.]

Example Permit Requirement Rationale for the Fact Sheet

Imperviousness has been shown to correlate with water quality impacts. In order to minimize water quality impacts, the permittee must examine their planning principles to manage the creation of impervious surfaces at the watershed level, such as reducing the footprint of streets and parking lots. Also, ecologically sensitive areas can protect water quality by acting both as filters that reduce pollutants in stormwater discharges and as sponges to reduce the impact on the ecosystem's hydrology. Thermal pollution is also a concern that can impact biota in waterways. Stormwater discharges from impervious surfaces are often characterized by higher temperatures than natural, pervious surfaces. Reducing the chances of further increasing this temperature by preserving, protecting, and restoring natural features that provide shading for the waterway can further help reduce thermal pollution. Whenever possible natural waterways

[20] *West Virginia Small MS4 Permit (www.wvdep.org/Docs/17444_SW_WV%20MS4%20permit%202009.pdf)*

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must be protected and not disturbed by stormwater from developed sites. For example, areas that have a high potential for erosion must be avoided for development when possible. Protecting vegetation, native soils, and conserving water can also help ensure the hydrologic qualities of the site remain intact.

Consideration of stormwater impacts from development is critical during the planning phases of development. This not only includes planning on the site-level, but also with respect to discharges from the MS4 on the watershed level. To the extent possible, stormwater management must be an integral part of higher level planning documents that determine where and how development that will result in stormwater discharges to the MS4 should occur since these decisions affect water quality. Using land efficiently can result in better stormwater management by putting development where it is most appropriate. For example, by directing and concentrating new development in areas targeted for growth, communities can reduce or remove development pressure on undeveloped parcels and protect sensitive natural lands and recharge areas. Another strategy is redeveloping already degraded sites such as abandoned shopping centers or underutilized parking lots. In this case, the net increase in discharges from developed sites would likely be zero, and it would likely decrease, depending on the on-site infiltration practices used. Also, by allowing or encouraging denser development, less land is converted overall, and less total impervious area created.

Recommendations for the Permit Writer

Examining stormwater on a watershed basis and including watershed principles is an important part of protecting waterways in a holistic manner. Climate change may increase the size and frequency of storms in some area of the nation. Including watershed-type assessments and considerations as Permit Requirements will help the permittee better focus their efforts to ensure the best water protection outcomes for existing conditions and those anticipated future conditions. Therefore, permit writers should consider including watershed protection principles. Newer programs may not be ready for permit writers to include the exact example permit provision provided. If possible, permit writers should be as specific as possible for the needs of the watershed where the MS4 permittee is located. Permittees should be careful when installing new stormwater BMPs to ensure that there are not any negative, unintended consequences.

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5.6 Tracking of Post-Construction Stormwater Control Measures

Example Permit Provision

5.6.1 Inventory of Post-Construction Stormwater Control Measures. The permittee must continue to maintain an inventory of all post-construction structural stormwater control measures installed and implemented at new development and redeveloped sites, including both public and private sector sites located within the permit area. The inventory must be searchable by property location (either on paper or electronic). New entries to the inventory must be made during the site plan review and approval process in Part 5.3.1.

5.6.2 Tracking Information. Each entry to the inventory must include basic information on each project, such as project name, owner's name and contact information, location, start/end date, etc. In addition, inventory entries must include the following for each project:

a. Short description of each stormwater control measure (type, number, design or performance specifications);
b. Latitude and longitude coordinates of each stormwater control measure;
c. Short description of maintenance requirements (frequency of required maintenance and inspections); and
d. Inspection information (date, findings, follow up activities, prioritization of follow-up activities, compliance status).

Based on inspections conducted under Part 5.7, the permittee must update the inventory as appropriate where changes occur in property ownership or the specific control measures implemented at the site. This inventory must be maintained and available for review by the permitting authority.

Example Permit Requirement Rationale for the Fact Sheet

Creating an inventory of post-construction structural stormwater control measures, including tracking of specific information, will first enable permittees to know what control measures they are responsible for. Without this information the permittee will not be protecting water quality to their full potential since inspections, maintenance, and follow-up changes cannot be performed. Tracking information such as the latitude/longitude, maintenance and inspection requirements and follow-up will allow the permittee to be able to better allocate their resources for those activities that are immediately necessary. Although not required, including photographs will help the permittee assess how the control measure has changed since it was first created and will likely aid in determining proper maintenance and/or retrofitting opportunities if the measure is no longer providing the water quality benefits it was originally designed.

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Recommendations for the Permit Writer

Permit writers may wish to specifically define the types of structural controls that must be included in the inventory. For example, rain barrels may be considered a structural control, but the MS4 likely does not need latitude and longitude coordinates of the rain barrels.

5.7 Inspections and Enforcement

Example Permit Provision

5.7.1 Inspection Frequency. To ensure that all stormwater control measures are operating correctly and are being maintained as required consistent with its applicable maintenance agreement, the permittee must conduct inspections of each project site covered under Part 5.2 performance standards, [*insert inspection frequency, e.g., at least one time during the permit term, 20% of sites per year, etc.*]. The inspections must be in accordance with those specified in the [*insert State manual that describes the maintenance of control measures*]. A description of inspection procedures must be included in the SWMP document.

5.7.2 Post-Construction Inspection. Within [*insert deadline, e.g., 1 week, 2 weeks, etc.*] of completion of construction of any project required to meet the Section 5.2 performance standards, the permittee must conduct a post-construction inspection to verify that the permittee's performance standards have been met. The permittee must include in its SWMP a procedure for being notified by construction operators/owners of their completion of active construction so that the post-construction inspection may be conducted.

5.7.3 Inspection Reports. The permittee must document its inspection findings in an inspection report. Each inspection report must include:

a. Inspection date;

b. Name and signature of inspector;

c. Project location (street address, latitude/longitude, etc.) and inventory reference number (from inventory established in Section 5.6.1)

d. Current ownership information (for example, name, address, phone number, fax, and email)

e. A description of the condition of the structural stormwater control measure including the quality of: vegetation and soils; inlet and outlet channels and structures; embankments, slopes, and safety benches; catch basins; spillways, weirs, and other control structures; and sediment and debris accumulation in storage and forebay areas as well as in and around inlet and outlet structures;

f. Photographic documentation of all critical structural stormwater control measure components; and

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g. Specific maintenance issues or violations found that need to be corrected by the property owner or operator along with deadlines and reinspection dates.

The permittee must document and maintain records of inspection findings and enforcement actions and make them available for review by the permitting authority.

Example Permit Requirement Rationale for the Fact Sheet

Inspection of post-construction control measures is key to ensuring the protection of water quality. If control measures are not inspected and maintained they could become sources of pollution rather than reducing pollution. By including detailed information in the inspection report, the permittee can better determine if maintenance is required and the permittee can have a snapshot of sorts to know the status of their control measures to prioritize funding.

Recommendations for the Permit Writer

Permit writers should clearly specify the requirements for inspections. Inspecting and properly maintaining structural stormwater controls to ensure they are working as designed is just as important as installing them in the first place. By having specific requirements, permittees will be reminded that they must allocate resources to ensure control measures are properly maintained and functioning. The permit writer may also want to add a prioritization scheme to the requirement to help the permittee determine what maintenance activities are priorities for protecting water quality and which ones are minor changes.

5.8 Retrofit Plan

Example Permit Provision

5.8.1 The permittee must develop a plan to retrofit existing developed sites that are impacting water quality. The retrofit plan must be developed within [*insert deadline, such as within two years of permit issuance*] and must emphasize controls that infiltrate, evapotranspire, or harvest and use stormwater discharges. The plan must include[21]:

a. An inventory of potential retrofit locations, which considers, at a minimum:
   - Locations that contribute pollutants of concern to an impaired waterbody
   - Locations that contribute to receiving waters that are significantly eroded
   - Locations that are tributary to a sensitive ecosystem or protected area
   - Locations that are tributary to areas prone to flooding

[21] Orange County Municipal Stormwater Permit (Section F.3.d) (www.waterboards.ca.gov/sandiego/water_issues/programs/stormwater/oc_stormwater.shtml)

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b. An evaluation and ranking of the inventoried locations to prioritize retrofitting which includes, at a minimum:
   - Feasibility
   - Cost effectiveness
   - Pollutant removal effectiveness
   - Impervious area potentially treated
   - Maintenance requirements
   - Landowner cooperation
   - Neighborhood acceptance
   - Aesthetic qualities, and
   - Efficacy at addressing concern.

Example Permit Requirement Rationale for the Fact Sheet

It is clear that we cannot protect the nation's waters without also addressing degradation caused by stormwater discharges from existing developed sites. For that reason stormwater programs must include substantive retrofit provisions.

It is possible and reasonable to significantly improve water quality in many urban receiving waters. This requires more than just a new development and redeveloped sites program, however, which at best can only hold the line. To actually improve the quality of receiving waters it is necessary to mitigate discharges from existing developed sites, which generally means implementation of measures to bring about the retrofit the stormwater control measures at existing sites to retain most stormwater on site.

In addition, research indicates that most streambank restoration projects that actively stabilize eroding channels should not be implemented until after hydrologic retrofits have been completed that restore the hydrologic regime not concurrently with the implementation of the retrofits.

Municipal projects, such as traffic calming sites could also include stormwater retrofit components, such as curb bump outs that include bioretention features, rain gardens, and curb cuts.

Information on retrofit options and the development of a retrofit plan can be found in the Center for Watershed Protection's guidance on Urban Stormwater Retrofit Practices (available at www.cwp.org as Manual No. 3 under the Urban Subwatershed Restoration Manual Series).

Recommendations for the Permit Writer

Permittees may need a permit term or two to adequately develop and implement a retrofit plan. Some permittees may not be ready to have retrofit plans as part of their requirements. It is up to the permit writer to make this determination based on the specific information they have available on current programs. A retrofit plan should assess the areas where retrofitting is appropriate and will result in increased water quality protection and restoration. The permit writer should determine

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the appropriate timeframe and language for a retrofit plan. For example, if the permittee was already required to develop a retrofit plan in a previous permit term the permit may specify a schedule for implementation rather than development.

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CHAPTER 6: POLLUTION PREVENTION/GOOD HOUSEKEEPING

Introduction

Federal stormwater regulations (see 40 CFR 122.34(b)(6) and 40 CFR 122.26(d)(2)(iv)(A)) require the operator of a regulated MS4 community to develop a program to:

- Prevent or reduce the amount of stormwater pollution generated by municipal operations and conveyed into receiving waters.
- Train employees on how to incorporate pollution prevention/good housekeeping techniques into municipal operations.
- Identify appropriate control measures and measurable goals for preventing or reducing the amount of stormwater pollution generated by municipal operations.

Included Concepts

- ► Municipal facility and control inventory
- ► Facility assessment
- ► Development of facility-specific stormwater management SOPs and Implementation of facility stormwater controls
- ► Storm sewer system maintenance activities
- ► Flood management
- ► Pesticide, herbicide, and fertilizer application and management
- ► Training and education
- ► Contractor requirements and oversight

The first step for the permittee is to evaluate and assess the areas and municipal facilities that it controls in order to determine which activities may currently have a negative impact on water quality and to find solutions for these activities. The simplest solution is to limit the number of activities that are conducted outside and exposed to stormwater.

Storm sewer systems need maintenance to ensure that structures within the storm sewer that are meant to reduce pollutants do not become sources of pollution. Regularly maintaining catch basins and cleaning storm sewer pipes prevent the accumulation of pollutants that are later released during rain events as well as blockages, backups, and flooding. Most permittees have an existing program to maintain the storm sewer infrastructure. EPA notes, however, that some of these programs have tended to focus on flood avoidance and complaint response rather than reducing water quality impacts from stormwater discharges.

The MS4 permit must require that the system be maintained to prevent the discharge of pollutants into receiving waters. System mapping and a schedule of regular maintenance are key to a successful pollution prevention program. EPA recommends establishing a tiered maintenance schedule for the entire storm sewer system area, with the highest priority areas being maintained at the greatest frequency. Priorities should be driven by water quality concerns and can be based on the land use within the MS4 area, the condition of the receiving water, the amount and type of material that typically accumulates in an area, or other location-specific factors. It is also advisable to use spill and illicit discharge data to track areas that may require immediate sewer infrastructure maintenance. It is also important for material that is collected to be disposed of in a responsible manner.

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The procedures for storm sewer system operation and maintenance must be documented in the permittee's SOPs or similar type of documents, which are part of the permittee's SWMP. Employee training to carry out these pollution prevention measures is a required component of the program. The pollution prevention/good housekeeping/maintenance activities should be documented and, where possible, quantified (e.g., number and location of inspections and clean-outs, type and quantity of materials removed). Having permittees characterize the quantity, location, and composition of pollutants removed from catch basins can provide useful data that can later be used to assess the program's overall effectiveness, identify illicit discharges, and help the permittee better prioritize implementation activities in the future.

Specific pollution prevention requirements related to pollutant-generating activities such as landscaping techniques (including the application of pesticides, herbicides, and fertilizer) and operating and maintaining public streets, should also be included in the permit where applicable. For example, typical pollutants associated with street repair and maintenance include heavy metals, chlorides, hydrocarbons (e.g., benzene, toluene, ethylbenzene, xylene), concrete dust, sand, deicers, sediment, and trash. The permitting authority should consider requiring alternative landscaping practices such as integrated pest management (IPM), xeriscaping, or mechanical (non-chemical) removal of unwanted plants. Other landscaping controls, such as mulch management, chemical storage, reduction of soil compaction, and erosion control, should also be considered. Training and educating municipal and contracted staff is also important to ensure that everyone is knowledgeable and proficient in the newest and most effective approaches to minimizing pollutant discharges from municipal facilities and activities.

Additionally, permits should require that water quality be considered when designing flood management projects, and that existing structural flood control devices are evaluated to determine if retrofitting the device to remove/reduce pollutants from stormwater is necessary and practicable.

6.1 Municipal Facility and Control Inventory

Example Permit Provision

6.1.1 Development of a Municipal Facility and Stormwater Control Inventory – The permittee must continue to update and maintain an inventory of municipally-owned or operated facilities and stormwater controls, including but not limited to the following:

- Composting facilities
- Equipment storage and maintenance facilities
- Fuel farms
- Hazardous waste disposal facilities
- Hazardous waste handling and transfer facilities
- Incinerators
- Landfills
- Landscape maintenance on municipal property
- Materials storage yards

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- Pesticide storage facilities
- Public buildings, including schools, libraries, police stations, fire stations, municipal buildings, and similar buildings
- Public parking lots
- Public golf courses
- Public swimming pools
- Public works yards
- Recycling facilities
- Salt storage facilities
- Solid waste handling and transfer facilities
- Street repair and maintenance sites
- Vehicle storage and maintenance yards
- Municipally-owned and/or maintained structural stormwater controls

6.1.2 Documentation– The list of municipally-owned or operated facilities and stormwater controls must be maintained and available for review by the permitting authority.

6.1.3 Mapping – On a map of the area covered by the MS4 permit, the permittee must identify where the municipally-owned or operated facilities and stormwater controls are located. The map must identify the stormwater outfalls corresponding to each of the facilities as well as the receiving waters to which these facilities discharge. The permittee must also identify the manager of each facility and their contact information. The map must be maintained and updated regularly and be available for review by the permitting authority.

Example Permit Requirement Rationale for the Fact Sheet

Municipally-owned or operated facilities serve as hubs of activity for a variety of municipal staff from many different departments. Some municipalities will have one property at which all activities take place (e.g., the municipal maintenance yard), whereas others will have several specialized facilities such as those listed above. A comprehensive list and map of such facilities will help staff responsible for stormwater compliance build a better awareness of their locations within the MS4 service area and their potential to contribute stormwater pollutants. The facility inventory will also serve as a basis for setting up periodic facility assessments (see Part 6.2) and developing, where necessary, facility stormwater pollution prevention plans (see Part 6.3).

Recommendations for the Permit Writer

Permit writers should tailor the facilities listed in the assessment as best they can to include the facilities most likely to be owned or operated by the permittee. It is highly likely that some of the facilities listed in the Permit Requirement would not apply to most non-traditional and/or non-municipal MS4s.

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6.2 Facility Assessment

Permit Requirement

6.2.1 Municipally-owned or operated facility assessment:

a. Comprehensive Assessment of Pollutant Discharge Potential –The permittee must review, reassess, and update the comprehensive assessment of all municipally-owned or operated facilities identified in Part 6.1 [*insert frequency, e.g., annually*] for their potential to discharge in stormwater the following typical urban pollutants: sediment, nutrients, metals, hydrocarbons (e.g., benzene, toluene, ethylbenzene and xylene), pesticides, chlorides, and trash. Other pollutants may be associated with, but not generated directly from, the municipally-owned or operated facilities, such as bacteria, chlorine, organic matter, etc. Therefore, the permittee must determine additional pollutants associated with its facilities that could be found in stormwater discharges. A description of the assessment process must be included in the SWMP document.

b. Identification of "High Priority" Facilities – Based on the Part 6.2.1.a comprehensive assessment, the permittee must identify as "high-priority" those facilities that have a high potential to generate stormwater pollutants. Among the factors that must be considered in giving a facility a high priority ranking is the amount of urban pollutants stored at the site, the identification of improperly stored materials, activities that must not be performed outside (e.g., changing automotive fluids, vehicle washing), proximity to waterbodies, poor housekeeping practices, and discharge of pollutant(s) of concern to impaired water(s). High priority facilities must include the permittee's maintenance yards, hazardous waste facilities, fuel storage locations, and any other facilities at which chemicals or other materials have a high potential to be discharged in stormwater.

c. Documentation of Comprehensive Assessment Results – The permittee must document the results of the assessments and maintain copies of all site evaluation checklists used to conduct the comprehensive assessment. The documentation must include the results of the permittee's initial assessment, any identified deficiencies and corrective actions taken, and a list of the "high priority" facilities identified per Part 6.2.1.b.

Example Permit Requirement Rationale for the Fact Sheet

The initial ("first time") comprehensive assessment is necessary to identify which of the municipality's facilities are most likely to contribute stormwater pollutants and which are in need of stormwater controls. The assessments will involve a detailed site inspection that can identify improperly stored materials, activities that should not be performed outside (e.g., changing automotive fluids, vehicle washing), and poor housekeeping practices.

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Recommendations for the Permit Writer

If the permitting authority has an established site inspection protocol to be used in the comprehensive assessment, it should be included and referenced here. The list of pollutants in this section should be modified or expanded based on pollutants of concern in the permitting authority's jurisdiction.

6.3 Development of Facility-Specific Stormwater Management SOPs and Implementation of Facility Stormwater Controls

Example Permit Provision

6.3.1 Facility-specific Stormwater Management SOPs for "High Priority" Facilities:

a. For each "high priority" facility or operation identified in Part 6.2, the permittee must develop a site-specific SOP that identifies stormwater controls (i.e., structural and non-structural controls, and operational improvements) to be installed, implemented, and maintained to minimize the discharge of pollutants in stormwater. At a minimum, the facility-specific SOP must include the stormwater control measures described below in Part 6.3.2, as well as inspection and visual monitoring procedures and schedules described in Part 6.3.3.

b. A copy of the facility-specific stormwater management SOP must be maintained and be available for review by the permitting authority. The SOP must be kept on-site at each of the municipally-owned or operated facilities' offices for which it was completed. The SOP must be updated as necessary.

c. The permittee must install, implement, and maintain all stormwater controls required per Part 6.3.2 of this permit and included in the facility's site-specific SOP.

6.3.2 Stormwater Controls for "High Priority" Facilities – The following stormwater controls must be implemented at all "high priority" municipally-owned or operated facilities identified in Part 6.2. A description of any controls included in this part and any standard operating procedures developed to comply with this part must be included as part of the of each facility's SOP:

a. General good housekeeping – The following good housekeeping practices must be implemented for all facilities identified as "high priority":

1. The permittee must keep all municipally-owned or operated facilities neat and orderly, minimizing pollutant sources through good housekeeping procedures and proper storage of materials.

2. Materials exposed to stormwater must be covered where feasible (without creating additional impervious surfaces, if possible).

b. De-icing material storage – The permittee must store salt and other de-icing materials in a permanent storage structure, unless stormwater runoff from the storage piles is not discharged, or if discharges from the piles are authorized under another stormwater permit. If a permanent storage structure is required but does not exist, one must be built within [*insert timeframe*], and seasonal

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tarping must be used as an interim control measure until the permanent structure is completed. If a permanent storage facility is not feasible, the permittee must provide a rationale to the permitting authority as to why and what alternate BMPs will be utilized instead.

Where a permanent storage structure is present, the permittee must perform regular maintenance and inspections of the permanent storage structure.

c. Fueling operations – The permittee must continue to implement standard operating procedures for vehicle fueling and receiving of bulk fuel deliveries at municipally-owned or operated facilities with the goal of reducing the likelihood of spills, and providing spill controls in the event that accidental spills do occur.

d. Vehicle maintenance – The permittee must continue to implement a standard operating procedure for vehicle maintenance and repair activities that occur at municipally-owned or operated facilities with the goal of reducing the likelihood of spills or releases and providing controls in the event that accidental spills do occur. The standard operating procedures must include regular inspections of all maintenance areas and activities.

e. Equipment and vehicle washing – The discharge of equipment and vehicle wash wastewater to the MS4 or directly to receiving waters from municipal facilities is prohibited. The permittee may meet this requirement by either installing a vehicle wash reclaim system, capturing and hauling the wastewater for proper disposal, connecting to sanitary sewer (where applicable and approved by local authorities), ceasing the activity, and/or applying for and obtaining a separate stormwater permit.[22]

6.3.3 Inspections and Visual Monitoring:

a. Weekly visual inspections – The permittee must perform weekly visual inspections to ensure materials and equipment are clean and orderly, and to minimize the potential for pollutant discharge. The permittee must look for evidence of spills and immediately clean them up to prevent contact with precipitation or runoff. The weekly inspections must be tracked in a log for every facility, and records kept with the SWMP document. The inspection report must also include any identified deficiencies and the corrective actions taken to fix the deficiencies.

b. Quarterly comprehensive inspections – At least once per quarter, a comprehensive inspection of "high priority" facilities, including all stormwater controls, must be performed, with specific attention paid to waste storage areas, dumpsters, vehicle and equipment maintenance/fueling areas, material handling areas, and similar potential pollutant-generating areas. The quarterly inspection results must be documented and records kept with the SOP document. This inspection must be done in accordance with the developed SOPs. The inspection report must also include any identified deficiencies and the corrective actions taken to fix the deficiencies.

[22] New Jersey Tier A Phase II MS4 Permit (NJ0141852) (www.state.nj.us/dep/dwq/pdf/Tier_A_final.pdf)

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c. Quarterly visual observation of stormwater discharges – At least once per quarter, the permittee must visually observe the quality of the stormwater discharges from the "high priority" facilities (unless climate conditions preclude doing so, in which case the permittee must attempt to evaluate the discharges four times during the wet season). Any observed problems (e.g., color, foam, sheen, turbidity) that can be associated with pollutant sources or controls must be remedied within three days or before the next storm event, whichever is sooner. Visual observations must be documented, and records kept with the SOP document. This inspection must be done in accordance with the developed SOPs. The inspection report must also include any identified deficiencies and the corrective actions taken to fix the deficiencies.

Example Permit Requirement Rationale for the Fact Sheet

Each municipal facility will require a different set of control measures depending on the nature of activities that occur there and the types of materials that are stored and used. Developing and maintaining a site-specific SOP for each facility will help to ensure that employees responsible for facility operation are aware of the stormwater controls required for the site.

There are a number of storage areas and activities that are common at municipal facilities that have a high potential for polluting stormwater:

- Deicing materials, particularly road salt, are easily liberated and transported by rainfall, and constituents such as chloride are not removed by most stormwater controls.
- Fueling and vehicle maintenance and storage areas are prone to spills and drips of various automotive fluids.
- Equipment and vehicle washing areas are designed to mix water with dirt and hydrocarbons, requiring special treatment of the wastewater (including pretreatment and diversion to the sanitary sewer, if allowed) and protection of wash areas from rainfall and runoff.

The best way to avoid pollutant discharges from these sources is to keep precipitation and runoff from coming into contact with stored chemicals and activity areas that use chemicals and materials, which can become sources of stormwater pollutants. For example, the permittee must cover stockpiles, create dedicated structures for stored materials, build berms around areas of pavement to prevent clean runoff from contacting contaminated areas, and maintain a minimum distance between stockpiles and stormwater infrastructure and receiving waters. These are just a few of the ways in which these potential pollutant sources can be protected from precipitation and runoff.

The permit requires that comprehensive site inspections be conducted quarterly, which is an appropriate frequency to ensure that material stockpiles that might be moved or utilized on a seasonal basis are protected from precipitation and runoff. Also, quarterly inspections will allow inspectors to observe different types of operations that occur at different times of the year (e.g., landscape maintenance crews are less active in the winter). Quarterly visual observations are required so that inspectors can see in real time the qualitative nature of the

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stormwater discharge and so that corrective action can be taken where necessary to improve on-site stormwater controls.

The permit also specifies that inspection procedures, results, and controls for each facility be documented to ensure that the site inspections are consistent and that maintenance of stormwater controls remains part of the municipality's standard operating procedures. The requirement for an inspection log will allow the permitting authority to verify that periodic site inspections have been performed.

Recommendations for the Permit Writer

Neither Phase I nor Phase II regulations specifically require that MS4 permittees develop facility-specific stormwater management SOPs. However, both Phase I and Phase II require that permittees prevent or reduce pollutant discharge in stormwater from municipal facilities and activities. Requiring permittees to assess high priority facilities and develop appropriate controls for each is an effective way of requiring permittees to address potential sources of pollutants at facilities.

When setting frequency for facility inspections (see Part 6.3.3), the permit writer should consider the number of facilities and the size/complexity of the sites to ensure that enough time is available to complete the assessments.

The list of specific stormwater controls for municipal facilities will vary from place to place based on local and watershed priorities and climate considerations. The permit writer should specify stormwater controls that are appropriate for the local conditions. For example, if a permittee uses satellite locations for temporary storage of deicing materials during snow events, the permit writer may want to consider options other than the permanent storage requirement if the permittee uses the piles within a certain time frame and the piles are covered by temporary tarping or a similar control.

6.4 Storm Sewer System Maintenance Activities

Example Permit Provision

6.4.1 MS4 catch basin maintenance

a. Assessment/prioritization of catch basins – The permittee must assign a priority to each of its catch basin inlets within its jurisdiction as one of the following:

- Priority A – Catch basins that are designated as consistently generating the highest volumes of trash and/or debris
- Priority B – Catch basins that are designated as consistently generating moderate volumes of trash and/or debris
- Priority C – Catch basins that are designated as generating low volumes of trash and/or debris

The permittee must use information compiled from citizen complaints/reports to help in the determination of the appropriate priority level. A description of

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the prioritization scheme must be included in the SWMP.

b. Catch basin inspection and cleaning

1. Based on the priorities assigned in Part 6.4.1.a., the permittee must inspect and clean catch basins in accordance with the following schedule:
   - Priority A – [*Insert cleanout frequency, e.g., 3 times per year*]
   - Priority B – [*Insert cleanout frequency, e.g., 2 times per year*]
   - Priority C – [*Insert cleanout frequency, e.g., 1 time per year*]

   The permittee must develop a catch basin cleaning schedule based on the frequency specified in this permit, along with a list of each of its catch basins and the priority assigned to them per Part 6.4.1.a.

2. In addition to catch basin cleanings performed above, the permittee must ensure that any catch basin that is inspected and found to be between one third and one half full of trash and/or debris must be cleaned within [*Insert cleanout frequency e.g., 1 week of discovery*].[23] The permittee must maintain a log of all maintenance performed.

3. The permittee must document that it has performed all required catch basin cleanings in a log that is to be made available for review by the permitting authority upon request.

c. Catch basin labeling – The permittee must ensure that each catch basin includes a legible stormwater awareness message (e.g., a label, stencil, marker, or pre-cast message such as "drains to the creek" or "only rain in the drain"). Catch basins with illegible or missing labels must be recorded and re-labeled within [*insert number of days*] of inspection.

d. Maintenance of surface drainage structures – The permittee must visually monitor permittee-owned open channels and other drainage structures for debris at least [*specify frequency, e.g., once per year*] and identify and prioritize problem areas, such as those with recurrent illegal dumping, for inspection at least [*specify frequency, e.g., three times per year*]. Removal of trash and debris from open channels and other drainage structures must occur [*insert frequency of open channel/drainage structure cleaning, e.g., annually*]. The permittee must document its drainage structure maintenance in a log that is to be made available for review by the permitting authority upon request.

e. Disposal of waste materials – The permittee must develop a procedure to dewater and dispose of materials extracted from catch basins. This procedure must ensure that water removed during the catch basin cleaning process and waste material will not reenter the MS4.

6.4.2 Municipal activities and operations

a. Assessment of municipal activities and operations

[23] EPA's Office of Research and Development documented a threshold sump level of ½ as a break point where solids retainage was either erratic or negative (Catchbasin Technology Overview and Assessment #EPA-600/2-77-051 1977).

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1. The permittee must maintain and revise as necessary the operation and maintenance (O&M) activity assessment. The following municipal O&M activities must be included in the assessment for their potential to discharge pollutants in stormwater:
   - Road and parking lot maintenance, including pothole repair, pavement marking, sealing, and re-paving
   - Bridge maintenance, including re-chipping, grinding, and saw cutting
   - Cold weather operations, including plowing, sanding, and application of deicing compounds and maintenance of snow disposal areas
   - Right-of-way maintenance, including mowing, herbicide and pesticide application, and planting vegetation
   - Municipally-sponsored events such as large outdoor festivals, parades, or street fairs
2. The permittee must identify all materials that could be discharged from each of these O&M activities. Typical pollutants associated with these activities include metals, chlorides, hydrocarbons (e.g. benzene, toluene, ethylbenzene, xylene), sediment, and trash.
3. The permittee must develop a set of pollution prevention measures that, when applied during municipal O&M activities, will reduce the discharge of pollutants in stormwater. These pollution prevention measures must include, at a minimum:
   - Replacing materials/chemicals with more environmentally benign materials or methods (e.g., use mechanical methods vs. herbicides, or use water-based paints or thermoplastics rather than solvent-based paints for stripping)
   - Changing operations to minimize the exposure or mobilization of pollutants (e.g., mulch, compost or landfill grass clippings) to prevent them from entering surface waters
   - Placing barriers around or conducting runoff away from deicing chemical storage areas to prevent discharge into surface waters), consistent with Part 6.3.2.b

   [*If available in your particular State or the municipality, insert relevant section of SWMP, or other relevant document, that includes specific stormwater controls that must be used*.]
4. The permittee must develop and implement a schedule for instituting the pollution prevention measures. At a minimum, with respect to all roads, highways, and parking lots with more than 5,000 square feet of pollutant-generating impervious surface area that are owned, operated, or maintained, the permittee must implement all pollution prevention measures by [*insert deadline*].
5. The results of the assessments and pollution prevention measures, including schedules for implementation, must be documented and made available for review by the permitting authority upon request.

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b. Inspection of pollution prevention measures – All pollution prevention measures implemented at municipal facilities must be visually inspected [*insert frequency, e.g., monthly or quarterly*] to ensure they are working properly; a log of inspections must be maintained and made available for review by the permitting authority upon request.

6.4.3 Street Sweeping and Cleaning

a. The permittee must continue to evaluate and rate all municipally-owned streets, roads, and public parking lots within their jurisdiction. The permittee must include in the evaluation the sweeping frequency, timing, and efficiency of existing street sweeping programs. The street sweeping frequency must be based on land use, trash and stormwater pollutant levels generated. At a minimum, the following areas must be regarded as "high priority," for sweeping activities while the "medium priority" and "low priority" areas are recommended:

- High priority – Streets, road segments, and public parking lots designated as high priority include, but are not limited to, high traffic zones, commercial and industrial districts, shopping malls, large schools, high-density residential dwellings, sport and event venues, and plazas. This designation must include areas that consistently accumulate high volumes of trash, debris, and other stormwater pollutants.
- Medium priority – Streets, road segments and public parking lots designated as medium priority include, but are not limited to, medium traffic zones; warehouse districts; and light, small-scale commercial and industrial areas.
- Low priority – Streets and road segments designated as low priority include, but are not limited to, light traffic zones and residential zones.

b. The permittee must show on a map of its service area how the streets, roads, and public parking lots have been rated in accordance with Part 6.4.3.a.

c. Implementing sweeping schedules – The permittee must sweep streets/roads/public parking lots in accordance with the following frequency:

- High priority – average of at least [*insert frequency, e.g., twice per month*]
- Medium priority – average of at least [*insert frequency, e.g., once per month*]
- Low priority – [*insert frequency, e.g., twice per year*]

If a permittee's existing overall street sweeping effort provides equivalent or greater street sweeping frequency relative to the requirements above, the permittee may continue to implement its existing street sweeping program.

d. For areas where street sweeping is technically infeasible (e.g., streets without curbs), the permittee must increase implementation of other trash/litter control procedures to minimize pollutant discharges to storm drains and creeks. The permittee must show on its Part 6.4.3.b map the location of these areas.

e. Sweeping equipment selection and operation

1. When replacing existing sweeping equipment, the permittee must select and operate high-performing sweepers that are efficient in removing pollutants,

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including fine particulates, from impervious surfaces.

2. The permittee must follow equipment design performance specifications to ensure that street sweeping equipment is operated at the proper equipment design speed with appropriate verification, and that it is properly maintained.
3. The permittee must operate sweepers to optimize pollutant removal by permitting sweepers access to the curb through the use of parking restrictions that clear the curb or through effective public outreach to inform citizens of sweeping days and times so that voluntary curb clearing can occur.

f. Sweeper Waste Material Disposal – The permittee must develop a procedure to dewater and dispose of street sweeper waste material. This procedure must ensure that water and material will not reenter the MS4.

g. Operator training – Street sweeper operators must be trained to enhance operations for water quality benefit.

h. The permittee must include the following in the SWMP and update as changes are made:

1. A description of the street sweeping frequency and any significant changes in the sweeping frequency map, along with the basis for those changes
2. The types of sweepers used
3. A summary of the proper sweeping operation verification results and street sweeping methods, including the way in which the permittee specifies and confirms the rate or speed at which street miles are covered by sweeper operators
4. The use of additional resources in sweeping seasonal leaves or pick-up of other material
5. A description of the methods for addressing areas identified in Part 6.4.3, considered infeasible for street sweeping

6.4.4 Maintenance of municipally-owned and/or maintained structural stormwater controls

a. The permittee must inspect at least [*insert frequency, e.g., yearly*], and maintain if necessary, all municipally-owned or maintained structural stormwater controls. The permittee must also maintain all green infrastructure practices through regularly scheduled maintenance activities.

Example Permit Requirement Rationale for the Fact Sheet

MS4 Maintenance

Traditional municipal storm drain systems were designed to quickly collect and convey runoff to receiving waters. The purpose of catch basin, inlet, and storm drain cleanouts is to prevent blockages, flooding, and reduce pollution.

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Fine particles and pollutants from run-on, atmospheric deposition, vehicle emissions, breakup of street surface materials, littering, and sanding can accumulate along the curbs of roads in between rainfall events. This results in the accumulation of pollutants such as sediment, nutrients, metals, hydrocarbons, bacteria, pesticides, trash and other toxic chemicals. Storm drain maintenance is often the last opportunity to remove pollutants before they enter the storm drain system. Because they effectively trap solids, they need to be cleaned out periodically to prevent those materials from being transported by high stormwater flows. By doing so the MS4 will prevent trash and litter from ultimately becoming sources of marine debris, which is any man-made, solid material that enters waterways either directly or indirectly.

The permit includes a priority ranking approach for catch basins so that municipal resources are directed to the areas and structures that generate the most pollutants. A priority ranking system is required because some catch basins will accumulate pollutants faster than others based on the nature of the drainage area and whether controls are present upstream of the catch basin. Catch basins with the highest accumulations will need to be cleaned more often than those with low accumulations. The permit language also includes a requirement that triggers catch basin cleaning when a catch basin is one-third full.

Proper storm drain system cleanout includes vacuuming or manually removing debris from catch basins; vacuuming or flushing pipes to increase capacity and remove clogs; removing sediment, debris, and overgrown vegetation from open channels; and repairing structures to ensure the integrity of the drainage system. It is important to conduct regular inspections of all storm sewer infrastructure and perform maintenance as necessary. Though these activities are intended to ensure that the sewer system is properly maintained and that any accumulated pollutants are removed prior to discharge, if not properly executed, cleanout activities can result in pollutant discharges. In selecting maintenance practices, the permittee must carefully evaluate each with an eye towards stormwater pollution potential to minimize unintended pollutant discharges, such as the use of flushing storm drain pipes to remove debris without recapturing the debris further down the pipe.

The materials removed from catch basins may not reenter the MS4. The material must be dewatered in a contained area and the water treated with an appropriate and approved control measure or discharged to the sanitary sewer. The solid material will need to be stored and disposed of properly to avoid discharge during a storm event. Some materials removed from storm drains and open channels may require special handling and disposal, and may not be authorized to be disposed of in a landfill.

Street Sweeping and Cleaning

Street and parking lot sweeping is a practice that most municipalities initially conducted for aesthetic purposes. However, the water quality benefits are now widely recognized. Street sweeping also prevents particulate matter associated with road dust from accumulating on public streets and washing into storm drains.

The permit language addresses a number of important factors that impact the effectiveness of a street sweeping program. The first factor is the type of equipment used; the permit language stipulates that when equipment needs to be replaced, high-performance sweepers are purchased preferentially. Street sweeping has traditionally been more effective at removing large-sized particles, but new equipment has been developed to remove smaller, fine-grained particles. Mechanical sweepers (broom-type) are usually the least expensive and are better suited to pick up

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large-grained sediment. Vacuum and regenerative air sweepers are better at removing fine-grained sediment particles, but they are more expensive. Removal efficiency can be improved through tandem sweeping (i.e., two sweepers sweeping the same route, with one following the other to pick up missed material), or if the street sweeper makes multiple passes on a street.

The second factor influencing street sweeping effectiveness is the way in which the equipment is operated; the permit specifies that equipment be operated according to the manufacturers' operating instructions by operators who have been trained to sweep in accordance with the Permit Requirements in order to protect water quality.

The third determining factor is the degree to which parked cars block sweeper access to the curb; one of the best ways to ensure access to the curb is to establish parking restrictions based on sweeping schedules and to inform residents of the schedule so they can voluntarily move their cars. The permit requires that the permittee institute parking restrictions and/or a public outreach campaign requesting that cars be parked elsewhere to accommodate sweeping schedules.

Because not all streets are suitable for sweeping (e.g., those that don't have a curb and gutter), source controls can be used in place of sweeping in those areas.

The permittee is required to maintain documentation of sweeping events and characterize the quantity and composition of pollutants removed from roadways. Street sweeping data are relatively easy to track and maintain, so the permit includes requirements for reporting and assessment of the effectiveness of the sweeping activities based on equipment used, miles swept, and the amount of materials collected.

The street sweeping material may not reenter the MS4. The material must be dewatered in a contained area and the water treated with an appropriate and approved control measure or discharged to the sanitary sewer. The solid material will need to be stored and disposed of properly to avoid discharge during a storm event. Some materials may require special handling and disposal, and my not be authorized to be disposed of in a landfill.

Recommendations for the Permit Writer

MS4 Maintenance

MS4s should have a specific schedule to clean out their storm drains since it will ensure that the debris that is trapped in the system will not move into waterbodies and ultimately become marine debris in the ocean. For additional information to include on marine debris go to the EPA's Marine Debris website (www.epa.gov/owow/oceans/debris).

The frequency and timing of visual assessments and cleaning of storm drains and open channels can be tailored to local climate conditions. For example, one approach would be to require that visual observations and cleanings be conducted before the start of the wet season or before spring snowmelt.

The permitting authority should review and approve dewatering and disposal methods for materials removed from catch basins.

Catch basin labeling is believed to be an effective mechanism for educating residents since it involves a direct reminder that that water or other materials which flow into storm drains is not

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treated in any way, but instead drains directly to nearby waterways. There are many methods for labeling catch basins and the permit writer should work with the permittee to determine the most feasible and cost effective method of delivering the "drains to stream" message.

Street Sweeping and Cleaning
Street sweeping frequency and timing can be based on climate conditions and seasonal variation in pollution loading. For example, in cold climates where sand is used for winter road maintenance, the permit language could specify increased sweeping during the winter and prior to the spring snowmelt. In areas with a rainy season, sweeping might be timed to occur before the rainy season starts.

In the fall, sweepers can be used to pick up leaves, as they can contribute 25 percent of nutrient loadings in catch basins. If more substantial piles of leaves are found in the community during the fall, street sweeping activities should be coordinated with leaf pick-up. Equally important is an early spring sweeping before rains begin to pick up sand, de-icing material, and winter debris. More frequent sweeping may reduce the need for catch basin cleaning.

The prioritization of sweeping activities (high, medium, low) should be based on standard categories that are based on traffic frequencies and used to determine service levels for the roadways. The example provided in the permit language is based on specific information for the location.

The permitting authority should review and approve dewatering and disposal methods for street sweeping material.

6.5 Flood Management

Example Permit Provision

6.5.1 Flood Management Projects – Within [*insert deadline, such as two years*] of permit issuance, the permittee must develop and implement a process to assess the water quality impacts in the design of all new flood management projects that are associated with the permittee or that discharge to the MS4. This process must include consideration of controls that can be used to minimize the impacts to site water quality and hydrology while still meeting the project objectives. Beginning [*insert deadline, such as three years*] from date of permit issuance, the permittee must assess at least [*insert number of projects to be evaluated, such as two*] existing flood management projects per year to determine whether changes or additions should be made to improve water quality. [24] A description of this process must be included in the SWMP document.

[24] Eastern Washington Phase II MS4 Permit (www.ecy.wa.gov/programs/wq/stormwater/municipal/phaseiiEwa/MODIFIEDpermitDOCS/EWpermitMODsigned.pdf)

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Example Permit Requirement Rationale for the Fact Sheet

This permit requires that existing flood management projects be prioritized and a set number be evaluated to identify opportunities for water quality retrofits. This is because the focus of stormwater management in the past had been to control flooding and mitigate property damage, with less emphasis on water quality protection. These structures may handle a significant amount of stormwater and therefore offer an opportunity to modify their design to include water quality features for less than the cost of building new controls. This requirement applies not only to new flood control projects, but also to existing structures.

6.6 Pesticide, Herbicide, and Fertilizer Application and Management

Example Permit Provision

6.6.1 Landscape maintenance

a. The permittee must evaluate the materials used and activities performed on public spaces such as parks, schools, golf courses, easements, public rights of way, and other open spaces for pollution prevention opportunities. Maintenance activities for the turf landscaped portions of these can include mowing, fertilization, pesticide application, irrigation, etc. Typical pollutants include sediment, nutrients, hydrocarbons, pesticides, herbicides and organic debris.

b. The permittee must implement the following practices to minimize landscaping-related pollutant generation:

1. Educational activities, permits, certifications, and other measures for municipal applicators and distributors.
2. Integrated pest management measures that rely on non-chemical solutions, including
    - Use of native plants, xeriscaping in arid/semi-arid regions (reduces water usage and fertilization)
    - Keeping clippings and leaves away from waterways and out of the street using mulching, composting, or landfilling
    - Limiting application of pesticides and fertilizers if precipitation is forecasted within 24 hours or as specified in label instructions
    - Limiting or replacing pesticide use (e.g., manual weed and insect removal)
    - Limiting or eliminating the use of fertilizers, or, if necessary, prohibiting application within 5 feet of pavement, 25 feet of a storm drain inlet, or 50 feet of a waterbody
    - Reducing mowing of grass to allow for greater pollutant removal, but not jeopardizing motorist safety
3. Schedules for chemical application that minimize the discharge of such constituents due to irrigation and expected precipitation.

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4. The collection and proper disposal of unused pesticides, herbicides, and fertilizers.[25]

Example Permit Requirement Rationale for the Fact Sheet

The permit focuses on requiring source controls to reduce the amount of chemicals used. The permit specifies the use of integrated pest management, selection of native vegetation that is naturally adapted to local conditions and therefore requires fewer chemical and water inputs, reducing exposure of the chemicals to water by scheduling application according to weather forecasts and plant needs, and ensuring that municipal employees who are responsible for storing and handling these materials are educated about their use, disposal, and possible impacts.

Recommendations for the Permit Writer

EPA is currently developing a general permit to control discharges from the application of pesticides to or over, including near, waters of the U.S. EPA is working closely with state NPDES and pesticide control authorities, the regulated community, and environmental organizations to develop its permit that will be required for such discharges beginning in April 2011. It is important to note that some of the permit language in this section may need to be altered to be consistent with the pesticide permit once it is finalized. For up-to-date information, go to EPA's website (www.epa.gov/npdes/agriculture).

6.7 Training and Education

Example Permit Provision

6.7.1 Employee Training Requirements – Permittees must develop an annual employee training program for appropriate employees involved in implementing pollution prevention and good housekeeping practices in the preceding Parts. All new hires must receive training within the first year of their hire date. This annual training must include a general stormwater education component, any new technologies, operations, or responsibilities that arise during the year, and the Permit Requirements that apply to the staff being trained. A description of the program must be maintained for review by the permitting authority. The permittee must also identify and track all personnel requiring training and records must be maintained. Training must begin [*insert deadline*] from the effective date of permit authorization.

[25] San Diego Phase I MS4 Permit (CAS0108758) (www.swrcb.ca.gov/rwqcb9/water_issues/programs/stormwater/docs/oc_permit/updates_8_13_09/R9-2009-0002_12Aug09.pdf)

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Example Permit Requirement Rationale for the Fact Sheet

The regulations found at 40 CFR 122.34(b)(6) specifically requires that the permittee develop a "training component" that trains employees "to prevent and reduce stormwater pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance." This permit requires employee training for existing and new employees who are involved in performing pollution prevention and good housekeeping practices. All training must include a general stormwater educational component, including an overview of the requirements with which the municipality needs to comply. The permittee is responsible for identifying which staff must attend trainings based on the applicability of the topics listed, and they are required to conduct refresher training on an annual basis.

Recommendations for the Permit Writer

The topics included in the trainings should take into consideration the types of activities in which the municipality engages and the extent to which such activities are performed in-house or contracted.

6.8 Contractor Requirements and Oversight

Example Permit Provision

6.8.1 Requirements for Contractors:

a. Any contractors hired by the permittee to perform municipal maintenance activities must be contractually required to comply with all of the stormwater control measures, good housekeeping practices, and facility-specific stormwater management SOPs described above.

b. The permittee must provide oversight of contractor activities to ensure that contractors are using appropriate control measures and SOPs. Oversight procedures must be described in the SWMP document.

Example Permit Requirement Rationale for the Fact Sheet

Many municipalities use third-party contractors to conduct municipal maintenance activities in lieu of using municipal employees. Contractors performing activities that can affect stormwater quality must be held to the same standards as the permittee. Not only must these expectations be defined in contracts between the permittee and its contractors, but the permittee is responsible for ensuring, through contractually-required documentation or periodic site visits, that contractors are using stormwater controls and following standard operating procedures.

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CHAPTER 7: INDUSTRIAL STORMWATER SOURCES

Introduction

Phase I MS4 permittees are required to develop and implement an inspection and oversight program to monitor and control pollutants in stormwater discharges to the MS4 from industrial facilities. Regulations addressing industrial stormwater management in Phase I MS4 permits is found at 40 CFR 122.26(d)(2)(i)(B, C, E, and F) and 40 CFR 122.26(d)(2)(iv). Requirements to regulate the stormwater discharges from commercial facilities are found at 40 CFR 122.26(d)(2)(iv)(A).

Included Concepts

- ► Facility inventory
- ► Industrial facility stormwater control measures
- ► Industrial and commercial facility inspections
- ► Staff training

This program component typically applies only to Phase I MS4 permittees as Phase II federal regulations (40 CFR 122.34(b)) do not specifically address stormwater discharges from industrial facilities and commercial businesses (other than as part of the education and outreach program). However, EPA recommends that permit writers consider including requirements pertaining to stormwater discharges to the MS4 from industrial sources in Phase II permits to further reduce stormwater pollutants from the MS4.

Phase I MS4 regulations specify that several key elements be included in Phase I MS4 stormwater management programs. These elements include: adequate legal authority to require compliance and inspect sites, inspection of priority industrial and commercial facilities, establishing control measure requirements for facilities that may pose a threat to water quality, and enforcing stormwater requirements. In order to implement these requirements, MS4 permits require the development of an inventory of facilities and prioritization protocol and adequate staff training to ensure proper inspection and enforcement of requirements.

7.1 Facility Inventory

Example Permit Provision

7.1.1 Source Identification

a. The permittee must continue to maintain an inventory of all industrial and commercial sites/sources within its jurisdiction (regardless of ownership) that could discharge pollutants in stormwater to the MS4. The inventory must be updated [*insert frequency, e.g. annually*] and available for review by the permitting authority upon request.

b. The inventory must include the following minimum information for each industrial and commercial site/source:

1. Name

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2. Address
3. Physical location of storm drain receiving discharge
4. Name of receiving water
5. Pollutants potentially generated by the site/source
6. Identification of whether the site/source is (1) tributary to an impaired water body segment (i.e., whether it is listed under Section 303(d) of the Clean Water Act) and (2) whether it generates pollutants for which the water body segment is impaired
7. A narrative description including standard industrial classification (SIC) codes, which best reflects the principal products or services provided by each facility.

The use of a geolocational database system is highly recommended.

c. At a minimum, the following sites/sources must be included in the inventory:

1. Commercial Sites/Sources:

[*insert commercial sources that are a priority such as*

- Airplane repair, maintenance, fueling, or cleaning
- Animal facilities
- Automobile and other vehicle body repair or painting
- Automobile (or other vehicle) parking lots and storage facilities
- Automobile repair, maintenance, fueling, or cleaning
- Boat repair, maintenance, fueling, or cleaning
- Building material retailers and storage
- Cement mixing or cutting
- Eating or drinking establishments (e.g., restaurants), including food markets
- Equipment repair, maintenance, fueling, or cleaning
- Golf courses, parks and other recreational areas/facilities
- Landscaping
- Marinas
- Masonry
- Mobile automobile or other vehicle washing
- Mobile carpet, drape or furniture cleaning
- Nurseries and greenhouses
- Painting and coating
- Pest control services
- Pool and fountain cleaning
- Portable sanitary services

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- Power washing services
- Retail or wholesale fueling]

2. Industrial Sites/Sources:
    - Industrial Facilities, as defined at 40 CFR § 122.26(b)(14), including those subject to the Multi Sector General Permit or individual NPDES permit
    - Facilities subject to Title III of the Superfund Amendments and Reauthorization Act (SARA)
    - Hazardous waste treatment, disposal, storage and recovery facilities
3. All other commercial or industrial sites/sources tributary to an impaired water body segment, where the site/source generates pollutants for which the water body segment is impaired
4. All other commercial or industrial sites/sources that the permittee determines may contribute a significant pollutant load to the MS4[26]

Example Permit Requirement Rationale for the Fact Sheet

The permit requires the permittee to develop an inventory of all potential commercial and industrial sites/sources that could contribute pollutants to the MS4. A list of specific commercial and industrial sites/sources is included in the permit, and additional sites/sources can be added if they are likely to discharge a pollutant of concern to an impaired waterbody or they are contributing a significant pollutant load to the MS4.

The inventory information will provide the permittee with information on potential pollutant sources that contribute to its MS4 system, and at what locations in the system into which they discharge. This information will also allow the permittee to prioritize inspections and tailor education and outreach efforts, which will best assist the facility in implementing appropriate pollution prevention practices or other on-site stormwater controls. In addition, the inventory data will allow the permittee to determine whether the facilities may discharge pollutants of concern into impaired waters. Finally, the information contained in the inventory will enable permittees to characterize these facilities and prioritize them based on their potential impact on stormwater quality. By prioritizing facilities in such a manner, the permittee may then establish a targeted approach towards conducting inspections (see Part 7.3 for a discussion of inspection frequency).

In addition, data from NPDES pretreatment programs within the MS4 boundary on significant industrial users (SIUs) could also be used to identify and prioritize the industrial sites in the stormwater program.

[26]San Diego MS4 Permit (www.swrcb.ca.gov/rwqcb9/water_issues/programs/stormwater/docs/sd_permit/r9_2007_0001/2007_0001final.pdf), with modifications.

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Recommendations for the Permit Writer

The example permit provision lists specific commercial and industrial sources to be included in the inventory, but permit writers should customize this list to meet specific issues in their area. For example, some permittees may have large industrial areas with few commercial businesses, while others may have a large number of restaurants and retail businesses but no industrial facilities at all. Other permittees may have had past water quality problems at certain types of commercial or industrial sites, in which case such facilities should be included in their inventories.

7.2 Industrial Facility Stormwater Control Measures

Example Permit Provision

7.2.1 The permittee must require industrial and commercial facilities included in the Part 7.1 inventory to select, install, implement, and maintain stormwater control measures. At a minimum, these control measures must:

a. Minimize Exposure – Industrial/commercial facilities must minimize the exposure of manufacturing, processing, and material storage areas (including loading and unloading, storage, disposal, cleaning, maintenance, and fueling operations) to rain, snow, snowmelt, and runoff by either locating these industrial materials and activities inside or protecting them with storm resistant coverings (although significant enlargement of impervious surface area is not recommended). The facilities must consider, where appropriate:

1. Using grading, berming, or curbing to prevent runoff of contaminated flows and divert run-on away from these areas
2. Locating materials, equipment, and activities so that leaks are contained in existing containment and diversion systems (confine the storage of leaky or leak-prone vehicles and equipment awaiting maintenance to protected areas)
3. Cleaning up spills and leaks promptly using dry methods (e.g., absorbents) to prevent the discharge of pollutants
4. Using drip pans and absorbents under or around leaky vehicles and equipment or store indoors where feasible
5. Using spill/overflow protection equipment
6. Draining fluids from equipment and vehicles prior to on-site storage or disposal
7. Performing all cleaning operations indoors, under cover, or in bermed areas that prevent runoff and run-on and also that capture any overspray
8. Ensuring that all wash water drains to a proper collection system (i.e., not the stormwater drainage system)

b. Follow Good Housekeeping Practices – Industrial/commercial facilities must keep clean all exposed areas that are potential sources of pollutants, using such

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measures as sweeping at regular intervals, keeping materials orderly and labeled, and storing materials in appropriate containers.

c. Conduct Maintenance – Industrial/commercial facilities must regularly inspect, test, maintain, and repair all industrial equipment and systems to avoid situations that may result in leaks, spills, and other releases of pollutants in stormwater discharged to receiving waters.

d. Implement Spill Prevention and Response Procedures – Industrial/commercial facilities must minimize the potential for leaks, spills and other releases that may be exposed to stormwater and develop plans for effective response to such spills if or when they occur. At a minimum, the facilities must implement:

1. Procedures for plainly labeling containers (e.g., "Used Oil," "Spent Solvents," "Fertilizers and Pesticides,") that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur
2. Preventative measures such as barriers between material storage and traffic areas, secondary containment provisions, and procedures for material storage and handling
3. Procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases. Employees who may cause, detect, or respond to a spill or leak must be trained in these procedures and have necessary spill response equipment available.
4. Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies [*Insert appropriate contacts for reporting*]

e. Implement Erosion and Sediment Controls – Industrial/commercial facilities must stabilize exposed areas and contain runoff using structural and/or non-structural control measures to minimize onsite erosion and sedimentation, and the resulting discharge of pollutants.

f. Manage Runoff – Industrial/commercial facilities must divert, infiltrate, reuse, contain, or otherwise reduce stormwater runoff, to minimize pollutants in discharges.

g. Address Salt Storage Piles or Piles Containing Salt – Industrial/commercial facilities must enclose or cover storage piles of salt, or piles containing salt, used for deicing or other commercial or industrial purposes, including maintenance of paved surfaces. If a permanent storage structure is required but does not exist, one must be built within [*insert timeframe*], and seasonal tarping must be used as an interim control until the permanent structure is completed. Facilities must implement appropriate measures (e.g., good housekeeping, diversions, containment) to minimize exposure resulting from adding to or removing materials from the pile. Piles do not need to be enclosed or covered if stormwater runoff from the piles is not discharged or if discharges from the piles are authorized under another NPDES permit.

h. Conduct Employee Training – All facility employees who work in areas where industrial materials or activities are exposed to stormwater, or who are

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responsible for implementing activities necessary to manage stormwater must be trained. Training must be conducted [*insert frequency, e.g. at least annually*].

i. Address Non-Stormwater Discharges – Industrial/commercial facilities must eliminate non-stormwater discharges not authorized by an applicable NPDES permit.

j. Control Waste, Garbage and Floatable Debris – Facilities must ensure that waste, garbage, and floatable debris are not discharged to receiving waters by keeping exposed areas free of such materials or by intercepting them before they are discharged.

k. Control Dust Generation and Vehicle Tracking of Industrial Materials – Industrial/commercial facilities must minimize generation of dust and off-site tracking of raw, final, or waste materials.[27]

7.2.2 Within the [*insert deadline, e.g. first two years of permit term*], the permittee must notify the owner/operator of each industrial and commercial site/source of the stormwater requirements for control measures in Part 7.2.1.

7.2.3 As necessary to minimize any pollutants causing the applicable receiving waterbody to be listed as impaired, the permittee must require implementation of additional controls for industrial and commercial sites/sources that are tributary to the impaired water body segments and that are likely to generate such impairment pollutants.[28]

Example Permit Requirement Rationale for the Fact Sheet

The permittee is required to ensure that the minimum control measures are implemented, as applicable, at every industrial/commercial facility included in its inventory. The minimum measures outlined, when properly selected, designed and implemented, promote prevention and source control, before treatment.

The control measures in this permit are consistent with the control measure requirements found in EPA's 2008 Multi-Sector General Permit (MSGP) for stormwater discharges from industrial activities. The permit writer should ensure that these requirements are consistent with the State's industrial stormwater permit. The control measures in this permit describe specific activities that the permittee must require industrial facilities and commercial sites to implement to minimize stormwater pollution. Another control measure is simply preventing pollutants from coming into contact with precipitation in the first place since this will ensure they are not carried into nearby waterways. General good housekeeping and maintenance procedures are also required. Additional control measures address spill prevention and response, erosion and sediment controls, managing runoff, and controlling discharges from salt storage piles.

[27] 2008 MSGP (Section 2) (www.epa.gov/npdes/pubs/msgp2008_finalpermit.pdf), with modifications
[28] San Diego MS4 Permit (www.swrcb.ca.gov/rwqcb9/water_issues/programs/stormwater/docs/sd_permit/r9_2007_0001/2007_0001final.pdf), with modifications

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The control measures must also include employee training, controlling non-stormwater discharges, addressing waste, garbage and floatable debris, and addressing dust generation and vehicle tracking.[29]

The permittee is required to notify industrial and commercial sites of the control measure requirements and their responsibility to implement and comply with the requirements.

Facilities that discharge into impaired waterbodies may be required to implement additional controls as necessary to prevent the discharge of the associated pollutants of concern.

7.3 Industrial and Commercial Facility Inspections

Example Permit Provision

7.3.1 Industrial and Commercial Site Inspection Program

a. The permittee must continue to implement a program to inspect all commercial and industrial facilities included in its Part 7.1(a) inventory. The permittee must describe how this will occur in the SWMP.

b. The inspection program must:

1. Prioritize all facilities into high, medium, and low categories on the basis of the potential for water quality impact using criteria such as pollutant sources on site, pollutants of concern, proximity to a water body, and violation history of the facility. The different priority categories will be assigned different inspection frequencies, with the highest priority facilities receiving more frequent inspections. Describe the process for prioritizing inspections and frequency of inspections. If any geographical areas are to be targeted for inspections due to high potential for stormwater pollution, these areas must be listed in the Inspection Plan.

3. Explain how the priority assigned to any one facility may be modified based on the site inspection findings and the facility's potential to discharge pollutants.

7.3.2 Minimum Inspection Requirements

a. Inspection Frequency – The permittee is required to conduct inspections at the following frequencies, at a minimum:

1. Facilities with high potential for water quality impact must be inspected [*insert frequency, e.g. annually*].

2. Facilities with medium potential for water quality impact must be inspected at least [*insert frequency, e.g. once every three years*].

3. Facilities with low potential for water quality impact must be inspected at least [*insert frequency, e.g. once every 5 years*].

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[29] 2008 MSGP Fact Sheet (www.epa.gov/npdes/pubs/msgp2008_finalfs.pdf), with modifications

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4. Facilities with either a [*insert violation type*] written violation occurring in the previous year must be inspected at least [*insert frequency, e.g. annually*] until compliance is achieved.
5. For facilities with no exposure of commercial or industrial activities to stormwater, no inspections are required. However, the permittee must continue to track these facilities for significant change in the exposure of their operations to stormwater.

b. Scope of Inspection – Inspections must at a minimum:

1. Evaluate the facility's compliance with the Part 7.2 requirement to select, design, install, and implement stormwater control measures.
2. Conduct a visual observation for evidence of unauthorized discharges, illicit connections, and potential discharge of pollutants to stormwater.
3. Verify whether the facility is required to be authorized under the [*insert applicable NPDES general industrial stormwater permit*], and whether the facility has in fact obtained such permit coverage.[30]
4. Evaluate the facility's compliance with any other relevant local stormwater requirements.

c. Documentation Requirements – At a minimum, the permittee must document the following for each inspection:

The inspection date and time;

The name(s) and signature(s) of the inspector(s);

1. Weather information and a description of any discharges occurring at the time of the inspection;
2. Any previously unidentified discharges of pollutants from the site;
3. Any control measures needing maintenance or repairs;
4. Any failed control measures that need replacement;
5. Any incidents of noncompliance observed; and
6. Any additional control measures needed to comply with the Permit Requirements.

d. Track Inspections – Inspection findings must be tracked to ensure inspections are conducted at the frequency specified in Part 7.3.2.b., highlight and document the recidivism of noncompliant facilities, and aid follow up and enforcement activities.

7.3.3 Enforcement – The permittee must ensure that all necessary follow up and enforcement activities are conducted as necessary to require necessary implementation and maintenance of the control measures described in Part 7.2. The permittee is required to utilize the approved ERP for all enforcement actions.

[30] San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (www.swrcb.ca.gov/sanfranciscobay/board_decisions/adopted_orders/2009/R2-2009-0074.pdf), with modifications

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Example Permit Requirement Rationale for the Fact Sheet

The permittee must design an inspection program that facilitates more frequent inspections of the highest priority facilities. (See 40 CFR 122.26(d)(iv)(C)(1)). This will help maximize use of the permittee's existing inspection resources and ensure that the permittee inspectors are the most visible and the most familiar with the facilities with the highest potential for water quality impact.

The permittee must develop a process for prioritizing inspections and designating all facilities in the industrial and commercial inventory as either a high, medium or low priority. The designation could occur by individual facility or by facility type. The prioritization for individual facilities may be adjusted after the first, or any subsequent, inspection (for example, if a facility is a high priority facility and the inspection reveals it has little potential for stormwater pollution, then the facility could be reprioritized as a low priority facility).

It is important that inspections be conducted in a thorough and consistent manner in accordance with a formal protocol for conducting an inspection. This protocol should be the basis for inspector training as well. Inspections should include a thorough walk-through of the facility.

The documentation of inspections is very important, not only when tracking noncompliance, but also to facilitate effective enforcement action when needed. A timeline of noncompliance and subsequent enforcement action is critical when escalating measures to gain compliance. Typically, the use of inspection forms facilitates complete and consistent documentation among inspectors and over time.

Recommendations for the Permit Writer

The permit writer may choose to define what criteria the permittee will use to determine the priority of each facility on its inventory. For example, the Phase I Los Angeles County MS4 permit specifies which facilities are Tier 1 and Tier 2 and provides the required inspection frequency for each. The permit writer could also automatically designate certain sets of industries to a certain priority category (e.g., all facilities subject to the State's Industrial General Permit could be designated as high priority facilities in the permit). If the permit does not define what criteria are to be used when prioritizing facilities, the permittee should be required to develop this protocol and submit it to the permitting authority for review.

The permit writer should review available industrial and commercial inventories to determine if more specific inspection frequencies should be set. For example, an MS4 with only 10 facilities in the inventory could probably inspect those facilities annually. However, an MS4 with over 2,000 facilities in the inventory may need to set the inspection frequency at a less frequent interval.

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7.4 Staff Training

Example Permit Provision

7.4.1 The permittee must ensure that all staff whose primary job duties are implementing the industrial stormwater program is trained to conduct facility inspections. The training must cover what is required under this permit in terms of stormwater control measures, the requirements of other applicable Industrial Stormwater general permits or other related local requirements, the permittee's site inspection and documentation protocols, and enforcement procedures. Follow-up training must be provided every other year to address changes in procedures, techniques, or staffing. Permittees must document and maintain records of the training provided and the staff trained.[31]

Example Permit Requirement Rationale for the Fact Sheet

Inspectors responsible for conducting inspections at industrial/commercial facilities must be trained on the applicable stormwater requirements for the different types of facilities (i.e., industrial, commercial, other). Training must include a summary of federal, state, and local stormwater regulations that may apply to industrial/commercial facilities. Inspectors must be familiar with various types of stormwater control measures commonly used at the types of facilities typically found in the MS4 area and must be able to educate facility operators about such stormwater control measures. In addition, inspectors must understand and use the permittee's established enforcement response plan (see Chapter 1 of this Guide) to gain compliance as necessary. The inspection staff must be proficient in the enforcement escalation procedure and must properly document all enforcement actions accordingly per the ERP.

[31] Western Washington Phase I MS4 Permit (www.ecy.wa.gov/programs/wq/stormwater/municipal/phaseIpermit/MODIFIEDpermitDOCS/PhaseIpermitSIGNED.pdf), with modifications

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CHAPTER 8: MONITORING, EVALUATION, AND REPORTING

Introduction

Phase I MS4s are required to conduct discharge characterization, field screening and develop a monitoring program. Phase I MS4s are also required to conduct an assessment of controls. See 40 CFR 122.26(d)(1)(iii), (d)(2)(iii), and (d)(2)(v).

Phase II MS4 regulations allow, but do not specifically require, monitoring. Phase II MS4s are required to evaluate program compliance, the appropriateness of identified control measures, and progress toward achieving identified measurable goals. See 40 CFR 122.34(g).

Included Concepts

- ► Consolidated information tracking system
- ► Development of a comprehensive monitoring and assessment program
- ► Evaluation of overall program effectiveness
- ► Requirements for annual reporting of MS4 activities

There are many components involved in monitoring and evaluating the effectiveness of a municipal stormwater program. Any comprehensive monitoring program should have clear monitoring objectives to help determine compliance and water quality impacts. Each monitoring program is unique and should be customized to the specific waterbodies, impairments, and pollutant sources of the MS4.

Evaluating the overall effectiveness of the municipal stormwater program should be done using information from the monitoring program, progress toward meeting measurable goals, and other indicators. Without assessing the effectiveness of the stormwater management program the permittee will not know which parts of the program need to be modified to protect and/or improve water quality and instead will essentially be operating blindly. Establishing a comprehensive monitoring and assessment program will enable the permittee to track progress in complying with permit provisions and implementing a program to protect water quality.

8.1 Consolidated Information Tracking System

Example Permit Provision

8.1.1 Within the first [*insert time frame which corresponds to the development of the monitoring program e.g. first two years of permit*], the permittee must develop a tracking system to track the information required in the permit as well as the information required to be reported in the annual report (see Part 8.4).

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Example Permit Requirement Rationale for the Fact Sheet

An important part of any municipal stormwater program is to document and track information on activities the permittee undertakes to comply with the Permit Requirements. Tracking should be integrated into each of the minimum measures. For example, tracking the location of illicit discharges may indicate that a specific area has a high incidence of motor oil being dumped into storm drains. Investigations may reveal that homeowners are changing the motor oil in their cars, but not properly disposing it. Therefore, the permittee will need to educate the homeowners in that area regarding proper disposal.

The permittee must develop a tracking system to monitor implementation of its various programs in order to document the permittee's compliance with its Permit Requirements, such as the number of construction sites and industrial facilities inspected. In addition, the tracking system will allow the permitee to monitor the compliance status of those entities within its jurisdiction, such as construction sites and industrial facilities, and to ensure compliance of municipally-owned and operated facilities.

Any tracking system should be coordinated with the monitoring and evaluation programs developed by the permittee. Ideally, a monitoring and evaluation program will link the "actions" (e.g., the inspections, maintenance, education and other activities the permittee implements) with the "results" (e.g., water quality monitoring data, improvements in environmental indicators) of the monitoring program.

In addition, adequate tracking is necessary to generate and provide reports of program progress not only to the permitting authority, but to a permittee's internal management for planning and funding purposes. Ideally, a MS4 permittee will have at least one person in charge of overall coordination, including tracking. While many departments or agencies might implement various stormwater program components, it is helpful for a single person or department to gather and analyze applicable data. This can be accomplished in a number of ways and will vary based on existing data tracking mechanisms used by a permittee, the data being captured and the reporting requirements the permittee must comply with. Ideally, the program would have a database accessible by all parties which specifies the required data. Lacking this, the permittee will need to coordinate all responsible parties. The permittee will need to ensure that responsible parties "mine" all data necessary to adequately represent the program and permit compliance, and specify adequate internal reporting deadlines to guarantee that the data is available in a timely manner for program planning, effectiveness assessments and permit reporting. Some permittees create reporting forms for program component managers to complete and submit by internal deadlines. Regardless of how the permittee coordinates the effort internally, without adequate tracking of data the permittees will not be able to submit annual reports to the permitting authority that provide the necessary information to determine permit compliance.

Recommendations for the Permit Writer

To assist the permittee in ensuring appropriate data is gathered and analyzed, the permitting authority should be very clear regarding annual reporting requirements. In addition, the text for this section should be tailored depending on the permittee. For example, some permittees may be able to develop a GIS-based system complete with the option to upload pictures and inspection reports versus a spreadsheet. In the text provided either system would meet the requirements, but more detailed information can be obtained with the GIS-based system.

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8.2 Development of a Comprehensive Monitoring & Assessment Program

Example Permit Provision

8.2.1 The permittee must continue to implement, and revise as necessary, a comprehensive monitoring and assessment program. A description of this program must be included in the SWMP document. The monitoring and assessment program must be designed to meet the following objectives:

a. Assess compliance with this permit;

b. Measure the effectiveness of the permittee's stormwater management program;

c. Assess the chemical, physical, and biological impacts to receiving waters resulting from stormwater discharges;

d. Characterize stormwater discharges;

e. Identify sources of specific pollutants;

f. Detect and eliminate illicit discharges and illegal connections to the MS4; and

g. Assess the overall health and evaluate long-term trends in receiving water quality.

NOTE: Because monitoring programs and requirements are very specific to the MS4 and local water quality impairments, permit writers are directed to the "Recommendations to the Permit Writer" section below for examples of comprehensive monitoring program Permit Requirements.

Example Permit Requirement Rationale for the Fact Sheet

Without clear monitoring objectives and a detailed monitoring plan, it will be difficult for permittees and permitting authorities to evaluate the effectiveness of the municipal stormwater program.

There are numerous factors that should be examined while setting up the water quality monitoring portion of the comprehensive program. Understanding and considering climatic conditions such as precipitation patterns, temperature, and seasonal variations will ensure the study design will collect data that are representative of typical storms in the area and that sampling occurs during times of the year when it is most logical to do so. Acknowledging the different types of land uses within the area will also help the permittee to prioritize monitoring efforts based on the areas most likely to be impacted by stormwater. The type of waterbody monitored must also be considered when selecting sampling locations since pollutants behave differently depending on the environment thereby impacting sampling protocols. For example, sampling in a freshwater lake involves different protocols than monitoring in a tidally influenced river or a first order stream. Waterbody type can also influence the data results and conclusions (e.g. freshwater wetlands typically have high denitrification rates that will likely impact the results of nitrate sampling).

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Selection of specific sampling locations is also very important. If particular sites are of concern, then monitoring both above and below the sites to figure out their contributions to the overall water quality issues may make sense. Also, the actual location in the waterbody is important to specify for consistency. For example, should samples be taken close to the stream bank or in the center of the waterbody, in riffles or pools? The answers to these questions, of course, depend on the goals of the monitoring and the constituents (biological, chemical, hydrological) being examined.

In addition, the number and frequency of samples collected and stream assessments performed will determine how robust the data will be (see page 287 in *National Research Council's Report Urban Stormwater Management in the United States (2009*) available at www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf). Monitoring may or may not be tied to specific wet weather events (i.e. within 72 hours after a rainfall event). A combination of specific wet weather samples and dry weather samples may be appropriate.

Establishing objectives with associated indicators (environmental or administrative) for each minimum measure can help put each component into perspective when considering the overall program. Indicators are one way to evaluate the success of the program from the overall program level. Developing standard environmental indicators is a critical step to evaluate the SWMP. Permittees need practical tools, such as these indicators, in order to determine if their stormwater programs are working, and that help elucidate where additional efforts may be most critical. Environmental indicators should be selected based on the type (estuarine/freshwater/brackish) and condition (impaired/non-impaired) of the waterbody to which stormwater is discharged as well as the intended use of the area where the stormwater is discharged (source water protection area, etc.).

In addition, permittees should document certain administrative efforts associated with developing and implementing their SWMPs. In this context 'administrative' is considered quite broad, including such things as control measures, inspection programs, policies and rules, MS4 system scope and condition, educational efforts and any other variable or outcome that could reflect on the quality of a stormwater program other than the actual environmental quality outcomes, which are covered under 'Environmental Indicators'.

Good administrative indicators are numerous, and good suites of indicators will vary from one community to another. More information can be obtained on each of the environmental and administrative indicators listed by going to the Stormwater Manager's Resource Center (www.stormwatercenter.net) and selecting "Monitor/Assess" on the left navigation bar.

Several protocols have been developed to assess the effectiveness of stormwater control measures:

- Guidance for Evaluating Emerging Stormwater Treatment Technologies, Technology Assessment Protocol - Ecology (TAPE) www.ecy.wa.gov/biblio/0210037.html . This guidance document's primary purpose is to establish a testing protocol and process for evaluating and reporting on the performance and appropriate uses of emerging stormwater treatment technologies.

- Technology Acceptance Reciprocity Partnership (TARP) Protocol for Stormwater Best Management Practice Demonstrations www.dep.state.pa.us/dep/deputate/pollprev/techservices/tarp/pdffiles/Tier2protocol.pdf . The purpose of the TARP

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Protocol is to provide a uniform method for demonstrating stormwater technologies and developing test quality assurance (QA) plans for certification or verification of performance claims.

- BMP Performance Verification Checklist. This is a tool that helps permittees provide a consistent set of questions for applicants proposing to use manufactured and proprietary BMP. It is available as Tool # 8 of the Center for Watershed Protection's *Managing Stormwater in Your Community*. The checklist is accompanied by an explanation and instructions for using the checklist, technical appendices, and a matrix that compares existing verification protocols, such as TARP and TAPE.

Additional monitoring resources include:

- CWP, 2008, *Monitoring to Demonstrate Environmental Results: Guidance to Develop Local Stormwater Monitoring Studies Using Six Example Study Designs* (www.cwp.org)
- Geosyntec Consultants and Wright Water Engineers, 2009, *Urban Stormwater BMP Performance Monitoring*, (bmpdatabase.org/MonitoringEval.htm)
- CASQA, 2007, *Municipal Stormwater Program Effectiveness Assessment Guidance* (www.casqa.org)

Recommendations for the Permit Writer

Because of the site-specific nature and variability of these monitoring programs between permittees, the detailed requirements should be provided by each permit writer. For example, the Phase I regulations included specific monitoring requirements while the Phase II regulations allow, but do not specifically require monitoring. To assist permit writers, several examples of monitoring requirements from existing MS4 permits are listed below:

- Baltimore County, MD Phase I MS4 permit (issued 2005); see the watershed assessment and planning requirements (Part II.F) and assessment of controls (Part II.H) www.mde.state.md.us/assets/document/sedimentStormwater/MSSPermit/BA%20final%20permit.pdf
- Southern California Regional Bioassessment Monitoring Program (this is a regional monitoring program involving coastal counties in Southern California) www.socalsmc.org/Docs/SMC-DesignofBioassessmentRegionalMonitoringProgram.pdf
- San Diego, CA Phase I MS4 Permit (issued 2007); see Receiving Waters and Urban Runoff Monitoring and Reporting Program. www.waterboards.ca.gov/sandiego/water_issues/programs/stormwater/docs/sd_permit/r9_2007_0001/2007_0001final.pdf

The permit writer could consider the role of partnerships among the MS4s in establishing and implementing the monitoring programs so that any data collected is robust, useful, and meaningful. In addition, communities may benefit more by working with local organizations and/or neighboring communities who are already collecting similar data. By doing so resources may be used more efficiently and results of testing may be more robust.

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The permit writer should also require the permittee to assess the effectiveness of the SWMP in meeting applicable Permit Requirements. The sampling protocols developed must support the goals of the monitoring program. The monitoring and assessment program must include water quality monitoring as well as an assessment of environmental and administrative indicators. Along these lines, the permit writer could also add requirements such as the ones provided below:

Water Quality Monitoring

a. *The Permittee must develop a water quality monitoring program that includes [insert specific monitoring programs and requirements, such as:*

- Ambient receiving water monitoring,
- Biological monitoring,
- Control measure performance monitoring, or
- Discharge (wet weather) monitoring

Because the detailed monitoring program requirements are very unique to each MS4, the permitting authority should insert here the specific details of the relevant monitoring program, such as monitoring type, frequency, location, etc.]

b. When determining water quality monitoring components, the permittee must examine and consider a variety of factors, including, but not limited to:

- Climatic conditions, including precipitation patterns, temperature, and seasonal variations
- Land uses in the MS4
- Waterbody type

c. The permittee must consider and address specific sampling quality assurance/quality control protocols, including, but not limited to:

- Specific chemical constituents (pollutants), biological stream indicators, and physical stream indicators that will be monitored to best achieve the purpose of the monitoring
- Sampling locations
- Number and frequency of sample collection and assessments
- Timing of sample collection

d. The permittee must determine if any similar monitoring is occurring within the MS4 and if it is logical to link efforts.

Environmental Indicators

As part of the comprehensive monitoring and assessment program, the permittee must identify and track at least [*insert number of indicators to be tracked*] environmental

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indicators from each category listed below (physical and hydrologic indicators; biological indicators; water quality indicators). The indicators must be appropriate to assess if the SWMP is meeting goals and objectives:

Physical and hydrological indicators

- Stream widening/ downcutting
- Physical habitat quality
- Impacted dry weather flows
- Increased flooding frequency
- Stream temperature monitoring

Biological indicators

- Fish assemblage analysis
- Macro-invertebrate assemblage
- Single species indicator
- Composite indicators
- Other biological indicators

Water quality indicators

- Water quality pollutant constituent monitoring
- Toxicity testing
- Non-point source loadings
- Exceedance frequencies of water quality standards
- Sediment contamination
- Human health criteria

Administrative indicators

As part of the comprehensive monitoring and assessment program, the permittee must identify and track at least [*insert number of indicators to be tracked*] administrative indicator from each category listed below (social indicators; programmatic indicators; site indicators). The indicators must be appropriate to assess if the SWMP is meeting goals and objectives:

Social indicators

- Public attitude surveys
- Industrial/commercial pollution prevention
- Public involvement and monitoring
- User perception

Programmatic indicators

- Number of illicit connections identified and corrected
- Number of control measures installed, inspected, and maintained
- Permitting and compliance
- Growth and development

Site indicators

- Control measure performance monitoring
- Industrial site compliance monitoring

Performance Monitoring of Stormwater Controls

When monitoring the performance of stormwater controls, EPA recommends that percent removal efficiencies are not calculated and compared since results can be misleading because the percentages may be based on differing levels of the influent concentration (see cfpub.epa.gov/npdes/stormwater/urbanbmp/bmptopic.cfm#percentremoval for further discussion; also see *National Research Council's Report Urban Stormwater Management in the United States (2009*) available at www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf).

Modeling can also be a useful tool to quantify the impacts of municipal stormwater management. The following resources provide summaries and reviews of different types of models available to

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determine existing loading from an MS4 as well as the effects expected from various stormwater controls.

1. USEPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters
   www.epa.gov/nps/watershed_handbook/

   Chapter 8 of this document focuses on methods for estimating pollutant loads, including the use of watershed models. This chapter provides assistance in selecting and applying watershed models to estimate pollutant loads from existing conditions.

2. USEPA TMDL Model Evaluation and Research Needs
   www.epa.gov/nrmrl/pubs/600r05149/600r05149.htm

   This report documents the review of more than 60 available watershed and receiving water models. It discusses model selection on the basis of model capabilities and provides a series of tables rating the capabilities or applicability the models using the categories of TMDL endpoints, general land and water features, special land processes, special water processes, and application considerations including the selection of appropriate best management practices and their water quality impacts. The document also provides individual fact sheets for each reviewed model.

8.3 Evaluation of Overall Program Effectiveness

Example Permit Provision

8.3.1 *Annual Effectiveness Assessment* – The annual effectiveness assessment must:

a. Use the monitoring and assessment data described in Part 8.2 to specifically assess the effectiveness of each of the following:
   1. Each significant activity/control measures or type of activity/control measure implemented;
   2. Implementation of each major component of the Stormwater Management Program (Public Education/Involvement, Illicit Discharges, Construction, Post-Construction, Good Housekeeping); and
   3. Implementation of the Stormwater Management Program as a whole.

b. Identify and use measurable goals, assessment indicators, and assessment methods for each of the items listed in Part 8.3.1.a above.

c. Document the permittee's compliance with permit conditions.

8.3.2 Based on the results of the effectiveness assessment, the permittee must annually review its activities or control measures to identify modifications and improvements needed to maximize SWMP effectiveness, as necessary to achieve compliance with this permit. The permittee must develop and implement a plan and schedule to address the identified modifications and improvements. Municipal activities/control

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measures that are ineffective or less effective than other comparable municipal activities/control measures must be replaced or improved upon by implementation of more effective municipal activities/control measures.

8.3.3 As part of its Annual Reports, the permittee must report on its SWMP effectiveness assessment as implemented under Part 8.3.1 above.

Example Permit Requirement Rationale for the Fact Sheet

A key requirement in the stormwater Phase II rule is a report (40 CFR 122.34(g)(3)) that includes "the status of compliance with permit conditions, an assessment of the appropriateness of identified [control measures] and progress towards achieving identified measurable goals for each of the minimum control measures." This assessment is critical to the stormwater program framework which uses the iterative approach of implementing controls, conducting assessments, and designating refocused controls leading toward attainment of water quality standards.

Building on the monitoring and assessment program developed in Part 8.2, the permittee must conduct an annual effectiveness assessment to assess the effectiveness of significant control measures, SWMP components, and the SWMP as a whole. The California Stormwater Quality Association's (CASQA) *Municipal Stormwater Program Effectiveness Guidance* describes strategies and methods for assessing effectiveness, including examples of effectiveness assessment for each SWMP program component. The CASQA Effectiveness Guidance is available at www.casqa.org for purchase. A two-hour EPA webcast focusing on the CASQA Guide is also available (available at www.epa.gov/npdes/training under "Assessing the Effectiveness of Your Municipal Stormwater Program"). A resources document from the webcast includes a 10 page summary of the Guide and example pages from the municipal chapter (www.epa.gov/npdes/outreach_files/webcast/jun0408/110961/municipal_resources.pdf).

The *Municipal Stormwater Program Effectiveness Assessment Guidance* synthesizes information on designing and conducting program effectiveness assessments. The document also explains how to select certain methods based on programmatic outcomes and goals. The reader is led through a series of questions and case studies to demonstrate how proper assessments are selected. Techniques are related to different level of outcomes: level one – documenting activities, level two – raising awareness, level 3 – changing behavior, level 4 – reducing loads from sources, level 5 – improving runoff quality, and level 6 – protecting receiving water quality. The Guide includes fact sheets for all six NPDES program elements, outlining methods and techniques for assessing effectiveness of each program.

Recommendations for the Permit Writer

Adaptive management is the appropriate process for assessing new opportunities for improving program effectiveness in controlling stormwater pollution. The permit writer should require the permittee to use adaptive management throughout the permit term to assess options for improving controls on stormwater discharges as compared with measurable goals and demonstrated by monitoring and assessment protocols. The permit writer should have the permittee monitor and

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assess the data and analyses required under the permit as well as applicable information from other sources in the adaptive management process.

In addition, the permit writer should have the permittee assess and modify, as necessary, any or all existing SWMP components and adopt new or revised SWMP components to optimize reductions in stormwater pollutants through an iterative process. This iterative process should include routine assessment of the need to further improve water quality and protect beneficial uses, review of available technologies and practices to accomplish the needed improvement, and evaluate resources available to implement the technologies and practices.

8.4 Requirements for Annual Reporting of MS4 Activities

Example Permit Provision

8.4.1 Summary Annual Report - The Permittee must submit annual reports on or before [*specify deadline, e.g., the anniversary date of this permit*] for the reporting period [*specify the reporting period, e.g., July 1-June 30*]. The Permittee must use the Summary MS4 Annual Report template in Appendix A to document a summary of the past year activities. All of the information required on this form must be completed.

8.4.2 Detailed Annual Report - The Permittee must also submit a detailed annual report that addresses, for the activities described in the SWMP document required in Part 1.1, the following:

- A summary of past year activities, including where available, specific quantities achieved and summaries of enforcement actions. See Part 8.4.3 for required information specific to certain SWMP areas.
- A description of the effectiveness of each SWMP program component or activity (see Part 8.3); and
- Planned activities and changes for the next reporting period, for each SWMP program component or activity.
- Detailed fiscal analysis described in Part1.4.2.

8.4.3 [*Specify any additional information and/or data pertaining to implementation of priority activities the Permitting Authority would like to see in Annual Reports, e.g. a list of green roofs (with square footage) installed in the MS4, a summary of water quality monitoring data collected for a specific waterbody, etc*.]

The Annual Report must clearly refer to the Permit Requirements, and describe in quantifiable terms, the status of activities undertaken to comply with each requirement.

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Example Permit Requirement Rationale for the Fact Sheet

In general, an annual report must document and summarize implementation of the SWMP during the previous year and evaluate program results and describe planned changes towards continuous improvement. The annual report also can serve as a "state of the SWMP" report for the general public or other stakeholders in the community. While records are to be kept and made available to the public, the annual report is an excellent summary document to provide as well.

Recommendations for the Permit Writer

EPA recommends using its Summary Annual Report Template (see Appendix A) in this guidance in order to obtain summary information about the status of MS4 programs. In addition to the summary annual report template, permittees must also submit a more detailed annual report.

The permit writer may determine that additional, more detailed, information is needed to determine compliance with the Permit Requirements. Even if these reporting details are not required within the permit, the permitting authority and enforcement officials can still request them at any time or during a program audit.

MS4 permits should require permittees to summarize and analyze data concerning the effectiveness of the SWMP and submit the analysis to the permitting authority. For example, the permittees should address such questions as:

- For illicit discharge data, what are the most prevalent sources and pollutants in the illicit discharge data, and where are these illicit discharges occurring? How many illicit discharges have been identified, and how many of those have been resolved? How many outfalls or screening points were visually screened, how many had dry weather discharges or flows, at how many were field analyses completed and for what parameters, and at how many were samples collected and analyzed? Does the MS4 need to conduct more inspections in these areas, or develop more specific outreach targeting these sources and pollutants?

- For the construction data, what are the most common construction violations, and are there any trends in the data (e.g., construction operators who receive more violations than others, areas of the MS4 with more violations, need to refine guidance or standards to more clearly address common violations). How has the permittee responded to these trends? Over the last year, how many construction site plan reviews were completed and approved? How many inspections were conducted, how many noncompliant sites were identified, and how many enforcement actions (and of what type) were taken?

At a minimum, the permit should require that the annual report clearly illustrate three key items for each SWMP area:

- **Summary of the Year's Activities**. The summary should describe and quantify program activities for each SWMP component. Responsible persons, agencies, departments or co-permittees should be included. Each activity should be described in relation to achievement of established goals or performance standards.

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- **Description of SWMP Effectiveness**. An annual report should not only describe the previous year's activities, but should also highlight the SMWP's effectiveness (see Part 8.3) using the indicators required in Part 8.2.

- **Planned Activities and Changes**. The annual report should describe activities planned for the next year highlighting any changes made to improve control measures or program effectiveness.

Also, although the stormwater Phase II rule requires reports, after the first permit term, to be submitted in only years two and four of the permit term, EPA strongly encourages annual reports for all permittees.

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APPENDIX A: SUMMARY ANNUAL REPORT TEMPLATE

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National Pollutant Discharge Elimination System Stormwater Program
Small MS4 Report Form

The purpose of this report is to contribute information to an evaluation of the NPDES small municipal separate storm sewer system (MS4) permit program. Consistent with 40 CFR §122.37 the U.S. Environmental Protection Agency is assessing the status of the program nation-wide. A "no" answer to a question does not necessarily mean noncompliance with your permit or with the federal regulations. In order to establish the range of variability in the program it is necessary to ask questions along a fairly broad performance continuum. Your permitting authority may use some of this information as one component of a compliance evaluation.

1. MS4 Information

____
Name of MS4

______________ ______________ ______________
Name of Contact Person (First) (Last) (Title)

______________ ______________
Telephone (including area code) Email

____
Mailing Address

______________ ____ ____
City State ZIP code

What size population does your MS4 serve? ________ NPDES number ______________

What is the reporting period for this report? (mm/dd/yyyy) From ____________ to ____________

2. Water Quality Priorities

A. Does your MS4 discharge to waters listed as impaired on a state 303(d) list? ☐ Yes ☐ No

B. If yes, identify each impaired water, the impairment, whether a TMDL has been approved by EPA for each, and whether the TMDL assigns a wasteload allocation to your MS4. Use a new line for each impairment, and attach additional pages as necessary.

Impaired Water	Impairment	Approved TMDL		TMDL assigns WLA to MS4	
________	________	☐ Yes	☐ No	☐ Yes	☐ No
________	________	☐ Yes	☐ No	☐ Yes	☐ No
________	________	☐ Yes	☐ No	☐ Yes	☐ No
________	________	☐ Yes	☐ No	☐ Yes	☐ No
________	________	☐ Yes	☐ No	☐ Yes	☐ No
________	________	☐ Yes	☐ No	☐ Yes	☐ No
________	________	☐ Yes	☐ No	☐ Yes	☐ No
________	________	☐ Yes	☐ No	☐ Yes	☐ No

C. What specific sources contributing to the impairment(s) are you targeting in your stormwater program?

____

D. Do you discharge to any high-quality waters (e.g., Tier 2, Tier 3, outstanding natural resource waters, or other state or federal designation)? ☐ Yes ☐ No

E. Are you implementing additional specific provisions to ensure their continued integrity? ☐ Yes ☐ No

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3. Public Education and Public Participation

A. Is your public education program targeting specific pollutants and sources of those pollutants? ☐ Yes ☐ No

B. If yes, what are the specific sources and/or pollutants addressed by your public education program?

____

C. Note specific successful <u>outcome(s)</u> (e.g., quantified reduction in fertilizer use; NOT tasks, events, publications) fully or partially attributable to your public education program during this reporting period.

____

D. Do you have an advisory committee or other body comprised of the public and other stakeholders that provides regular input on your stormwater program? ☐ Yes ☐ No

4. Construction

A. Do you have an ordinance or other regulatory mechanism stipulating:

Erosion and sediment control requirements?	☐ Yes	☐ No
Other construction waste control requirements?	☐ Yes	☐ No
Requirement to submit construction plans for review?	☐ Yes	☐ No
MS4 enforcement authority?	☐ Yes	☐ No

B. Do you have written procedures for:

Reviewing construction plans?	☐ Yes	☐ No
Performing inspections?	☐ Yes	☐ No
Responding to violations?	☐ Yes	☐ No

C. Identify the number of active construction sites ≥ 1 acre in operation in your jurisdiction at any time during the reporting period. __________

D. How many of the sites identified in 4.C did you inspect during this reporting period? __________

E. Describe, on average, the frequency with which your program conducts construction site inspections.

____

F. Do you prioritize certain construction sites for more frequent inspections? ☐ Yes ☐ No

If Yes, based on what criteria? ____________________________________

G. Identify which of the following types of enforcement actions you used during the reporting period for construction activities, indicate the number of actions, or note those for which you do not have authority:

☐ Yes	Notice of violation	#_____	No Authority ☐
☐ Yes	Administrative fines	#_____	No Authority ☐
☐ Yes	Stop Work Orders	#_____	No Authority ☐
☐ Yes	Civil penalties	#_____	No Authority ☐
☐ Yes	Criminal actions	#_____	No Authority ☐
☐ Yes	Administrative orders	#_____	No Authority ☐
☐ Yes	Other ____________________		#_____

H. Do you use an electronic tool (e.g., GIS, data base, spreadsheet) to track the locations, inspection results, and enforcement actions of active construction sites in your jurisdiction? ☐ Yes ☐ No

I. What are the 3 most common types of violations documented during this reporting period?

____

J. How often do municipal employees receive training on the construction program? ________________________

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5. Illicit Discharge Elimination

A. Have you completed a map of all outfalls and receiving waters of your storm sewer system? ☐ Yes ☐ No

B. Have you completed a map of all storm drain pipes and other conveyances in the storm sewer system? ☐ Yes ☐ No

C. Identify the number of outfalls in your storm sewer system. ______________

D. Do you have documented procedures, including frequency, for screening outfalls? ☐ Yes ☐ No

E. Of the outfalls identified in 5.C, how many were screened for dry weather discharges during this reporting period?

____

F. Of the outfalls identified in 5.C, how many have been screened for dry weather discharges at any time since you obtained MS4 permit coverage? ______________

G. What is your frequency for screening outfalls for illicit discharges? Describe any variation based on size/type.

____

H. Do you have an ordinance or other regulatory mechanism that effectively prohibits illicit discharges? ☐ Yes ☐ No

I. Do you have an ordinance or other regulatory mechanism that provides authority for you to take enforcement action and/or recover costs for addressing illicit discharges? ☐ Yes ☐ No

J. During this reporting period, how many illicit discharges/illegal connections have you discovered? ________

K. Of those illicit discharges/illegal connections that have been discovered or reported, how many have been eliminated?

____

L. How often do municipal employees receive training on the illicit discharge program? ______________________

6. Stormwater Management for Municipal Operations

A. Have stormwater pollution prevention plans (or an equivalent plan) been developed for:

All public parks, ball fields, other recreational facilities and other open spaces ☐ Yes ☐ No

All municipal construction activities, including those disturbing less than 1 acre ☐ Yes ☐ No

All municipal turf grass/landscape management activities ☐ Yes ☐ No

All municipal vehicle fueling, operation and maintenance activities ☐ Yes ☐ No

All municipal maintenance yards ☐ Yes ☐ No

All municipal waste handling and disposal areas ☐ Yes ☐ No

Other ____

B. Are stormwater inspections conducted at these facilities? ☐ Yes ☐ No

C. If Yes, at what frequency are inspections conducted? ________________________________

D. List activities for which operating procedures or management practices specific to stormwater management have been developed (e.g., road repairs, catch basin cleaning).

____

E. Do you prioritize certain municipal activities and/or facilities for more frequent inspection? ☐ Yes ☐ No

F. If Yes, which activities and/or facilities receive most frequent inspections? ________________________

G. Do all municipal employees and contractors overseeing planning and implementation of stormwater-related activities receive comprehensive training on stormwater management? ☐ Yes ☐ No

H. If yes, do you also provide regular updates and refreshers? ☐ Yes ☐ No

I. If so, how frequently and/or under what circumstances? ________________________________

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7. Long-term (Post-Construction) Stormwater Measures

A. Do you have an ordinance or other regulatory mechanism to require:

Site plan reviews for stormwater/water quality of all new and re-development projects?	☐ Yes	☐ No
Long-term operation and maintenance of stormwater management controls?	☐ Yes	☐ No
Retrofitting to incorporate long-term stormwater management controls?	☐ Yes	☐ No

B. If you have retrofit requirements, what are the circumstances/criteria?

____

C. What are your criteria for determining which new/re-development stormwater plans you will review (e.g., all projects, projects disturbing greater than one acre, etc.) ______________________________

D. Do you require water quality or quantity design standards or performance standards, either directly or by reference to a state or other standard, be met for new development and re-development? ☐ Yes ☐ No

E. Do these performance or design standards require that pre-development hydrology be met for:

Flow volumes	☐ Yes	☐ No
Peak discharge rates	☐ Yes	☐ No
Discharge frequency	☐ Yes	☐ No
Flow duration	☐ Yes	☐ No

F. Please provide the URL/reference where all post-construction stormwater management standards can be found.

____

G. How many development and redevelopment project plans were reviewed during the reporting period to assess impacts to water quality and receiving stream protection? __________

H. How many of the plans identified in 7.G were approved? __________

I. How many privately owned permanent stormwater management practices/facilities were inspected during the reporting period? __________

J. How many of the practices/facilities identified in I were found to have inadequate maintenance? __________

K. How long do you give operators to remedy any operation and maintenance deficiencies identified during inspections?

____

L. Do you have authority to take enforcement action for failure to properly operate and maintain stormwater practices/facilities? ☐ Yes ☐ No

M. How many formal enforcement actions (i.e., more than a verbal or written warning) were taken for failure to adequately operate and/or maintain stormwater management practices? __________

N. Do you use an electronic tool (e.g., GIS, database, spreadsheet) to track post-construction BMPs, inspections and maintenance? ☐ Yes ☐ No

O. Do all municipal departments and/or staff (as relevant) have access to this tracking system? ☐ Yes ☐ No

P. How often do municipal employees receive training on the post-construction program? ____________________

8. Program Resources

A. What was the annual expenditure to implement MS4 permit requirements this reporting period? ______________

B. What is next year's budget for implementing the requirements of your MS4 NPDES permit? ______________

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C. This year what is/are your source(s) of funding for the stormwater program, and annual revenue (amount or percentage) derived from each?

Source: ______________________________ Amount $__________ OR %_____

Source: ______________________________ Amount $__________ OR %_____

Source: ______________________________ Amount $__________ OR %_____

D. How many FTEs does your municipality devote to the stormwater program (specifically for implementing the stormwater program; not municipal employees with other primary responsibilities)? __________

E. Do you share program implementation responsibilities with any other entities? ☐ Yes ☐ No

Entity	Activity/Task/Responsibility	Your Oversight/Accountability Mechanism

9. Evaluating/Measuring Progress

A. What indicators do you use to evaluate the overall effectiveness of your stormwater management program, how long have you been tracking them, and at what frequency? These are not measurable goals for individual management practices or tasks, but large-scale or long-term metrics for the overall program, such as macroinvertebrate community indices, measures of effective impervious cover in the watershed, indicators of in-stream hydrologic stability, etc.

Indicator	Began Tracking (year)	Frequency	Number of Locations

B. What environmental quality trends have you documented over the duration of your stormwater program? Reports or summaries can be attached electronically, or provide the URL to where they may be found on the Web.

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10. Additional Information

In the space below, please include any additional information on the performance of your MS4 program. If providing clarification to any of the questions on this form, please provide the question number (e.g., 2C) in your response.

Certification Statement and Signature

I certify that all information provided in this report is, to the best of my knowledge and belief, true, accurate and complete. ☐ Yes

Federal regulations require this application to be signed as follows: **For a municipal, State, Federal, or other public facility**: by either a principal executive or ranking elected official.

Name of Certifying Official, Title

Date (mm/dd/yyyy)

Submit

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APPENDIX B: DEFINITIONS

Commencement of Construction – the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction-related activities (e.g., stockpiling of fill material). (Source: 2008 CGP)

Control Measure – any best management practice (BMP) or other method used to prevent or reduce the discharge of pollutants to waters of the United States. (Source: 2008 CGP)

Discharge – when used without qualification means the "discharge of a pollutant." (Source: 2008 CGP)

Discharge of Stormwater Associated with Construction Activity – as used in this permit, refers to a discharge of pollutants in stormwater from areas where soil disturbing activities (e.g., clearing, grading, or excavation), construction materials or equipment storage or maintenance (e.g., fill piles, borrow area, concrete truck chute washdown, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants) are located. (Source: 2008 CGP)

Illicit Discharge - any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities. (Source: 40 CFR 122.26)

Large Construction Activity – is defined at 40 CFR §122.26(b)(14)(x) and incorporated here by reference. A large construction activity includes clearing, grading, and excavating resulting in a land disturbance that will disturb equal to or greater than five acres of land or will disturb less than five acres of total land area but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than five acres. Large construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site. (Source: 2008 CGP)

Non-Structural Controls – preventative actions that involve management and source controls. Refer also to 40 CFR 122.34(b)(5)(c)(iii). (Source: 40 CFR 122.26)

Qualified Personnel – A person knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact stormwater quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of stormwater discharges from the construction activity. (Source: EPA's 2008 Construction General Permit)

Receiving Water – the "Water of the United States" as defined in 40 CFR §122.2 into which the regulated stormwater discharges. (Source: 2008 CGP)

Small Construction Activity –includes clearing, grading, and excavating resulting in a land disturbance that will disturb equal to or greater than one (1) acre and less than five (5) acres of land or will disturb

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less than one (1) acre of total land area but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than one (1) acre and less than five (5) acres. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site. (Source: 2008 CGP)

Stormwater control measure – see control measure.

Structural Control - physically designed, installed, and maintained practices used to prevent or reduce the discharge of pollutants in stormwater, to minimize erosion, and/or to minimize the impacts of stormwater on waterbodies.

Wasteload Allocation – the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. Wasteload allocations constitute a type of water quality-based effluent limitation. (40 CFR 130.2)

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EXHIBIT 20

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MS4 Program Evaluation Guidance

U.S. Environmental Protection Agency Office of Wastewater Management

Comments on this guide should be directed to:

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1. Introduction and Background

1.1 Overview

Purpose of the Guidance

The National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Program Evaluation Guidance (Guidance) is intended to assist State and NPDES permitting authority staff to:

- Assess the compliance and effectiveness of Phase I and Phase II MS4 programs;
- Develop Phase II MS4 stormwater management programs (SWMPs);
- Assess pollutants of concern;
- Provide technical assistance.

TIP:

The questions and issues addressed in this MS4 Evaluation Guidance are intended to be used as a reference during an MS4 program evaluation, not as a script or checklist during the review.

Each evaluation should be customized to the issues and requirements specific to that MS4.

Unlike NPDES industrial wastewater permits which typically contain specific end-of-pipe effluent limits based on water quality standards or available treatment technology, MS4 permits usually include programmatic requirements involving the implementation of **best management practices** (BMPs) in order to reduce pollutants discharged to the "maximum extent practicable" (MEP). In addition, the permittees often are allowed flexibility in the types of BMPs and activities implemented to meet permit requirements. This flexibility, as well as the multifaceted nature of the requirements, makes it difficult to evaluate the effectiveness of MS4 stormwater programs. The purpose of this Guidance is to provide NPDES permitting authority staff the information and questions necessary to conduct a comprehensive MS4 program evaluation and determine if the permittee is implementing the program in order to reduce pollutants discharged to the MEP. This Guidance is not intended to be used as a checklist, rather as a reference to prepare for and conduct an MS4 evaluation. The evaluator must ultimately rely on personal experience and **best professional judgment** (BPJ) to conduct a comprehensive MS4 program evaluation.

An MS4 program evaluation is ultimately based on the requirements in the MS4 permit and commitments made in the stormwater management program (SWMP). These should serve as the primary references for a specific MS4 program evaluation, with this Guidance used as a tool to help assess compliance with the SWMP Plan and the permit. The evaluator may also recommend additional activities that should be conducted by the permittee to improve the SWMP. The term evaluation can refer to an audit, inspection or screening process depending on the level of detail utilized. These terms are defined under "Common Terms" below.

It is important to keep in mind that this Guidance is not an enforcement "how to" document, but can be used to *assist* in the enforcement process by describing a process for consistently and accurately assessing and documenting the compliance status of permittees based on permit or SWMP requirements. Notes, checklists, and reports developed as a result of an evaluation will be helpful when justifying and generating enforcement actions.

Intended Audience

This Guidance is written for State and EPA staff responsible for NPDES MS4 permit issuance, compliance and inspections.

TIP:

Permittees may find this Guidance useful in conducting a self-audit to identify and proactively address issues.

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Permittees may also find the information in this Guidance useful in conducting a self-audit to improve the effectiveness of their SWMP.

Resources:

Information regarding permitting authorities or other NPDES information can be found at www.epa.gov/npdes/stormwater

Objective Evaluation

This Guidance is intended to provide information to evaluators to help them objectively evaluate if the permittee is implementing the SWMP to the MEP. This is going to vary from state to state and by permittee. For example, some states have requirements that go beyond the federal regulations, or have state programs or policies that affect the way in which certain requirements are articulated in a permit. In addition, individual NPDES MS4 permits may provide some details on the type of program elements the permittee must implement, but not describe in detail all activities necessary to implement each element. Typically these permits require that the permittee's SMWP Plan include this detail, however, and be submitted for approval. Or permits may specify goals or performance standards that the permittee must meet and then require them to develop the necessary program components to reach those goals or standards and describe them in their SWMP.

Each permittee may have a different approach to complying with a specific permit requirement based on MS4-specific traits or issues. For example, EPA regulations require permittees to develop "procedures for site inspection and enforcement" for addressing construction activities. MS4 permits will likely elaborate on this requirement in more detail, such as by specifying a minimum frequency for inspection. However, few MS4 permits will specify how the permittee should inventory their active construction projects or track enforcement activities. A permittee with only a few construction projects a year may be able to use a paper system to inventory and track construction projects. A permittee with hundreds or thousands of construction projects would likely need a database or similar electronic tracking system to ensure it was implementing the program to the MEP.

Some MS4 permits will not include any specific requirements at all and will only generally dictate that the required MS4 SMWP components are developed and implemented. These MS4 programs are often the hardest to objectively evaluate because there is no prescribed benchmarks to measure against. In these cases, the evaluator will need to subjectively assess the MS4's SWMP program against the intent of the associated regulations to reduce pollutants to the MEP. Evaluation techniques and tools (i.e. checklists) may need to be altered in these cases to best ascertain and assess the effectiveness and compliance status of such a program.

Common Terms

For purposes of this guidance, it is important to note that the term "evaluation" is generally used to define any assessment of an MS4 program. Evaluations are further defined as either "inspections", "audits", or "screenings" depending upon the level of review performed. These and other common terms used throughout this Guidance are defined as follows:

- Audit—comprehensive evaluation of all components of an MS4 program to assess overall implementation and identify problems
- MS4—the municipal separate storm sewer system (full text definition included in Appendix A); can refer to the conveyance system in addition to the jurisdiction(s) which own/operate the system.
- Permittee—the permitted owner/operator(s) of the MS4; the entity being evaluated
- Evaluation—any screening, audit or inspection of an MS4 program
- Evaluator—the NPDES permitting authority staff person who is conducting the evaluation of the MS4 program

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- Inspection—focused evaluation of specific components of an MS4 program to verify compliance with permit requirements
- Municipal permittee—a general reference to a municipality that is the owner/operator of an MS4 and is covered by an NPDES MS4 permit
- Permit Area—Geographic area covered by the MS4 permit
- Permitting Authority—the State or EPA Region authorized to issue NPDES permits
- Screening—evaluation method used to get a basic impression of a program or uncover "red flags;" may be used as a precursor to a program evaluation
- Stormwater Management Program, or SWMP—the stormwater management program implemented by the permittee; also referred to as the "program"
- SWMP Plan—the document often used by permittees to document SWMP elements implemented or planned

How to Use this Guidance

The first part of this Guidance includes background information useful for review. Subsequent sections lead the evaluator through a series of steps to conduct an evaluation, which can be categorized into three parts: Advance Preparation, Conducting the Evaluation, and Post-Evaluation Activities.

The section titled "Conducting the Evaluation" is divided into subsections that describe in depth how to evaluate overall program management as well as each of the major SWMP components:

- MS4 public education and participation
- MS4 maintenance activities
- Construction activities
- Post-construction controls
- Industrial/commercial facilities
- Illicit discharge detection and elimination

For each subsection, the following information is provided:

- A description of regulatory requirements
- Resources for more information
- Common activities related to the SWMP component
- Materials to review prior to the evaluation
- Elements to address and questions to ask during the evaluation
- A description of any recommended in-field evaluation activities
- Common issues identified during evaluations

In addition, a glossary as well as multiple worksheets and checklists have been included in appendices as tools for the evaluator to prepare for and conduct an MS4 SWMP evaluation.

Appendix A—Glossary & Acronym List
Appendix B—Evaluation Worksheets

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Appendix C—Field Visit Worksheets
Appendix D—Annual Report Review and Evaluation Worksheet

Note that this Guidance is best used as a preparatory tool and except for the worksheets in Appendices B and C does not lend itself well as a reference to be used *during* an evaluation.

1.2 Regulatory Overview

For More Information:
For information on stormwater programs and regulations visit www.epa.gov/npdes/stormwater

Background

A brief summary of EPA's stormwater regulations are presented below. Sections of relevant regulatory text are included in the Chapter 4 of this Guidance, however, MS4 stormwater program evaluators are referred to the NPDES Phase I and Phase II regulations, preamble, and other EPA guidance for detailed information on the stormwater regulations. State programs that wish to adopt this Guidance may want to add state-specific elements.

In 1987, Congress amended the **Clean Water Act** (CWA) to require implementation, in two phases, of a comprehensive national program for addressing stormwater discharges.

Stormwater Phase I

The first phase of the program, commonly referred to as "Phase I," was promulgated on November 16, 1990 (55 *Federal Regulations* (FR) 47990) and addresses MS4, active construction and industrial facilities.

Phase I requires NPDES permits for stormwater discharges from a large number of priority sources including medium and large MS4s generally serving populations of 100,000 or more, and several categories of industrial activity, including construction activity that disturbs five or more acres of land.

The Phase I permits mostly covered larger cities, and required them to develop a SWMP, conduct some monitoring, and submit periodic reports.

According to 40 CFR 122.26(b)(8), **municipal separate storm sewer system** means a "conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law)...including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the Clean Water Act that discharges into waters of the United States. (ii) Designed or used for collecting or conveying stormwater; (iii) Which is not a combined sewer; and (iv) Which is not part of a **Publicly Owned Treatment Works** (POTW) as defined at 40 CFR 122.2."

TIP:
MS4 systems can be linear or more complex, open, piped, manmade, natural, or a combination of all of these things. Some carry groundwater or piped streams, are tidally influenced, or have some other constant source of non-stormwater discharge.

What constitutes an MS4 is often misinterpreted and misunderstood. An MS4 is not always just a system of underground pipes—it can include roads with drainage systems, gutters, and ditches. Although most entities with MS4s are local municipal governments (e.g., cities and counties), there are other governmental entities that manage storm drain systems at their facility, including state departments of transportation, universities, local sewer districts, hospitals, military installations, and prisons. As

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previously stated in the "Common Terms" section, the term "MS4" can refer to the system itself or the entities which own and operate the system.

The operators of construction activities disturbing greater than 5 acres have been required to obtain NPDES permit coverage since 1992. General permits for large construction activity require construction operators to develop and implement a stormwater pollution prevention plan to control erosion, sediment and other wastes on the site.

The Phase I industrial stormwater program regulates eleven industrial categories, which EPA has further broken out into 30 sectors. Similar to construction activities, these industrial facilities have been required to obtain NPDES permit coverage since 1992. General permits require regulated industries to develop and implement a stormwater pollution prevention plan, including monitoring for some industries.

Stormwater Phase II

The second phase of the stormwater program, promulgated on December 8, 1999 (64 FR 68722) and amends existing Phase I regulations dealing with MS4s, active construction and industrial facilities.

The Phase II regulations require NPDES permits for stormwater discharges from certain small municipal separate storm sewer systems and construction activity generally disturbing between 1 and 5 acres. The construction requirements essentially extended the Phase I threshold for construction activities from 5 acres down to 1 acre.

Phase II Stormwater Minimum Measures

- ✓ Public education and outreach
- ✓ Public involvement/ participation
- ✓ Illicit discharge detection and elimination
- ✓ Construction site runoff control
- ✓ Post-construction stormwater management
- ✓ Pollution prevention/ good housekeeping for municipal operations

Under the Phase II MS4 stormwater program, operators of regulated small MS4s are required to

- Apply for NPDES permit coverage
- Develop a SWMP that addresses six minimum control measures
  - Public Education and Outreach on Stormwater Impacts
  - Public Involvement/Participation
  - Illicit Discharge Detection and Elimination
  - Construction Site Runoff Control
  - Post-Construction Stormwater Management in New Development and Redevelopment
  - Pollution Prevention/Good Housekeeping for Municipal Operations
- Implement the SWMP using appropriate stormwater management controls, or BMPs
- Develop measurable goals for the SWMP
- Evaluate the effectiveness of the SWMP
- Provide reports on program status

The Phase II regulations also required certain regulated industrial facilities, with no industrial activities exposed to stormwater runoff, to submit a certification of "no exposure" if the facility fell into one of the regulated eleven industrial categories but did not have an NPDES permit.

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MS4 Permits

Phase I MS4 permittees were subject to the permit application requirements found at 40 *Code of Federal Regulations* (CFR) 122.26(d). The permit application consisted of two parts that provided the NPDES permitting authority comprehensive information to use in developing permit requirements. Information required in the application included a physical description of the MS4, legal authority of the MS4 operator, a characterization of the surrounding sources and the pollutants found in the stormwater discharge, and a description of fiscal resources. The most significant portion of the application was the development of a proposed SWMP that would meet the standard of "reducing pollutants to the MEP." Using the information submitted in the permit application, the NPDES permitting authority would then develop appropriate permit requirements. Phase I MS4 permittees were covered under individual permits issued to either single permittees or groups of co-permittees.

Although there are some exceptions, phase II MS4 permittees are primarily covered by general permits that require implementation of the six minimum control measures.

The specific requirements in MS4 permits vary greatly around the country. Some MS4 permits contain broad requirements that outline the basic SWMP components the permittee is required to implement, giving the permittee the flexibility to develop a program to meet these broad requirements. Other MS4 permits are more prescriptive and specify in detail the minimum activities and BMPs for each program element.

1.3 Types of Permittees

Traditional MS4 Programs

Many MS4 operators permitted under the NPDES program are either city or county governments. To evaluate this type of an MS4 program, an evaluator must have a basic understanding of the structure, operation and function of local governments. The structure and authority of local governments can vary by state (for example, the use of towns, townships, villages or parishes), therefore a general description of a common city/county local government structure is provided below.

> **TIP:**
> City and county stormwater management programs can be administered by various programs including: public works, building, and environmental program, or wastewater management staff, usually pretreatment.

Cities provide a variety of functions including fire and police protection, construction and maintenance of streets, stormwater and wastewater services, and providing for health, recreation, and social needs. Counties provide many of these same services in unincorporated areas. Cities are governed by a city council that establishes municipal policy and enacts local ordinances. Many cities are run by the council-manager system, where the elected council appoints a full-time professional manager to direct city departments and implement policy. Some cities are run by the mayor-council system, where a mayor (either elected or appointed by the council) works with the council to direct city departments and implement policy.

City boundaries can change through the annexation process. Unincorporated county land that is adjacent to the city can be annexed through a formal process.

Stormwater management responsibilities vary depending on the city or county. Some permittees assign stormwater program oversight and implementation to the public works department, while others assign stormwater to an environmental services department. Still others combine stormwater program implementation with wastewater treatment agencies, flood control authorities, or other regional entities. Also, some counties perform stormwater activities within incorporated cities (such as inspections). Each

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permittee should clearly describe in the SWMP Plan the roles and responsibilities of each department involved in stormwater management.

Nontraditional MS4 Programs

As stated previously, the term MS4 does not solely refer to municipally owned storm sewer systems. Examples include, but are not limited to non-traditional entities such as state departments of transportation (DOTs), airports, universities, local sewer districts, hospitals, military installations, post offices, prisons, or irrigation districts.

Because of the unique structure and features of many non-traditional MS4s, some of the traditional SWMP elements may need to be modified or may not be entirely applicable. For example, a public education program for a state DOT or military base would be very different from a public education program for a traditional city.

In other instances, some non-traditional MS4s may lack the legal authority or employ a different type of enforcement mechanism than a city/county government to implement a SWMP component. For example, a state DOT may not have the legal authority to enforce controls on illicit discharges into its system. In these situations the DOT is encouraged to work with the neighboring regulated permittees to develop and implement a shared SWMP in which each permittee is responsible for activities that are within their individual legal authorities and abilities. The DOT could work closely with the permittees that surround the DOT MS4 (i.e. country or city) and use their enforcement authority to eliminate illicit discharges. In other words, a municipal permittee can utilize regulations which prohibit polluted runoff from leaving an individual property and entering the DOT MS4 if the property is covered under an appropriate municipal code (e.g. building, health, etc.) An evaluation of a non-traditional MS4 program must be very specific to the particular circumstances, permittee relationships, and permit requirements applicable.

For More Information:

The California Department of Transportation is a non-traditional MS4. To review the permit, programs, reporting, etc. visit: http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm

TIP:

When evaluating non-traditional MS4 SWMPs, be sure to adjust interview topics and questions, field inspections, and documents evaluated to accommodate any unique characteristics of the MS4.

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2. Pre-Evaluation Preparation

2.1 Evaluation Goals and Benefits

Evaluation Goals

A permitting authority can have one or more overall goals when conducting an MS4 program evaluation. Identifying the overall goals of the evaluation will help in developing an appropriate schedule and focus. The primary goals in conducting an MS4 SWMP evaluation can include

> **TIP:**
> An MS4 evaluation should not be confrontational. The evaluation process works smoothly if both parties use the evaluation as a mechanism to improve the program and increase coordination.

- **Determination of compliance status.** Assessing the compliance status of a permittee with its MS4 permit and SWMP Plan is often a principal goal of an evaluation.
- **Assistance with permit issuance or renewal process.** An on-site program evaluation might be very helpful after the issuance or during renewal of a permit. The evaluation process can be used to identify and answer questions about implementation of program components within the first year of permit issuance. Towards the end of the permit term, the permitting authority can use the evaluation to assist the permittee with the permit application or SWMP Plan revision and/or the evaluation may provide valuable information to the MS4 permit writer to assist in the permit renewal process (including the drafting of a new Phase II General Permit).
- **Phase II SWMP development.** Because most Phase II permittees are just beginning to implement SWMPs, a full compliance evaluation might not be necessary. Nevertheless, an evaluation can also be a compliance assistance tool that can help to correct deficiencies early in the program. Permitting authorities could conduct evaluations geared toward compliance assistance early in the Phase II program development process.
- **Assessing pollutants of concern.** If a water body is impaired or there is a concern regarding pollutants common in urban stormwater, it may be helpful to assess the implementation effectiveness of MS4 programs in the watershed to reduce those pollutants. If a **total maximum daily load** (TMDL) has been developed for a waterway receiving a discharge from a permittee, a program evaluation may assist the permitting authority in assigning an applicable **wasteload allocation**, and/or assist the permittee in implementing the steps necessary to comply with the wasteload allocation.
- **Technical assistance**. Providing technical assistance is an important goal of an MS4 SWMP evaluation. Often it is the only time that the permitting authority staff and the permittees meet face-to-face and can be a valuable opportunity to share technical expertise, advice, reference materials, and examples of successful SWMPs implemented elsewhere.

Benefits of an Evaluation

There are a number of benefits from conducting an MS4 SWMP evaluation of a permittee, including:

- Determination of compliance and assistance with execution of appropriate enforcement actions
- Stronger coordination and working relationship between the permitting authority and the permittee
- Better understanding by the permittee of the expectations and permit requirements of the permitting authority
- An opportunity to clarify any misunderstandings in the MS4 permit requirements or SWMP Plan

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- Improved permitting authority knowledge of the permittee's operations, priorities, constraints and challenges faced when implementing a municipal stormwater program
- A more effective SWMP resulting in better water quality

2.2 Advance Preparation

Evaluation Options

Which permittee(s) should be evaluated?
The first question to be answered is which permittee should be evaluated. If the permitting authority has jurisdiction over numerous MS4 permits, ideally all MS4s would be evaluated on an annual basis. If staff resources are limited and only a select number of evaluations can be conducted in a given year, a permitting authority may want to evaluate those MS4s with suspected compliance issues, those located in watersheds of concern, or those with pending permit renewals most frequently. However, permitting authorities should visit each permittee on a regular basis, even if they are not considered "bad actors" however, as evaluations provide many valuable benefits beyond compliance determination or assistance with permit renewal.

If a selected permit covers more than one co-permittee, the evaluator then must determine which co-permittee or co-permittees should be evaluated during a single evaluation. Some permits may cover 20-30 or more co-permittees and it may be impossible to evaluate them all in a single evaluation or year. Evaluations conducted early in the permit cycle may focus on the larger MS4s or those that coordinate activities for smaller permittees. Subsequent evaluations may focus on the smaller co-permittees that have compliance issues or located in watersheds of concern.

After the evaluator has determined which permittees are to be evaluated, the evaluator must consider several questions when determining the level of detail for the evaluation and how best to facilitate and coordinate the process.

What Level of Detail is Possible or Necessary?
If limited time is available, a screening-level evaluation may be an efficient and effective method for developing a basic impression of the program's compliance status or as a way to determine if a more in-depth evaluation is necessary (see Chapter 3). A screening is a way to uncover "red flags" or obvious instances of noncompliance with the MS4 permit. A screening-level evaluation is comprised of a basic interview with the MS4 coordinator or main contact of the program along with a review of the most recent annual report and the SWMP Plan. Documents can be obtained during the screening and reviewed by the evaluator at a later date. The screening-level evaluation should take a minimal amount of time but should be thorough enough to answer general questions about permit compliance. This type of screening may be the precursor to a detailed evaluation (see Chapter 4) at a later date.

A detailed on-site evaluation involves a more intensive review of files and detailed interviews with all or most applicable office and field staff. This type of review is more time-consuming but will provide a more comprehensive picture of SWMP development, coordination, and implementation.

Type of Evaluation	Typical Allotted Time[1]
Screening-level	2-6 hours per permittee
Detailed on-site evaluation	2-3 days per permittee

[1] Assumes one evaluator

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Which Program Component(s) will be Evaluated?
A program component-specific evaluation focuses on a specific stormwater program area, such as construction activities or new and significant redevelopment. This type of evaluation may allow the evaluator to get more details through a more extensive file review or more numerous field inspections. For example, during an evaluation focused strictly on the construction component the evaluator may be able to interview all plan reviewers on staff, do an in-depth review of multiple erosion and sediment control plans, review those site's compliance histories, and perform inspections of each. This type of a review is especially helpful if the permitting authority has specific concerns about implementation of a particular component. Such an in-depth evaluation will typically take 1 to 2 days, depending on the complexity of the program and the amount of information to be covered.

Primary Phase I Stormwater Components

- ✓ Program management
- ✓ Maintenance activities
- ✓ Construction
- ✓ Post-construction
- ✓ Illicit discharge detection and elimination
- ✓ Public education/Participation
- ✓ Industrial/Commercial

A detailed on-site evaluation addresses all of the generally accepted primary stormwater program components (i.e., program management, MS4 maintenance activities, construction, post-construction, illicit discharge detection and elimination, public education/participation and industrial/commercial for Phase I MS4 permittees). The intent of a detailed on-site evaluation is to assess the permittee's entire SWMP and possibly identify specific areas or issues that might require a component-specific review in the future.

The level of detail that can be achieved during either type of evaluation is often dictated by the amount of time devoted to each program area. Both the screening-level and detailed on-site evaluation can vary in terms of level of detail.

Will the Evaluation be Conducted in the Office, the Field, or Both?
To get an accurate picture of "on the ground" implementation of the construction and industrial/commercial components of a typical SWMP, the evaluator will need to accompany inspection staff into the field. In addition, many permittees manage municipal facilities such as maintenance yards, material storage facilities, or other municipal facilities that would be helpful to visit during the evaluation to ascertain the permittee's municipal housekeeping practices. If time allows and the evaluator has questions about implementation of these aspects of the SWMP, field time should be built into the evaluation schedule.

As previously stated, this level of detail may not be necessary for a compliance screening or component-specific inspection. In addition, if the program areas being evaluated do not have a field element (i.e., public education), then field activities will not be necessary.

Evaluation Logistics

The MS4 program coordinator or primary contact should be notified well in advance to allow for proper coordination and scheduling amongst parties responsible for program implementation. The contact should be in charge of determining who the appropriate people are to include in the evaluation. Some examples of pertinent staff includes:

TIP:
It is helpful to exchange cell phone numbers to facilitate schedule changes, alternative meeting places, inspection schedules, etc.

- Program managers
- Inspectors

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- Administrative staff
- Outreach specialists
- Legal staff

One or more conference calls prior to the evaluation may be necessary to establish the schedule, determine appropriate participants, and answer any questions. Establishing email contact with all of the players well in advance is key to providing necessary information, resources, as well. A final call is helpful the week before the evaluation to answer any last-minute questions, exchange contact information (especially cell phone numbers), confirm the schedule and meeting locations, and make necessary changes. A final evaluation schedule should be developed and distributed to all contacts well in advance to ensure everyone is prepared and expecting the evaluator(s) on the correct dates.

When conducting a component-specific inspection, depending on the complexity of the program, roughly 2 – 4 hours should be assumed for an adequate in-depth office review of each program component. Evaluation of inspection activities in the field can be time consuming due to travel times between sites and facilities, so it is important to allow adequate time in the field as well. Normally, four hours per component (e.g., construction, industrial/commercial) is adequate to evaluate inspection staff. Evaluation of municipal maintenance activities should include adequate field time to inspect the municipal public works yard or similar facility, but normally this should not take more than 1 – 2 hours. All of these time estimates should be confirmed with the permittee when establishing the draft schedule.

Depending upon the size of the area covered under the MS4 permit, the scope of the SWMP, and the type of evaluation to be conducted, a single evaluator could require three days for a comprehensive, in-depth office and in-field program audit.

More than one evaluator can be used to conduct a comprehensive audit as well. This allows one person to interview office staff and another to perform field activities thereby minimizing the number of days to complete the audit.

In addition, multiple evaluators can be used to assess multiple permittees covered under one permit simultaneously. This can be accomplished either by assigning evaluators or "teams" to a particular permittee or to a specific component for all permittees. For example, Team 1 would assess all construction programs for three separate permittees covered under the same permit during a three day period. This approach allows for a consistent review of the all three permittees' construction programs and helps to ensure an equitable assessment between them. Or, Team 1 could review all program components for the City of Pleasantville, while another evaluator reviews the Town of Bliss. This allows the evaluators to become intimately familiar with all facets of their respective MS4 permittees, SMWP, implementation challenges, etc.

It is helpful to try and minimize travel between office locations whenever possible and establish a central meeting place, such as a conference room in a city hall, to save time.

Often it is helpful for the evaluator to coordinate a "kickoff" meeting at the start of the evaluation to review the schedule, answer any last minute questions and finalize logistics. An outbrief session is helpful to coordinate at the conclusion the audit to give a tentative summary of findings from the evaluation. Care must be taken to caveat all

TIP:

Outbrief sessions should be limited to the findings the evaluator feels comfortable revealing prior to a more thorough review of documents, interview responses, and inspection results. In addition, it should be stated that the outbrief findings are subject to change. Rebuttals and questions by the MS4 staff should be limited to clarification of incorrect findings or misunderstandings.

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findings as preliminary at that time subject to change based on further review of evaluation materials, the permit, or the SWMP Plan.

Below is an example of a comprehensive, 3-day MS4 program evaluation schedule that addresses the major SWMP components for typical Phase I and Phase II permittees.

Example Schedule for a Phase I Permittee

Monday

8:30 – 9:00	Evaluation Kickoff
9:00 – 12:00	Illicit Discharge Detection and Elimination & Industrial and Commercial Facilities (office)
1:30 – 5:00	Industrial and Commercial Facilities (field)

Tuesday

8:30 – 12:00	MS4 Maintenance Activities (office and field)
1:00 – 5:00	New Development/Redevelopment & Construction Activities (office)

Wednesday

8:30 – 12:00	Construction Inspections (field)
1:30 – 3:00	Outbrief Session

Example Schedule for a Phase II Permittee

Monday

8:30 – 9:00	Kick-off Meeting
9:00 – 10:30	Program Management, Effectiveness and Assessment
10:30 – 12:00	Public Education and Outreach Public Involvement/Participation
1:00 – 5:00	Post-Construction Stormwater Management Construction Activities (office)

Tuesday

8:30 – 12:00	Pollution Prevention/Good Housekeeping for Municipal Operations (office and field)
1:00 – 4:00	Construction Site Runoff Control (field)

Wednesday

8:30 – 10-30	Illicit Discharge Detection and Elimination
10:30 – 12:00	Outbrief Session

2.3 Materials to Review Before the Evaluation

The information provided below should be reviewed before an on-site evaluation. The level of review varies depending on the evaluator’s experience with the particular permittee program being evaluated and the type of evaluation being conducted.

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- **MS4 NPDES permit.** Because the evaluation is ultimately an assessment of the permittee's compliance with its NPDES permit, the evaluator must be very familiar with the permit and its requirements.
- **SWMP Plan.** The evaluator must review the permittee's latest SWMP planning document(s) and note the commitments and schedules for specific activities.
- **Latest annual report.** The most recent annual report must be reviewed to establish the current status of implementation. Previous annual reports could be reviewed if time permits and if the evaluator wants to assess trends before the on-site evaluation. See Chapter 2.4 below for guidance on Annual Report review.
- **Permitting authority correspondence with the permittee.** Review any relevant correspondence with the permittee regarding its stormwater program. This material might include permitting authority comments on the permittee's SWMP Plan, comments on annual reports, notices of violation (NOVs), or other notices.
- **Permitting authority inspections within the MS4.** Ideally, the evaluator should be aware if an NPDES permitting authority industrial or construction inspector has found violations within the permittee's jurisdiction. If this review is not completed before an evaluation is conducted, it should occur after the on-site evaluation and before the final evaluation report is developed. Any findings should be incorporated into the final report.
- **Permittee Web sites.** Often, permittees have developed stormwater Web sites that can provide copies of reports, guidance documents, and other more current information on the stormwater program.
- **Legal authority.** Review the permittee's legal authority, especially with respect to any exemptions or exclusions from the applicable ordinance.
- **Special water quality concerns.** Be aware of any impaired waters, TMDLs, high quality or protected status, or other water quality-related designations for water bodies to which the MS4 discharges.
- **Other water programs affecting the permittee.** A significant source of frustration to permittees is trying to meet requirements for multiple programs arising from a single agency (i.e. EPA or state environmental protection agency) when program staff within that agency do not understand the trade-offs (sometimes even contradictions) in funding and implementing the requirements of various regulations and programs. For example, an MS4 SWMP evaluator should at least be aware if the municipality being evaluated has a drinking water program, a state revolving fund loan, wastewater permit(s), **combined sewer overflow** (CSO) long-term control plan, or other requirement for which it must also account to the permitting authority. If there is time, it is helpful to find out a little bit about the program requirements applicable to the municipality. There may even be ways to streamline, modify or combine certain requirements to meet multiple program goals.

For More Information:

Chittendon County, Vermont, has developed a Web site to educate the general public about stormwater and the regional management program. Visit http://www.smartwaterways.org

Resources

✓ TMDLs
http://www.epa.gov/owow/tmdl/

Resources

✓ Combined Sewer Overflows
www.epa.gov/npdes/cso

✓ State Revolving Fund
www.epa.gov/owm/cwfinance/cwsrf/index.htm

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2.4 Annual Report Reviews

Applicable federal regulations for the NPDES stormwater Phase I regulations and Phase II Rule require that annual reports be submitted. Many permitting authorities include more specific requirements for reporting in their MS4 permits. These reporting requirements can include specific information required for each program component, or it can specify the format for the annual report. For permits with multiple co-permittees, often a central organization or lead co-permittee will coordinate the annual report and submit one to cover all co-permittees.

In general, an annual report should document implementation of the SWMP during the previous year; evaluate program results and describe planned changes towards continuous improvement. Generally written for the permitting authority, an annual report can also be written for the citizens of the community as a way to report progress in meeting water quality goals. To this end, an annual report should clearly illustrate three key items for each SWMP area:

- **Permit and SWMP Requirements.** These requirements either will be specifically prescribed in the permit itself, or described in the permittee's SWMP. The SWMP normally is considered a binding document and part of the permit once it is submitted and approved by the permitting authority. A description of applicable goals or performance standards for each SWMP component should be stated in this summary as well.

- **Summary of Year's Activities.** The summary should describe and quantify program activities for each SWMP component. Responsible persons, agency, department or copermittee should be included. Each activity should be described in relation to achievement of established goals or performance standards.

- **Planned Activities and Changes.** The annual report should describe activities planned for the next year highlighting any changes made to improve BMP or program effectiveness.

An annual report should describe not only the activities during the previous year, but should highlight the SMWP's effectiveness as well. It should be assumed that the ultimate goal of the SWMP is the protection or improvement of water quality; however, there may be multiple, smaller program goals. Identification of direct measures of success for a stormwater program is very difficult, therefore, what is considered 'effective' and how the permittee chooses to assess this effectiveness will vary. Ideally the permittee and permitting authority will establish performance standards or goals in an attempt to define and quantify what is "effective" when the permit is issued. If the performance standards or goals include definitive milestones or schedules, the annual report should highlight these as well.

In addition to the items described above, the annual report should include appropriate program budget information, and a summary of any required monitoring data.

It is important to remember that annual reporting and program assessment are valuable exercises for the permittee as well as the permitting authority. Reporting should not be seen as merely a 'bean counting' effort. The permittee benefits greatly as an annual program assessment guides program focus, helps to budget and target resources, helps justify program support, and facilitates participation among the affected departments and permittees.

Step 1: Related Document Review and Preparation

Prior to beginning the annual report review, an evaluator should review or obtain the following information:

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- **NPDES permit provisions.** The NPDES permit requirements will serve as the primary basis for the annual report review. The permit should describe basic program requirements, discharge prohibitions and reporting requirements.

- **SWMP provisions.** The permittee's SWMP document will describe the overall management structure of the program, planned activities, milestones, schedules and any established performance standards or goals. The SWMP should describe if there is a blanket organization which coordinates the co-permittees and if the organization is coordinated by co-permittee staff or a consultant.

- **Previous annual report review comments.** If the previous year's annual report was received and reviewed by the permitting authority, any comments or response should be reviewed to determine if requested changes to report were made, requested information was provided, etc.

- **Previous annual reports.** It is helpful to have access to previous years' reports as certain documents may have been submitted which may be helpful to have on hand (i.e., an ordinance which established legal authority).

Step 2: Background Information

It is helpful to first document basic information about the permittee and permit. Each permittee has different land use, socioeconomic, and water quality issues which will shape the SWMP. All of this information may not be included in the annual report, but can be obtained through a cursory internet search.

- What is the population served by the permittee?
- What is the primary industry within the permittee's boundary?
- What are the primary land uses within the permittee's boundary?
- What are the priority pollutants within the watersheds of the permittee's boundary?
- Are there impaired waterways impacted by the permittee?
- Have TMDLs been established?
- Are there other sensitive areas of concern within the permittee's boundary?

Step 3: Legal Authority

While most important during the first permit year annual report review, it is helpful to confirm a permittee's legal authority to implement all components of the SWMP on an annual basis. Note any described changes to the SMWP and confirm that existing legal authority will support the implementation of those changes (i.e., requiring existing gas stations to install catch basin insert treatment BMPs). Any changes to applicable ordinances should be included in the annual report as well. If the actual codes or ordinances are not included in the annual report or previous annual reports, they should be obtained during an on-site evaluation.

Step 4: Fiscal Analysis

Phase I regulations require that annual expenditures and budget for the year following be included in each annual report. No such requirement exists for Phase II. If included, this information should be reviewed to determine if budget changes are being made. If funding changes are planned, an explanation should be provided (i.e., an additional inspector is being added or additional expenditures are not expected for the development of new outreach materials as they were developed during year one of the permit).

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Step 5: SWMP Component Review

TIP:
When reviewing an annual report with the Worksheet provided, pay special attention to questions in the Worksheet answered "unknown." Program components for which little information was provided may be good candidates for an on-site evaluation.

While each MS4 SWMP will differ based on various factors (i.e., permit requirements, priority pollutants), the Worksheet lists some basic information that should be provided for each program component. In addition, each target established in the permit or SWMP should be documented and verified on the Worksheet as well. It is helpful to document all quantifiable data during the review to highlight what vital information may be missing and what, if any "red flags" need to be addressed with the permittee. For example, if the permittee provides the total number of construction inspections conducted, but does not provide the prioritized list of active construction sites, the reviewer cannot determine the frequency of inspections or whether high-priority sites were adequately monitored and assessed. Further if the permittee had established a goal of inspecting all active sites within 48 hours of every rain event, the reviewer would be unable to ascertain whether this goal had been met.

For each program component, the annual report should describe applicable training of staff which occurred during the previous year. It is helpful if agendas or presentation materials are included.

As described in the Conducting an Evaluation section of this Guidance, information regarding the implementation of the following SWMP components should be provided in a Phase I MS4 annual report (additional components may be required by the MS4 permitting authority):

- Program to detect and eliminate illicit discharges to the system
- Program to prevent, contain, and respond to spills
- Program to educate and allow citizens to report illicit discharges or other potential impacts to water quality
- Educational program to encourage the proper disposal of used oil and other toxic materials
- Program to reduce infiltration of sewage into the storm sewer system
- Program to reduce pollutants from active construction sites
- Programs to reduce pollutants in runoff from industrial, commercial, and residential areas

Phase II permittees are required to develop SWMPs which include similar minimum measures, each of which should be addressed in an annual report:

- Public education and outreach program
- Public involvement/participation program
- Illicit discharge detection and elimination program
- Construction site stormwater runoff control program
- Post-construction SWMP for new development and redevelopment (for development greater than or equal to one acre)
- Pollution prevention/good housekeeping program for municipal operations

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For purposes of this Guidance and annual report review Worksheet, the above SWMP requirements have been combined and categorized into the following components for both Phase I and Phase II MS4s:

- Program Management
- Public Education and Public Participation
- Municipal Maintenance/Good Housekeeping
- Construction Activities
- New Development and Significant Redevelopment
- Industrial/Commercial Facilities
- Illicit Discharge Detection and Elimination

Step 6: Follow-Up Activities

The information obtained during the annual report review can be used in various ways.

1. To provide feedback to the permittee regarding program development or implementation. Often, permittees have limited contact with permitting authority staff and the submittal of an annual report is the primary means of communication during the year. It is important that the permitting authority review annual reports in a timely manner and respond with any comments, suggestions or criticisms.

2. To determine the need for an on-site evaluation. If the annual report elicited numerous questions about SWMP implementation, an on-site evaluation may be very helpful in determining compliance or effectiveness of the MS4 program.

3. To prepare for an on-site program evaluation. If a permittee has been selected for an on-site evaluation, the most recent and historic annual reports should be reviewed prior.

4. To determine the compliance status of the permittee and progress towards achieving permit requirements, milestones or measurable goals. The permitting authority may choose to use the annual report to determine compliance and issue necessary enforcement actions.

5. To note exceptional approaches, programs, or BMPs used by the permittee that might be helpful to other permittees. Often it is beneficial for permittees to share information, program ideas, educational tools or implementation approaches and annual reports are a good way to facilitate the distribution of ideas.

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3. Conducting a Screening-Level Evaluation

3.1 Screening-Level Procedures

The majority of this Guidance (Chapter 4 and the worksheets in Appendix B) describes how to conduct a detailed on-site evaluation of an MS4 program. However, if an evaluator does not have enough time to conduct a detailed on-site evaluation, a more limited screening-level evaluation could be conducted. The intent of the screening-level evaluation is to quickly identify the program areas that are deficient or noncompliance and should be targeted for a more in-depth evaluation. The screening-level evaluation is not intended to be an assessment of compliance with all permit conditions.

TIP:

Conduct a screening-level evaluation when you have limited time and want a "quick" assessment of the MS4.

The screening-level evaluation ideally should be conducted on-site at the permittee's offices after a review of the permittee's annual report (see chapter 2.4). The screening-level evaluation could cover all program components or focus on specific program components that are of particular interest due to pollutants of concern, past compliance issues, or other factors. Depending on the level of detail, the complexity of the program and the number of program components to be reviewed, the screening-level evaluation could last from 2 hours to a full day.

TIP:

Benefits of a screening-level evaluation:

- A quick "snapshot" of MS4 compliance
- Identify major strengths and weaknesses of a program
- Can be conducted in a relatively short amount of time

To conduct a screening-level evaluation, the evaluator should be familiar with the permittee's NPDES permit and most recent annual report. The screening-level evaluation will need to be customized to the unique permit requirements and issues of each MS4, however, some of the more common questions and information to review during a screening-level evaluation are listed below. An evaluator should use this list as a guide to help them quickly assess whether a more comprehensive evaluation is necessary for a certain program component or to review the entire SWMP.

3.2 Common Screening-Level Questions

Program Management

Key questions to ask:

- ✓ Does your written stormwater management plan include specific milestones and quantities for each program/BMP?
- ✓ Describe how your SWMP is coordinated across departments.
- ✓ Describe the impaired waters, pollutants of concern and TMDLs for the waterbodies you discharge to. Does your SWMP include programs or BMPs specifically addressing these impairments?
- ✓ Describe how you evaluate the success of your stormwater management program.

Potential information to review:

- ✓ Stormwater management plan document
- ✓ Most recent annual report
- ✓ Organizational chart showing departments with stormwater responsibilities

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Public Education and Participation

Key questions to ask:

- ✓ Describe your overall approach to educating the public on stormwater issues.
- ✓ What are the primary pollutants or behaviors you target with your public education program?
- ✓ Describe your top three target audiences and the messages you plan to deliver. How do they relate to the primary pollutants or behaviors?
- ✓ How do you evaluate the effectiveness of your outreach activities? Have you conducted any public awareness surveys?

Potential information to review:

- ✓ Public outreach strategy
- ✓ Results of any public awareness surveys
- ✓ Information tracking the distribution of outreach materials

MS4 Maintenance Activities

Key questions to ask:

- ✓ Describe your current MS4 mapping resources (e.g., has the permittee mapped storm drains, outfalls, inlets, municipal facilities, etc.).
- ✓ Describe your procedures for catch basin cleaning, street sweeping and MS4 maintenance.
- ✓ Do your municipal facilities have SWPPPs? If not, why?
- ✓ How are maintenance staff trained with respect to stormwater activities and BMPs?

Potential information to review:

- ✓ Catch basin cleaning records for the month of _______
- ✓ Stormwater plan or SWPPP for main municipal maintenance facility (including any self-inspection records)
- ✓ Standard Operating Procedures (SOPs) for stormwater-related maintenance activities

Construction Activities

Key questions to ask:

- ✓ Describe your legal authority to require erosion and sediment control BMPs and enforce stormwater requirements.
- ✓ Describe your system for tracking construction plans, active construction projects, inspections, and enforcement actions (including the number of projects disturbing greater than one acre last year).
- ✓ How do you coordinate implementation of your local erosion and sediment control requirements with the States (or EPA's) NPDES construction general permit requirements?
- ✓ Describe your process for reviewing plans to ensure stormwater BMPs are addressed. What BMPs does a plan reviewer look for on a plan?

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- ✓ Interview an inspector to assess how stormwater inspections are conducted at construction sites. Ask about the frequency of inspections and the number of inspectors.
- ✓ Describe the most recent training attended by inspectors and plan review staff

Potential information to review:

- ✓ List of active construction projects disturbing greater than one acre for the month of _______
- ✓ Erosion and sediment control plan reviewed and approved by permittee (selected from list)
- ✓ Inspection reports for a selected project (including any enforcement actions for noncompliance)

Post-Construction Controls

Key questions to ask:

- ✓ Describe your post-construction design standards and legal authority.
- ✓ Describe your process for reviewing plans to ensure post-construction BMPs are addressed. Do plan reviewers use checklists to ensure consistent plan review?
- ✓ Describe your post-construction operation and maintenance (O&M) program (including your inventory of post-construction BMPs and your inspection and maintenance schedule).

Potential information to review:

- ✓ Post-construction plan reviewed and approved by MS4
- ✓ Records for post-construction BMP inspection and maintenance; both private and public if applicable
- ✓ An O&M plan for post-construction BMPs from a recently approved project

Industrial/Commercial Facilities

Key questions to ask:

- ✓ Describe your industrial/commercial facility program, including the types and numbers of facilities covered. How were these facilities selected?
- ✓ Describe the types of BMPs or stormwater requirements these facilities must meet.
- ✓ Describe your industrial/commercial inspection program (including the frequency of inspections and the number of inspectors)
- ✓ Interview an inspector to assess how industrial/commercial stormwater inspections are conducted. Ask about the frequency of inspections and the number of inspectors.

Potential information to review:

- ✓ List of industrial/commercial facilities subject to stormwater requirements
- ✓ Inspection report(s) for selected facilities
- ✓ Enforcement records for a facility out of compliance

Illicit Discharge Detection and Elimination

Key questions to ask:

- ✓ Describe your legal authority to prohibit illicit discharges and illegal dumping to the MS4 (including an exemptions).

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- ✓ Describe any field screening activities. If an illicit discharge is discovered during screening, what is the process for determining the source and eliminating the discharge.
- ✓ Describe your illicit discharge investigation and spill response programs, including staff and equipment available.
- ✓ How are the locations of illicit discharges tracked and used to steer other SWMP components (i.e. industrial inspections, public education, etc).

Potential information to review:

- ✓ List of illicit discharge events investigated over the past _______
- ✓ Records on investigation, follow-up and enforcement relating to one or more event(s)

3.3 Screening-Level Evaluation Follow-Up

After a screening-level evaluation, an evaluator has several options:

- Submit a report to the permittee summarizing the findings and asking for deficiencies to be corrected
- Conduct a detailed on-site evaluation of those program components found deficient
- Conduct a detailed on-site evaluation of all program components

If an evaluator conducted a screening-level assessment of multiple permittees, common deficiencies can be used to target either more detailed evaluations or additional compliance assistance on those program components. Additional information on post-evaluation activities, including preparing a written report and follow-up activities, are described in Chapter 5.

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4. Conducting a Detailed On-Site Evaluation

The following chapter describes the process and content of a detailed on-site evaluation. The following program areas are covered:

- Program Management
- Public Education and Participation
- MS4 Maintenance Activities
- Construction Activities
- Post-Construction Controls
- Industrial/Commercial Facilities
- Illicit Discharge Detection and Elimination

Each program area section includes a list of regulatory requirements that apply to that program area and describes activities that typically are performed by permittees to meet permit requirements. The sections also include a description of documents to be reviewed before the evaluation and a series of questions to be asked during the interviews. Also included is a list of common problems identified during evaluations.

Approach and Demeanor

An evaluator's approach and demeanor can have a significant impact on the success of the interviews by putting the interviewees at ease. Evaluations can be a stressful process for the permittee, which could result in stilted discussions and overly brief answers to questions. It is best to use a friendly approach and start by asking open-ended, broad questions that allow the interviewees to talk freely about their programs. Since MS4 stormwater programs are not "one size fits all," it is sometimes best to have the interviewees describe their approach to each program area up front rather than ask questions from a list that may not be organized in a way that makes sense in the context of their program's activities. To ensure that all topics are covered in sufficient depth, the evaluator should ask for clarification throughout and take a break at the end of the session to review the list of topics and ask follow-up questions if needed. Maintaining a conversational style will allow the interviewees to explain their answers and feel as though they can provide input into the interview process.

Kick-off Meeting

The first day of an evaluation should begin with a kickoff meeting to allow for introductions and an overview of the process and goals of the evaluation. The meeting usually includes all staff who will be interviewed, and it is a good time for higher-level managers and officials to be introduced to the process and understand what will be happening over the next few days.

The following is a sample agenda for the kickoff meeting. The evaluator should tailor the agenda to suit his or her own objectives:

- **Introductions.** The evaluator should introduce him- or herself and can provide a brief overview of his or her background in stormwater program evaluations. Then each person in the room can introduce him- or herself in turn. It is helpful to distribute a sign-in sheet at this time to collect the names, positions, and contact information for the people being interviewed throughout the week in case follow up is needed.

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- **Goals and benefits.** Describe the goals and outline some of the benefits of the evaluation process. These are described in depth in Section 2.1 of this guidance.
- **Schedule.** Review the schedule for the week's interviews and discuss which topics will be discussed during each session. It is also helpful to clarify what type or level of staff should participate in each session and what documentation should be available for review.
- **Products and timeline.** The evaluator should describe the general content and organization of the report and provide a timeline for when a final report will be produced.
- **Questions.** Limit questions to the evaluation process, procedures, and report. Questions about a specific program topic can be addressed during that session.

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4.1 Program Management

Regulatory Requirements

Applicable federal regulations for the Phase I and Phase II NPDES regulations are listed at right. NPDES MS4 permits must address these requirements and often more specific state requirements as well.

Common Activities

Comprehensive Stormwater Management Planning

Phase I and Phase II permittees are required to develop SWMPs designed to reduce the discharge of pollutants from the MS4 to the MEP. Ideally, a SWMP is developed with input from internal and external stakeholders including, but not limited to, departments, agencies, and co-permittees within the permitted area, the general public, nonprofit organizations, state agencies, and watershed groups. This program should be described in a planning document (SWMP Plan) that details organizational structure and coordination scheme and a detailed description of the proposed controls or program components (i.e., public education and outreach) that includes performance standards or goals, standards, or timelines and a prioritization of existing resources.

Multiple co-permittees or different agencies may be involved in the development and implementation of the MS4 SWMP programs and Plan. To ensure that the program is implemented consistently by all, it is important that the SWMP describe the communication mechanisms between the co-permittees, and between the co-permittees and other agencies. Within a permittee's stormwater management structure there might be different departments that are to develop, implement, and enforce various components of the program. The SWMP should describe how the various departments communicate and coordinate activities.

Performance standards and goals are important tools for permittees to use to gauge the success of their programs in achieving measurable benefits and improving water quality. The development of performance standards or goals may not be required for many Phase I permittees, however, you should discuss the establishment of water quality-or performance-based goals for SWMP components and refer Phase I permittee's to available measurable goals guidance developed in response to the Phase II regulations (see Resources text box).

Assessment and Evaluation

SWMP evaluations not only demonstrate progress, but also allow the permittee to adjust programming, funding, or staffing levels for the upcoming year to best use existing resources to maximize water quality benefit. Evaluations should examine both direct measures, such as water quality indicators, and indirect measures of program

Federal NPDES Regulations

- ✓ Phase I MS4 Regulations
  40 CFR 122.26(d)(2)(iv)
  40 CFR 122.42(c)
- ✓ Phase II MS4 Regulations
  40 CFR 122.34(a)
  40 CFR 122.34(d)
  40 CFR 122.34(g)(1)
  40 CFR 122.34(g)(3)
  40 CFR 122.35(a)

Resources

- ✓ Menu of BMPs
  www.epa.gov/npdes/stormwater/menuofbmps
- ✓ Measurable Goals Guidance for Phase II Small MS4s
  http://cfpub.epa.gov/npdes/stormwater/measurablegoals/index.cfm
- ✓ Stormwater Phase II Fact Sheet Series
  http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm
- ✓ National Management Measures to Control Nonpoint Source Pollution from Urban Areas
  www.epa.gov/owow/nps/urbanmm/index.html
- ✓ Stormwater Phase II Compliance Assistance Guide
  www.epa.gov/npdes/pubs/comguide.pdf
- ✓ Institutional Aspects of Urban Runoff Management
  www.stormwater.ucf.edu/publications/urban_runoff.pdf
- ✓ Stormwater Authority
  www.stormwaterauthority.com
- ✓ Stormwater Manager's Resource Center
  www.stormwatercenter.net

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effectiveness, such as improved compliance rates of construction operations resulting from inspections.

Measurable Goals

According to the Stormwater Phase II Regulations, small MS4 operators must reduce pollutants in stormwater to the MEP to protect water quality. The regulations specify that compliance with the MEP requirement can be attained by developing a SWMP that addresses the six minimum control measures previously described in this Guidance. One component required in the Phase II MS4 SWMP is the selection of measurable goals to evaluate the effectiveness of the individual control measures and the SWMP as a whole. Phase I MS4 regulations do not specify the creation of measurable goals per se, but require the assessment of water quality improvements or degradation and propose changes to the SWMP necessary to improve effectiveness. Requiring measurable goals of Phase I permittees allow permitting authorities to track the permittee's progress in implementing BMPs and the overall SWMP. The process for developing measurable goals and the benefits of incorporating them into the evaluation of a MS4 program are the same for Phase I or Phase II permittees.

Resources

- ✓ Measurable Goals Guidance for Phase II Small MS4s. http://cfpub.epa.gov/npdes/stormwater/measurablegoals/index.cfm
- ✓ Measurable Parameters http://cfpub.epa.gov/npdes/stormwater/measurablegoals/parameters.cfm
- ✓ California Stormwater Quality Association. An Introduction to Stormwater Program Effectiveness Assessment. http://www.casqa.org/resources/product.php

To determine the effectiveness and success of a stormwater management program, managers must first determine the ultimate outcomes they wish to achieve. Then, programmatic, social, physical, and hydrological, or environmental indicators can be used to assess the achievement of the desired goals, or outcomes.

The California Stormwater Quality Association[1] (CASQA) asserts that there are six levels of stormwater management program outcomes. Each successive level represents increasingly difficult outcomes to not only achieve, but to assess.

TIP:

Often, permittees do not develop measurable goals that truly quantify and track progress towards desired outcomes in the SWMP. Many times "performance standards" primarily consist of a list of BMPs. Performance standards should include quantifiable activities that can be tracked or criteria against which progress towards desired outcomes can be measured.

The levels are:

1. Compliance with activity-based permit requirements
2. Changes in attitudes, knowledge and awareness
3. Behavioral change and BMP implementation
4. Pollutant load reductions
5. Changes in urban runoff and discharge quality
6. Changes in receiving water quality

Stormwater program managers may strive to achieve some or all of these outcomes; however, in general the "implementation outcomes" (1, 2, and 3 above) typically are easier to measure than the more complex goals of reducing loading and achieving changes in discharge and receiving water quality. In addition, these outcome levels are not independent of one another; the hope is that movement towards one will result in progress towards achieving another.

[1] CASQA. 2005. *An Introduction to Stormwater Program Effectiveness Assessment.* August 2005. http://www.casqa.org/resources/product.php

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It is important that some measure of assessment be determined in conjunction with the establishment of each goal. A goal can be expressed qualitatively or quantitatively, and the associated index should be measurable, relevant, reliable, available, scientifically valid, replicable, and focused on measuring the outcome.

EPA has developed sets of "measurable parameters" for stormwater program managers to use as a guide when developing quantifiable goals. For example, the following implementation parameters could be used to quantify and track the effectiveness of an illicit discharge detection and elimination program component:

- Inventory conducted and sites prioritized for inspection
- Number of field tests conducted in high-risk areas
- Whether or not an ordinance was developed to allow entrance into private buildings for the purpose of conducting tests
- Number of illicit connections reported by business employees
- Number of survey responses indicating a possible illicit connection
- Number of illicit connections found
- Number of illicit connections repaired/replaced
- Whether or not an ordinance was developed for mandatory inspections of new buildings
- Number of new buildings inspected

CASQA asserts that depending on the outcome, various methods of obtaining necessary measurement data are available, including the following:

Method	Definition	Example
Confirmation	Documenting whether a task has been completed.	Development of an construction operator BMP outreach brochure
Tabulation	Tracking an absolute number or value of something	Number of brochures distributed to construction operators
Surveying	Determining knowledge, awareness, etc. of a group of people	Phone survey of 100 construction operators, 50 of whom had received the BMP brochure, to gauge any differences in stormwater awareness
Quantification	Estimating pollutant loading	Modeling to determine sediment load reductions prior to initiating construction operator outreach program – assumption made about BMP use before and after program
Inspections or site visits	Observing activities or BMPs	Inspections of construction projects before and after initiating construction operator outreach program
Reporting	Utilizing reports generated by third parties	Audit of construction component of the SWMP indicated that BMPs observed and the level of understanding demonstrated by operators had improved during the last year

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Method	Definition	Example
Monitoring	Sampling or observation in the field to determine environmental or water quality conditions	Water quality monitoring above and below three comparable active construction sites (Site 1 – trained on construction BMPs, Site 2 – no training, Site 3 – random control, unknown level of BMP understanding) to determine any differences in per/acre disturbed loading of sediment

Permittees need to perform sampling and conduct scientific field assessments to assess specific water quality-related SWMP goals (i.e., pollutant load reductions, changes in urban runoff and discharge quality, and changes in receiving water quality). Some MS4 permits require water quality monitoring to establish baseline water quality conditions, determine the quality of discharges from different land uses or subwatersheds, measure the effectiveness of structural BMPs, or to participate in regional watershed monitoring efforts to track water quality trends.

Evaluating Program Management

Effective program management is essential to help guide SWMP development, implementation, administration, and continued assessment. Each program should have a management process that facilitates stormwater activity coordination between departments within each permittee, between co-permittees, and between the permittee and other organizations and agencies interested in stormwater quality. Some permits that regulate multiple co-permittees may allow for a separate “umbrella” management structure to perform certain functions, one of which may be management of certain components (e.g. public education) of the program and coordination among copermittees. These umbrella structures can be managed by the lead permittee or by consultants hired collectively by all co-permittees.

For More Information:

For an example of a program that uses an “umbrella” management structure, the Contra Costa Clean Water Program manages the stormwater program for nineteen co-permittees in Contra Costa County, California. Visit http://www.cccleanwater.org.

Another important aspect of program management is the development of goals or standards to measure effectiveness of the program from a water quality perspective. This is normally required by the permitting authority in addition to being helpful to MS4 SWMP coordinators for use in budgeting, staff allocation, and long-term planning. When evaluating a SWMP, you should question permittee staff regarding the desired outcomes for the program as a whole and for each individual program component. You should determine what, if any, assessment measures have been established for each goal and question the MS4 staff regarding progress.

The findings of the MS4 evaluation should not be based solely on the level of achievement of measurable goals. It is important, however, that the permittee’s SWMP includes the use of measures to assess progress towards meeting goals that benefit water quality and not rely on “bean-counting.” You should be confident that the SWMP is being regularly assessed and modified as necessary to improve effectiveness.

Typically, each MS4 SWMP would have a coordinator or other principal contact. This person would be the best to interview regarding program management procedures.

TIP:

Normally, it is not within the scope of a typical MS4 program evaluation to review or evaluate water quality monitoring data. Because of the amount of data, monitoring methods, and monitoring plans, this is an exercise best undertaken by NPDES staff that specializes in ambient water quality monitoring protocols and analysis.

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Before the Program Evaluation

To prepare for the program management evaluation, an evaluator should review or obtain the following information prior to the evaluation:

Pre-Evaluation Checklist
- ✓ MS4 permit provisions
- ✓ SWMP provisions
- ✓ Most recent annual report
- ✓ Memorandums of understanding

- **MS4 NPDES permit provisions.** Review the permit requirements for program management to identify any specific requirements (such as annual reporting details). The NPDES permit will serve as the primary basis for the program evaluation.
- **SWMP provisions.** The permittee's SWMP planning document(s) should describe the overall management structure of the program.
- **Latest annual report.** The annual report should be reviewed to help you become familiar with the management structure of the program.
- **Memorandums of Understanding (MOUs)** or other written agreements between or among co-permittees or other agencies stipulating arrangements and responsibilities for meeting permit requirements.

Records Review

The following records might help in evaluating the permittee's program management structure. Ask for copies of relevant information where it will help in writing the report or documenting a permit violation.

Documentation	What to Look For
▪ Stormwater program staff lists ▪ Organizational charts ▪ Contact names and responsibilities	▪ Are specific departments and/or individual positions identified as responsible for each part of the SWMP? ▪ Are lines of authority and responsibility clear?
▪ Performance standards ▪ Program goals/measurable goals ▪ Implementation schedule	▪ Has the permittee documented a schedule and goals for guiding the SWMP in subsequent years? ▪ Are these goals specific enough for the SWMP to be evaluated?
MOUs or other agreements	▪ Does the permittee document partnerships with other agencies, nonprofit organizations, or other cooperating entities? ▪ Are the roles and responsibilities of each entity clearly identified?
▪ Tracking systems ▪ Reporting and assessment procedures	▪ Has the permittee established procedures or deadlines for reporting or program assessment, both within the permittee's structure and between agencies or co-permittees?
Coordination meeting schedules, task force rosters	▪ Do permittee staff responsible for implementing the SWMP meet periodically? ▪ Do municipal agency representatives meet to discuss SWMP implementation? ▪ Does the permittee meet with cooperating entities to discuss SWMP implementation?

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Elements to Address During the Program Evaluation

A successful management structure will generally be composed of the following elements:

- Comprehensive stormwater management planning
    - Public participation
    - Intergovernmental, agency, and department coordination
    - Staff inventory and organization
    - Performance standards or goals
    - Prioritization of resources
- Data collection and reporting
- Assessment and evaluation
- Program adjustments based on ongoing assessments

The common program elements are the key issues to consider during the review. For each of the elements listed above, this Guidance presents common program activities and questions to consider during the program evaluation. The questions are suggested for you to address each program component. Of course, a comprehensive SWMP evaluation must be tailored to the specific issues associated with each permittee and should include more specific questions regarding the permittee's permit structure and management challenges.

COMPREHENSIVE STORMWATER MANAGEMENT PLANNING

SWMP Planning Documents

- ✓ Has a SWMP Plan been developed? If so, when? Last revised?
- ✓ If a SWMP plan has not been developed, what guidance does the permittee use to implement components of the SWMP?
- ✓ Is there a schedule for revision of the SWMP plan?
- ✓ If multiple co-permittees are included in the program, does each permittee have their own SWMP planning document?
- ✓ Is there an additional MS4-wide document, plan, or program? Who developed it?
- ✓ How were internal and external stakeholders included in the development or revision of the SWMP plan?

Intergovernmental, Agency, and Department Coordination

- ✓ If the permit covers more than one permittee, does the program contain a description of the roles and responsibilities of each permittee and procedures to ensure effective coordination?
- ✓ Is there an "umbrella" group that facilitates administration and coordination among the co-permittees?
    - What functions does this group perform?
    - Are there task forces or committees who are used to coordinate program-wide components and to address specific issues related to different program topics (e.g., Public Education and Outreach Committee)?

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- o Who are members of these committees?
- o Are there regular meetings to coordinate amongst the co-permittees?

- ✓ Is there a formal agreement (e.g., an MOU) between the co-permittees?
- ✓ Discuss with the permittee the institutional arrangements between city departments that have been developed to ensure coordination and collaboration on stormwater management activities.
- ✓ Is there a stormwater committee (or equivalent) within the municipal permittee to help ensure coordination among city departments?
- ✓ How often does the committee meet? Who are the members, and are all the relevant city departments involved?
- ✓ Is the stormwater program coordinated with nonpoint source, **brownfield** redevelopment, transportation planning, underground injection control, coastal zone, household hazardous waste, recycling, and other relevant programs?
- ✓ Does the stormwater program use nonprofit organizations, watershed groups or other community organizations to administer required elements of their permit or minimum measures?

Staff Inventory and Organization

- ✓ Does the permittee have a person designated to lead and coordinate the stormwater program and activities?
- ✓ Does the SWMP planning document include an organization chart listing responsible parties for each SWMP component?

Performance Standards or Goals

- ✓ Has the permittee established measurable goals or performance standards for program components?
- ✓ If performance standards have been established, are they measurable or are they essentially BMP recommendations with level of service (i.e., number of miles swept) requirements?
- ✓ Does the permittee attempt to quantify or assess a program or a BMP's water quality impact or effectiveness as opposed to merely tracking level of service? For example, the percentage of violation recidivism for industrial facilities reinspected during a permit term may provide better information about the effectiveness of the industrial inspection program than the total number of facilities inspected in a year.

Prioritization of Resources

- ✓ Has the permittee identified specific pollutants of concern for its local water bodies?
- ✓ Are these pollutants of concern consistent with priorities identified in the **303(d)-listed** impairments for local water bodies?
- ✓ Are these pollutants of concern consistent with any water quality monitoring data or studies conducted by the permittee or another agency?
- ✓ Has the permittee developed strategies to specifically address those pollutants?
- ✓ How does the permittee decide on program priorities? Are these reassessed periodically?
- ✓ Does the SWMP include a schedule of activities?
- ✓ Does the MS4 discharge to a water body on the state's list of impaired waters?
  - o What pollutants are identified on the list?

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  - o Has stormwater been identified as a source?
  - o Does the SWMP specifically address this pollutant?
  - o Does the SWMP identify BMPs specifically for sources or discharges to the listed water body?

- ✓ Has a TMDL been developed for a water body to which the MS4 discharges and for which stormwater has been identified as a pollutant source?
  - o What pollutants are addressed in the TMDL?
  - o Does the TMDL specifically address (or include wasteload allocations for) stormwater?
  - o Has the corrective action plan or other planning to address TMDLs been reviewed for integration with the SWMP?
  - o Does the permittee's stormwater program address the pollutants of concern identified in the TMDL?
- ✓ Is the permittee participating in any watershed planning efforts?
- ✓ Have any goals been developed based on watershed issues, strategies, or challenges?
- ✓ Has the permittee established a set of indicators or parameters to assess progress toward meeting the goal(s) of the watershed plan?
- ✓ Is the permittee's stormwater program implemented on a watershed basis?

ASSESSMENT AND EVALUATION

Programs

- ✓ Does the permittee regularly measure progress against the established performance standards and goals?
- ✓ Are the goals quantifiable?
- ✓ Is the permittee analyzing data in the annual report to identify program activities that may need to change to address problem areas?
- ✓ Has the SWMP been altered based on this evaluation?

BMPs

- ✓ Is the permittee able to track both structural BMPs and non-structural BMPs and activities?
- ✓ Has the permittee set measurable goals or performance standards to evaluate individual BMPs and activities or suites of BMPs that address a particular pollutant source?
- ✓ Is there a process to evaluate or revise individual BMPs and suites of BMPs when receiving water outcomes or endpoints are not being met?
- ✓ Do assessments evaluate impacts of BMPs on ground water?
- ✓ Is the permittee analyzing data in the annual report to identify individual BMPs or suites of BMPs that may need to change to address problem areas?

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Water Quality

- ✓ Has the permittee documented environmental, water quality, stream corridor, habitat, or other types of improvements?
- ✓ Has the permittee estimated reductions in pollutant loadings from the MS4 or other quantifiable water quality benefits expected as the result of the municipal stormwater program?

MONITORING

Note: It is important to tailor these questions to each permittee's monitoring requirements as specified in their permit.

Wet Weather Outfall Screening and Monitoring

- ✓ Does the permittee conduct wet weather screening at outfalls to characterize stormwater flows from the MS4?
- ✓ Does the permittee have written screening procedures?
- ✓ What is the permittee's schedule for screening the sites?
- ✓ Are parts of the permit area prioritized for screening based on incidents of illicit discharges, land use, dumping reports, etc.?
- ✓ What parameters are being tested?
- ✓ How does the permittee prioritize sites for follow-up (e.g., magnitude and nature of suspected discharge)?
- ✓ Who conducts the sampling? What kind of training have sampling personnel received?
- ✓ What type of records are kept?
  - Analytical results
  - Date and duration (in hours) of the storm events sampled (rainfall data)
  - Rainfall measurements or estimates (in inches) of the storm event which generated the sampled runoff (rainfall data)
  - Duration (in hours) of the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event (rainfall data)
  - Estimate of the total flow of the discharge sampled (stage and velocity)
- ✓ What analytical methods are used (i.e., 40 CFR Part 136)?
- ✓ What are the results of the initial sampling and analysis?
- ✓ Has the permittee made any changes to the monitoring program based on past results and experience?
- ✓ How have monitoring results been used to assess program components?
- ✓ Are monitoring data used to estimate pollutant loads for a TMDL?

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Dry Weather Outfall Screening and Monitoring

- ✓ Does the permittee conduct dry weather screening at outfalls to identify non-stormwater discharges?
- ✓ Does the permittee have written screening procedures?
- ✓ What is the permittee's schedule for screening the sites?
- ✓ Are parts of the permit area prioritized for screening based on incidents of illicit discharges, land use, dumping reports, etc.?
- ✓ What parameters are being tested?
- ✓ How does the permittee prioritize sites for follow-up (e.g., magnitude and nature of suspected discharge)?
- ✓ Who conducts the sampling? What kind of training have sampling personnel received?
- ✓ What type of records are kept?
  - Analytical results
  - Date and duration (in hours) of the storm events sampled (rainfall data)
  - Rainfall measurements or estimates (in inches) of the storm event which generated the sampled runoff (rainfall data)
  - Duration (in hours) of the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event (rainfall data)
  - Estimate of the total flow of the discharge sampled (stage and velocity)
- ✓ What analytical methods are used (i.e., 40 CFR Part 136)?
- ✓ What are the results of the initial sampling and analysis?
- ✓ Has the permittee made any changes to the monitoring program based on past results and experience?
- ✓ How have monitoring results been used to assess program components?
- ✓ Are monitoring data used to estimate pollutant loads for a TMDL?

Biological Monitoring

- ✓ Does the permittee perform biological sampling?
- ✓ Has a plan been developed to conduct biological sampling? If so, does the plan include the following:
  - Identification of sampling stations and rationale for selection
  - Location of known major MS4 outfalls discharging to water bodies in which sampling stations were chosen
  - Land use activities near sampling stations
  - Frequency of monitoring
- ✓ Who conducts biological sampling and what training have they received?

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- ✓ Has the permittee made any changes to the monitoring program based on past results and experience?
- ✓ How have monitoring results been used to assess program components?

Ambient Monitoring

- ✓ Does the permittee conduct ambient monitoring to characterize water quality conditions in receiving waters?
- ✓ How were the sampling sites selected?
- ✓ Is sampling conducted both during dry weather and wet weather?
- ✓ What is the frequency of sampling?
- ✓ What parameters are analyzed? What sampling and analytical methods have been used?
- ✓ Does the permittee have a written protocol or procedures for this sampling program?
- ✓ Who conducts the sampling and what training have they received?
- ✓ Has the permittee made any changes to the monitoring program based on past results and experience?
- ✓ How have monitoring results been used to assess program components?
- ✓ Are monitoring data used to estimate pollutant loads for a TMDL?

DATA COLLECTION AND REPORTING

- ✓ What reporting requirements are included in the MS4 NPDES permit?
- ✓ If multiple permittees are covered, are there different requirements for the co-permittees and the "umbrella" group?
- ✓ For co-permittees or Phase II permittees that rely on other entities to implement required elements of the program, how are data provided or reported?
- ✓ How are the required data collected, tracked, and reported?
  - o Is there a database?
  - o Are there reporting forms?
- ✓ Are there internal reporting deadlines within the municipal program structure?
- ✓ Are the appropriate data being collected by the permittee to be able to measure effectiveness and determine if performance standards are being met?
- ✓ How are data disseminated to those who use them, if at all?

<u>In-Field Program Evaluation Activities</u>
In-field activities are not necessary to evaluate program management.

Common Issues Identified During Program Evaluations

- ✓ The permittee lacks necessary intradepartmental coordination on stormwater issues.
- ✓ The permittee does not describe a formal, coordinated program framework.
- ✓ The SWMP does not identify pollutants of concern or program priorities.

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- ✓ The program does not have measurable goals to track and quantify progress towards desired outcomes.
- ✓ The “umbrella” group for multiple co-permittees has a program or plan, but nothing has been developed for each specific co-permittee to detail actual implementation or goals specific to each co-permittee’s program.
- ✓ No SWMP planning document(s) exist to guide the implementation of SWMP components.
- ✓ The SWMP has not been revised and updated based on evaluations of effectiveness.

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4.2 Public Education and Participation

Regulatory Requirements
EPA's federal NPDES regulations for the stormwater Phase I and Phase II are listed at right. NPDES MS4 permits must address these requirements and often include more specific provisions.

Public education is not addressed as a separate program area in the Phase I regulations. Two general public education requirements are contained in the illicit discharge detection and elimination program requirements, as well requirements for education of pesticide, herbicide, and fertilizer applicators and construction site operators. The latter two programs are discussed in greater detail in the MS4 Maintenance and Construction Activities sections of Conducting an Evaluation.

The NPDES Phase II regulation's minimum control measures include requirements for Public Education and Public Participation.

Common Activities
Public education efforts aim to project information to the audience, while the goal of a public participation and involvement program is to encourage volunteerism, public comment and input on policy, and activism in the community. Many activities can and often do achieve both goals, therefore many permittees combine the two into one public outreach program component and develop joint materials. For example, a brochure about stormwater impacts could also invite residents to participate in a stream cleanup. In addition, it is common for several co-permittees to combine funds and produce one set of public outreach materials to distribute regionally or simply use another permittee's materials.

Goals and Objectives
Although not specified in NPDES regulations, ideally a stormwater outreach program should have a strategy to address public education and participation. The outreach strategy should be outlined in a document that may only be a few pages but should establish who is responsible for specific tasks, how much is budgeted, and the dates of implementation (especially if the permittee has to apply for funding support) and completion.

A permittee's outreach program should include goals based on specific stormwater quality issues in the community or pollutants of concern as well as specific target audiences. The goals can be quantitative (i.e., numbers of classroom presentations per year) or qualitative (i.e., increased stormwater awareness among Spanish-speaking residents regarding illegal dumping demonstrated by awareness surveys). Goals can be short-term or long-term but should be designed to be reassessed on a regular basis. Goals should also be progressive; for example, a goal for the first two years may be based on increasing public awareness of certain issues, whereas a goal for

Federal NPDES Regulations
NPDES MS4 permits must address these requirements and often include more specific state requirements:

✓ Phase I MS4 Regulations
Public Education
40 CFR 122.26(d)(2)(iv)(B)
40 CFR 122.26(d)(2)(iv)(D)(4)
40 CFR 122.26(d)(2)(iv)(A)(6)

Public Participation
40 CFR 122.26(d)(2)(iv)(D)

✓ Phase II MS4 Regulations
Public Education
40 CFR 122.34(b)(1)

Public Participation
40 CFR 122.34(b)(2)

Resources
- ✓ EPA Menu of BMPs http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm
- ✓ Getting In Step http://www.epa.gov/owow/watershed/outreach/documents/getnstep.pdf
- ✓ EPA Stormwater Month Outreach Materials and Reference Documents www.epa.gov/npdes/stormwatermonth
- ✓ Think Blue San Diego, an overview of San Diego's stormwater pollution prevention program http://www.thinkbluesd.org/why.htm
- ✓ CTIC Know Your Watershed http://www.ctic.purdue.edu/KYW/

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subsequent years would be based on measurable changes in behavior as a result of increased awareness.

Though each permittee may select its own unique set of goals, the ultimate outcome of all programs should be to elicit specific changes in behavior that benefit water quality. Brochures and presentations are means to this end, but they do not necessarily indicate a meaningful and successful public education program.

Message Development
The permittee's stormwater outreach messages should be clear, specific, and tied directly to elements that each specific audience values, in addition to goals established in the SWMP. Multiple messages may be necessary to address various audiences or behaviors.

Target Audiences
An outreach strategy should identify target audiences a permittee wants to reach with appropriate messages. Target audiences can be segmented by geographic location, demographics, occupation, or behavior patterns. Selection of a target audience can be based on stormwater quality issues and behaviors to be altered. The permittee should determine what information the target audience needs, gather information on the profile of the target audience, and collect information on the barriers to reaching this target audience. As stormwater awareness is evaluated and the program evolves, the target audience may change as well.

Message Packaging
Permittees use various packages to deliver messages to different target audiences. The packages should be appropriate to the audience (i.e., demographic, employment, geographic location, etc.). Packages for messages can include brochures, TV and radio spots, videos, presentations, events, and other formats.

Distribution Mechanisms
There are many ways to distribute outreach messages and materials. Distribution methods should be specific to the message and audience. Often, co-permittees or other partners (i.e., nonprofit organizations, watershed groups, other government agencies) share the distribution costs to best use available resources. Often goals or permit requirements are tied to distribution; therefore, permittees should track distribution of materials, program-related presentations, and other delivery methods.

Evaluation Methods
Permittees can evaluate the effectiveness of an outreach strategy in a number of ways, but any method should be linked to established measurable goals. Some use public surveys to gauge changes in awareness or behavior of the target audiences. The surveys can be conducted in person at events, on the phone, or using Web-based survey tools. Others track quantifiable data such as brochures distributed, people trained, participation in events, volunteer hours, etc. Ultimately, permittees should track metrics showing the adoption of desirable behavior changes.

Public Participation Activities
Ideally, permittees give the public the opportunity to participate in the development, implementation, evaluation, and improvement of the stormwater program. At the very least, permittees need to notify the public about the availability of the SWMP and notice of intent and solicit comments. Some permittees have stakeholder workgroups that are involved in developing policy and programs. Many permittees encourage and facilitate involvement by coordinating or promoting community events and promoting volunteerism in the community through activities such as storm drain stenciling, stream cleanups, riparian tree plantings, and other programs.

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Evaluating Public Education and Participation Programs

The public education and participation component of a SWMP may be implemented by one person or department (e.g., a communications office) or be a combination of efforts by many people, departments, or agencies. An evaluator should question the SWMP coordinator about key staff to talk with prior to the evaluation. It may be possible for the coordinator to relay all necessary information without having to track down numerous staff. It is also a good idea for you to request that copies of pertinent outreach materials be compiled to review during the evaluation or taken to review after.

Some permittees will want to present all stormwater public education activities as an independent program area, while other permittees describe education activities in each relevant SWMP component (for example, education of construction operators is addressed in the construction component or public education on illicit discharges is addressed in the illicit discharge component). An evaluator should take note of how the permittee organizes its education activities and adjust the evaluation process accordingly.

Before the Program Evaluation

An evaluator should review or obtain the following information prior to the evaluation:

Pre-Evaluation Checklist
✓ MS4 permit provisions
✓ SWMP provisions
✓ Most recent annual report

- **MS4 NPDES permit provisions.** Review the permit requirements for public education and public participation to identify any specific requirements (such as the type of activities the program must include or the pollutants the program must address). The NPDES permit will serve as the primary basis for the program evaluation.
- **SWMP provisions.** The permittee's SWMP should describe the overall outreach structure of the program and any measurable goals.
- **Latest annual report.** The annual report should be reviewed to help you become familiar with the activities that have been conducted in the past and the progress made towards achieving measurable goals of the program component.

Records Review

The following records might help in evaluating the compliance and performance of the permittee's public education and participation program. Ask for copies of relevant information where it will help in writing a report or documenting a permit violation.

Documentation	What to Look For
Public outreach or communication strategy	Target audiences, specific stormwater messages, tracking methods, measurable goals, a plan to review and modify the strategy over time.
Stormwater Web site	Pamphlets, calendars of events, hotlines, contact information, access to stormwater permit requirements and SWMP documentation, general stormwater information, volunteer opportunities
Public awareness survey	Public awareness surveys may be available to assess either baseline awareness or movement towards measurable goals.

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Elements to Address During the Program Evaluation
This Guidance presents common program activities and questions to consider during the program evaluation. Of course, a comprehensive program evaluation must be tailored to the specific issues associated with each permittee and should include more specific questions regarding the permittee's permit structure and management challenges.

GOALS AND OBJECTIVES

- ✓ Does the permittee have a strategy document for education and participation?
- ✓ Does the document include specific goals?
- ✓ On what are the goals based?
- ✓ Are the goals measurable? How?

MESSAGE DEVELOPMENT

- ✓ Have specific messages been developed for stormwater outreach?
- ✓ On what are the messages based? Pollutants of concern? General awareness? Problem target audience? All of the above?
- ✓ Are different messages used for different target audiences (i.e., children, homeowners, industry, etc.) or is one central message used for all?
- ✓ Do the messages encourage participation in stormwater-related activities?
- ✓ Do the messages educate about behavior changes that the audience can make to contribute to a solution?
- ✓ Have messages been developed specific to reducing illicit discharges with information about how to report them to the appropriate authorities?
- ✓ Have messages been developed to educate pesticide, fertilizer, and herbicide applicators (including homeowners) about ways to reduce stormwater pollution?

TARGET AUDIENCES

- ✓ Has the permittee identified target audiences for outreach efforts? How are these target audiences selected? What are the target audiences?
- ✓ What land use groups (i.e. industry, commercial businesses) has the permittee targeted?
- ✓ Have certain ethnic groups or nationalities been identified as audiences to be targeted based on an evaluation of local demographics?
- ✓ Have the target groups been reevaluated based on evaluation of the strategy and progress that has been made?
- ✓ Has the Phase I permittee targeted pesticide, herbicide, and fertilizer applicators (including homeowners) and construction site operators for outreach?
- ✓ Has the Phase II permittee targeted industries or commercial businesses of concern for outreach?

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MESSAGE PACKAGING

- ✓ Does the permittee have a variety of written educational materials?
- ✓ Does the permittee have a variety of other packages (i.e., Web site, presentations, displays) for educational materials?
- ✓ Did the permittee produce the education and outreach materials in the different languages that are spoken in the community?
- ✓ Do the permittee's materials explain stormwater issues in easy-to-understand terms?

DISTRIBUTION MECHANISMS

- ✓ Does the permittee track distribution of materials to measure effectiveness?
- ✓ Is the permittee focused solely on distribution or is an effort made to evaluate the impact of the messages?
- ✓ Does the permittee use a variety of distribution mechanisms to target various audiences?

EVALUATION METHODS

- ✓ How does the permittee evaluate the effectiveness of the outreach strategy?
- ✓ Has the permittee conducted a public awareness survey?
- ✓ Which outreach materials have been the most effective in soliciting public involvement and participation? Changing audience behaviors? Increasing general stormwater awareness?
- ✓ Have any changes been made to the outreach strategy or materials based on an evaluation of effectiveness?

PUBLIC PARTICIPATION ACTIVITIES

- ✓ What opportunities does the permittee give to the public to review and comment on any changes to the SWMP, such as public comment via a Web site, a public meeting, or a stormwater advisory group?
- ✓ What volunteer opportunities (i.e., stream cleanups, storm drain stenciling) does the permittee coordinate or publicize to encourage the public to participate in stormwater-related activities?
- ✓ Does the permittee sponsor or promote any of the following activities?
  - o Beach/stream/lake cleanups
  - o Volunteer stream monitoring
  - o Stream clean-ups or equivalent activities
  - o Stormwater citizen panel

<u>In-Field Program Evaluation Activities</u>
The evaluation for this program area will be primarily conducted with the permittee in the office or by reviewing materials before or after the evaluation. However, evaluators can take note during other field activities to observe the stormwater educational materials available and distributed. For example, when visiting the permittee's permit counter, assess the types of stormwater outreach materials available to applicants for new construction projects. When driving around the permit area, observe if posters,

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billboards, or other signs display stormwater messages. These types of field observations about the permittee's public education activities can help assess the effectiveness of the program.

Common Issues Identified During Program Evaluations

The following should be closely considered during evaluations of permittees:

- ✓ Permittees set inappropriate or immeasurable goals for activities.
- ✓ Permittees are not including key target audiences.
- ✓ Permittees are not customizing the materials for the target audience.
- ✓ Permittees are not developing materials for commonly spoken languages.
- ✓ Permittees are not distributing the materials adequately using appropriate methods for the target audience.
- ✓ Permittees are not facilitating involvement in program development, implementation, and improvement during the course of the permit term.
- ✓ Permittees are not coordinating or promoting events or activities that would improve water quality or change behaviors of concern.

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4.3 MS4 Maintenance Activities

Regulatory Requirements

Applicable Phase I and Phase II federal NPDES regulations are listed at right.

General Permits

Although MS4 maintenance activities are addressed in MS4 NPDES permits, it is important to note that some permittees will also have coverage under industrial stormwater general permits or have individual permits for maintenance facilities that fall under one of the covered industrial categories, such as landfills, waste transfer stations, or transportation facilities.

Common Activities

Infrastructure Mapping and Characterization

Debris, **floatables**, sediment, metals, and other pollutants are caught in the MS4 and a regular program to inspect, clean, and repair components of this infrastructure will reduce the pollutants leaving the system and entering surface waters. A map of the MS4 is important for the permittee to plan for and track proper maintenance of inlets, catch basins, outlets, conduits, and management structures such as detention basins.

Public Streets Operation and Maintenance

The SWMP should address and include various practices for operating and maintaining public streets, roads, and highways that reduce the impact on receiving waters of discharges from municipal storm sewer systems. These practices should include regular street sweeping and proper use of BMPs during street maintenance activities. In addition, where applicable, permittees should consider deicing agent application methods that minimize the discharge of pollutants into the MS4, as well as salt and sand storage, fleet maintenance, fueling, and washing.

Flood Management

Permittees should assure that the impacts on the water quality of receiving water bodies are assessed in municipal or regional flood management projects and that existing structural flood control devices have been evaluated to determine if retrofitting the device to provide additional pollutant removal from stormwater is feasible.

Public Facilities Operation and Maintenance

The SWMP should include a mechanism to inventory and assess the impact of stormwater runoff from municipal facilities. The inventory should include all facilities that treat, store, or transport municipal waste as well as industrial/commercial facilities (facilities covered by a general permit as well as those defined by the Industrial/Commercial Facilities program component). Facilities

Federal NPDES Regulations

NPDES MS4 permits must address these requirements and often include more specific state requirements:

- ✓ Phase I MS4 Regulations 40 CFR 122.26(d)(2)(iv)(A)
- ✓ Phase II MS4 Regulations 40 CFR 122.34(b)(6)(i)

Resources

- ✓ Menu of BMPs www.epa.gov/npdes/menuofbmps
- ✓ California Stormwater Quality Association's Municipal BMP Handbook www.cabmphandbooks.com/Municipal.asp
- ✓ National Management Measures to Control Nonpoint Source Pollution from Urban Areas http://www.epa.gov/owow/nps/urbanmm/index.html
- ✓ North Texas Council of Governments - Stormwater Pollution Prevention Training Module Series http://www.nctcog.org/envir/SEEclean/stormwater/program-areas/pollution_prevention/CD/Version_1/P2_Training_Materials.asp

MS4 Facilities

- ✓ Municipal maintenance yard
- ✓ Fleet maintenance facility
- ✓ Chemical storage facility
- ✓ Household hazardous waste facility
- ✓ Solid waste transfer station
- ✓ Animal control facility
- ✓ Salt storage facility

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with activities characterized as a potential threat should be inspected and BMPs should be implemented to reduce water quality impact.

Pesticide, Herbicide and Fertilizer Application and Management
The SWMP should include a component to reduce pollutants associated with the application of pesticides, herbicides, and fertilizer. This program should include, as appropriate, educational activities, permits, certifications and other measures for commercial applicators and distributors, and controls for application in public right-of-ways and at permittee owned or operated facilities, such as playing fields and other recreational facilities.

Training and Education
To ensure that maintenance staff is knowledgeable and proficient in the newest and most effective approaches to minimizing stormwater pollution from facilities and activities, many permittees require annual BMP training for field staff. This training may be presented in-house or staff may attend trainings provided by the permitting authority or industry. It is important to cross-train or educate any contracted staff used for field work as well. Many permittees also provide general stormwater awareness training to all employees.

TIP:

MS4 permittees are not required to enforce the NPDES (state or federal) industrial stormwater general permit, but they are required to comply with this permit at their own facilities. This includes the submittal of a notice of intent, development of a stormwater pollution prevention plan (SWPPP) or equivalent, inspections, and other requirements specified in the applicable industrial stormwater general permit.

Evaluating MS4 Maintenance Programs

MS4 maintenance encompasses a large variety of facilities and activities necessary to operate and maintain a permittee's infrastructure, which include streets, facilities, and the storm drain system. MS4 maintenance activities typically are designed to maintain a certain level of service to maintain the aesthetics of public areas, provide public safety, maintain public infrastructure, and provide flood management, rather than for stormwater quality protection. When reviewing MS4 maintenance programs, however, an evaluator should focus on activities that might impact stormwater quality. The following should be evaluated:

1. How the permittee has inventoried all its infrastructure and facility maintenance activities
2. How the permittee has reviewed maintenance activities to assess potential impacts on stormwater quality
3. Whether the permittee has revised activities or implemented new measures to protect stormwater quality

MS4 maintenance staff should be trained on stormwater BMPs and principles, and have clear guidance on appropriate stormwater BMPs to use during typical maintenance operations and facilities management.

Various departments may be involved in the MS4 maintenance component of a SWMP. Within a municipality, the majority of functions normally are performed by public works staff. However, be sure to discuss the areas to be evaluated with the SWMP coordinator to ensure that the appropriate staff are available to interview during the evaluation. Departments or agencies that might need to be interviewed include streets and highways, facilities management, water authority, fire department, wastewater treatment plant, flood control district, solid waste, and parks and recreation. As previously stated, it is important to interview managers as well as field staff whenever possible.

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Pre-Evaluation Checklist

- ✓ MS4 permit provisions
- ✓ SWMP provisions
- ✓ Most recent annual report
- ✓ NPDES-permitted municipal facilities
- ✓ Municipal facility inspection reports

Before the Program Evaluation

To prepare for the MS4 maintenance program evaluation, an evaluator should review or obtain the following information prior to the evaluation:

- **MS4 NPDES permit provisions.** Review the permit requirements for the MS4 maintenance program to identify any specific requirements (such as a minimum street sweeping frequency). The NPDES permit will serve as the primary basis for the program evaluation.
- **SWMP provisions.** The permittee's SWMP planning document(s) should describe the activities and BMPs that the permittee has committed to implement and may include measurable goals that provide deadlines for program implementation.
- **Latest annual report.** The annual report should be reviewed to identify past activities and help you become familiar with the permittee's SWMP.
- **List of permittee-owned or -operated facilities with NPDES permits.** Try to obtain a list of industrial facilities owned or operated by the permittee that are covered by an NPDES industrial stormwater permit issued by the permitting authority (i.e., household hazardous waste collection facility). This list can be used during the program evaluation to determine whether the permittee is including the facilities that are covered by an industrial stormwater general permit in the inspection program and to understand the types of facilities present in the permit area. The list can also help identify potential sites for the field inspections.
- **MS4 maintenance facility inspection reports.** Review reports from inspections performed by the permitting authority within the permit area and talk to state inspectors to determine if there have been past stormwater violations at facilities owned or operated by the permittee.

Records Review

The following records might help in evaluating the compliance and performance of the permittee's MS4 maintenance activities. Ask for copies of relevant information where it will help in writing the report or documenting a permit violation.

Documentation	What to Look For

Tracking systems
✓ Catch basin cleaning
✓ Street sweeping
✓ Pump station maintenance
✓ Structural BMP maintenance
	▪ What type of water quality-related information is tracked (i.e., tons of material swept)
	▪ Does the permittee set priorities and goals for MS4 maintenance activities each year?
	▪ How are these priorities and goals established?
	    ▪ Pollutants of concern
	    ▪ Watersheds of concern
	▪ Review how these activities are summarized for the annual report

In-field inspection sheets	▪ What guidance is provided to inspectors or maintenance crews to ensure they're properly inspecting and maintaining stormwater infrastructure?

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Documentation	What to Look For
Maintenance SOPs	▪ Review standard operating procedures or any employee manuals or fact sheets used by permittee staff to conduct their day-to-day activities to determine if stormwater BMPs are described
List of municipal facilities	▪ Have the facilities been prioritized based on potential water quality impacts? ▪ Are the facilities inspected? How often? Who inspects?
MS4 maintenance facility SWPPPs	▪ Are SWPPPs (or equivalent) for permittee-owned or -operated maintenance yards, wastewater treatment plants, public transit facilities that perform maintenance, or other facilities adequately addressing stormwater? ▪ When were the SWPPPs last updated?
Training schedule	▪ Review training records to determine how often training is provided, who is required to attend
Pesticides, herbicides, and fertilizers ✓Application records and protocols ✓Applicator certifications and training	▪ Has the permittee tracked the types and amounts of chemicals applied in the permit area? ▪ Does the permittee have state-certified pesticide applicators? ▪ Are the applicators' certifications up to date?
Flood management program	▪ Review the permittee's capital improvement project list for flood drainage or flood management projects. ▪ Review the permittee's watershed master plans or flood drainage master plans for flood management projects. ▪ What types of evaluation criteria have been used to prioritize the projects on the (CIP) list or in the watershed master plan (e.g., water quality impacts)? ▪ Determine whether permittee has a documented evaluation showing why it is not feasible to retrofit existing flood management projects.

Elements to Address During the Program Evaluation

Although the specific nature of a successful municipal program is not specified in NPDES regulations, it will generally be composed of the following components:

- Stormwater infrastructure management and maintenance
- Public streets operation and maintenance
- Flood management
- Public facilities operations and maintenance
- Pesticide, herbicide and fertilizer application and management, as well as erosion control, landscaping, and turf grass care

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- Standards, BMPs, and outreach for municipal staff
- Training and education

For each of the elements listed above, this Guidance presents questions to consider during the program evaluation. Of course, a comprehensive program evaluation must be tailored to the specific issues associated with each permittee and should include more specific questions regarding the permittee's permit structure and management challenges.

STORMWATER INFRASTRUCTURE OPERATION AND MAINTENANCE

Infrastructure Mapping and Characterization

- ✓ Does the permittee have a map showing all inlets, outfalls, storm drain conduits, stormwater management facilities, and receiving water bodies?
  - o Does this map include catch basins and structural stormwater controls?
  - o Is the map readily available and used by maintenance field staff when performing maintenance activities?
  - o Is the map in hard copy format only or is it also in a geographic information system (GIS)?
- ✓ Are infrastructure assets or components named or numbered to better track necessary maintenance and repairs?

TIP:

A map is also required for the illegal connection and illicit discharge detection and elimination programs described in this Guidance. The maps developed for MS4 maintenance and illegal connection and illicit discharge programs can be the same to best use resources.

- ✓ Is information regarding stormwater infrastructure maintained in a database or mapping system? What types of data are maintained?
  - o Type of structure or asset
  - o Location (address, latitude/longitude)
  - o Photo
  - o Date built
  - o Date last inspected
  - o Date last cleaned/maintained

Catch Basin Cleaning

- ✓ Does the permittee have a schedule for routine maintenance or cleaning of catch basins?
  - o How many are cleaned and how often?
  - o Has the permittee targeted certain areas for more frequent maintenance? Does this targeting help minimize stormwater pollution?
  - o Does the permittee set goals for how many basins are inspected and cleaned each year?
  - o How does the permittee track and record cleaning and maintenance needs?
  - o What information is documented? Does the permittee track which catch basins are cleaned, how much material is removed, and so forth?
  - o How does the permittee use the data collected to further its program or evaluate program effectiveness? Are the data used to help prioritize cleaning frequency? Are they used to identify areas for targeted outreach?
- ✓ What are the permittee's procedures for disposing of waste removed from catch basins or storm drains?
  - o Does the permittee flush material that could potentially discharge to surface water?

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- o If the material is removed using a wet vacuum, how is the material dewatered? How is the decanted water disposed?

- ✓ Does the permittee have a schedule for routine maintenance or inspection of storm drain pipes?
- ✓ What are the permittee's maintenance procedures for cleaning clogged storm drain pipes?

Stormwater Management Structures

- ✓ Are catch basins and other inlet structures marked so that the public knows they drain to surface waters?
- ✓ Has the permittee inventoried the type and location of public stormwater management structures in its jurisdiction? How are the data collected and stored?
  - o Pump stations
  - o Drainage structures (debris basins, detention basins, regional ponds, etc.)
  - o Structural treatment controls
  - o Open channels
- ✓ How is vegetation maintained in grassed swales, rain gardens, pond perimeters, and other vegetated stormwater controls?
- ✓ Has the permittee mapped private stormwater management structures?
- ✓ How often are these facilities inspected?
- ✓ Are the stormwater management structures regularly maintained by the permittee?
  - o Are records kept of material and debris removed during maintenance?
  - o How is maintenance conducted? Are chemicals used to maintain vegetation and pests?
- ✓ How does the permittee use the data collected to further its program or evaluate program effectiveness? Are the data used to help prioritize cleaning frequency? Are they used to identify areas for targeted outreach based on type and volume of materials removed?

TIP:

Governmental Accounting Standards Board (GASB) Statement No. 34, Basic Financial Statements and Management's Discussion and Analysis for State and Local Governments (Statement 34) establishes new requirements for the annual financial reports of state and local governments. The Statement was developed to make annual reports easier to understand and more useful to the people who use governmental financial information to make decisions. Statement 34 requires governments to document and report existing infrastructure and depreciate their capital assets.

Permittees can utilize the information obtained through this required reporting to inventory assets such as maintenance facilities, stormwater management structures and MS4 infrastructure (i.e. outfalls, storm sewer pipes, catch basin).

http://www.gasb.org/

PUBLIC STREETS OPERATION AND MAINTENANCE

Street Sweeping

- ✓ Does the permittee regularly sweep streets? Public parking lots?
- ✓ What is the schedule for street sweeping?
- ✓ Are areas scheduled for sweeping based on aesthetics only or is consideration given for reducing impacts on the stormwater management infrastructure and surface water?
- ✓ What types of sweepers are used? Wet or dry?

TIP:

It is a good idea to question both managers and field staff regarding BMPs used. It is helpful to ascertain the level of understanding at the field level as well what types of BMPs are deemed appropriate and feasible for the specific MS4.

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- ✓ How is street-sweeping debris disposed? If the debris is dewatered, how is this done? How is the decanted water disposed?
- ✓ Are records kept of the amount of debris collected?
- ✓ How does the permittee use the data collected to further its program or evaluate program effectiveness? Are the data used to help prioritize cleaning frequency?

Yard Debris Reduction and Disposal

- ✓ Does the permittee offer guidance or services to encourage mulching and/or composting of grass clippings and other yard debris?
- ✓ Does the permittee offer seasonal recycling or disposal services to collect leaf litter, Christmas trees, yard debris, or other seasonal organic materials?

Public Streets, Roads, and Highways Maintenance

- ✓ What types of public streets, roads, and highways operation and maintenance practices and procedures are performed by the permittee?
- ✓ Are BMPs used by field crews to minimize stormwater impacts during road maintenance or repair activities?
- ✓ What types of BMPs are used? Discuss BMPs used for such activities as:
  - Ditch cleaning
  - Sidewalk repair
  - Asphalt patching
  - Curb and gutter repair
  - Street striping
  - Sign painting
  - Maintaining dirt and gravel roads (preventing erosion, dust control)

Deicing Activities

- ✓ What types of deicing agents does the permittee use? If salt is used, has the permittee investigated alternatives?
- ✓ How are deicing agents, sand, or other materials stored? Is the material covered and/or bermed to prevent runoff?
- ✓ Does the permittee track the locations and volumes of deicing agents, sand, or other materials applied?
- ✓ Is the material picked up after the snow/ice event is concluded? Is there a schedule for picking it up after an event?

FLOOD MANAGEMENT

- ✓ Does the permittee have an inventory of structural flood management structures?
- ✓ Have these structures been assessed to determine whether retrofitting could provide additional water quality benefits?
- ✓ How often are flood management projects inspected and/or maintained?
- ✓ Are new flood management projects being designed or planned to include water quality considerations?

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PUBLIC FACILITIES OPERATION AND MAINTENANCE

Facility Inventory

- ✓ Does the permittee have an inventory of public facilities? At a minimum, this list should include the following:
  - o Public works yards
  - o Public transit facilities
  - o Wastewater and domestic water treatment plants
  - o Sanitary sewer system overflow locations
  - o Public parks/open areas
  - o Public parking lots
  - o Public buildings
  - o Landfills and hazardous waste disposal sites, transfer locations, or storage facilities
- ✓ Have the facilities been inspected and assessed for water quality impacts?
- ✓ Are any facilities required to apply for coverage under a general industrial permit? Do these facilities have SWPPPs?

Maintenance Yard Management

- ✓ If the permittee is a municipality, does the municipal public works yard have a SWPPP?
- ✓ Who is responsible for implementing and maintaining the SWPPP?
- ✓ Who is responsible for periodically inspecting the yard for stormwater compliance?

Parks Operation and Maintenance

- ✓ Are there adequate trash enclosures available at park facilities? Are they emptied regularly?
- ✓ Does the permittee provide any stormwater education or signage at parks and other areas?
- ✓ How are public restrooms cleaned and maintained? What chemicals are used? How is cleanup water disposed of?
- ✓ How are public pools maintained? How is the chlorinated water disposed of?
- ✓ Does the permittee include pet waste disposal stations with signage and baggies in public parks?
- ✓ What BMPs are used to address:
  - o Stormwater impacts from turf grass maintenance?
  - o The transport of pesticides, herbicides, and fertilizers by stormwater?
  - o Erosion?
- ✓ What types of vegetated BMPs are implemented at parks (e.g., alternative landscaping to minimize high-maintenance turf grass, streamside buffers, reduced mowing frequency, etc.)
- ✓ Does the permittee implement water conservation measures at its park facilities?

Building Operation and Maintenance

- ✓ Are the permittee’s parking lots regularly swept?
- ✓ How are enclosed parking structures and other public buildings cleaned? If power washing is used, are BMPs implemented to protect storm drain inlets?

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Sanitary Sewer System Maintenance, Overflow, and Spill Prevention

- ✓ Does the permittee have a program to mitigate or prevent **sanitary sewer overflows (SSO)** from entering the MS4?
- ✓ Have flow pathways from SSO locations to catch basins or other points of entry to the MS4 been identified?
- ✓ Have spill prevention and cleanup plans been prepared?
- ✓ Does the permittee have a written procedure to ensure that the MS4 is protected from a sewage overflow or spill? Do the procedures include protection of the storm drain system during and after the cleanup of a spill or overflow?
- ✓ Does the permittee implement a reporting protocol to ensure that all spills and overflows are reported to the appropriate authorities or the department designated to collect and report the permittee's annual report?
- ✓ If the jurisdiction includes residential homes with septic tanks, how does the permittee educate homeowners about proper maintenance of the systems?

Water Supply Operation and Maintenance

- ✓ Have procedures been developed to ensure that field staff integrate stormwater management BMPs into their operation and maintenance activities?
- ✓ Are BMPs implemented to address the testing and flushing of new or existing water lines?
- ✓ Are BMPs implemented to address hydrant testing?
- ✓ Are BMPs implemented to address maintenance activities required to maintain underground water lines (e.g., trenching, excavation)?
- ✓ Does the permittee coordinate source water protection efforts with the stormwater program?

Chemical and Hazardous Material Use and Disposal

- ✓ What types of chemicals or hazardous materials are used by the permittee?
- ✓ Where are these materials stored?
- ✓ Has the permittee implemented an alternative materials program to reduce the use of hazardous materials?
- ✓ Has the permittee implemented an inventory reduction program to reduce the quantity of chemicals and hazardous materials stored and used?
- ✓ Does the permittee have a household hazardous waste collection center for the public?
    - o Are records of the quantity of materials collected maintained by type of material?
    - o How does the permittee notify the public of these sites?
    - o Does the permittee have special household hazardous waste collection days?
- ✓ How does the permittee use the data collected to further its program or evaluate program effectiveness? Are the data used to help prioritize maintenance frequency? Are they used to identify areas of targeted outreach?

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PESTICIDE, HERBICIDE AND FERTILIZER APPLICATION AND MANAGEMENT

- ✓ What kind of program has been established to address pollutants associated with the application of pesticides, herbicides, and fertilizer at public facilities?
- ✓ Are the permittee's fertilizer/pesticide applicators certified? Are permits or other certifications required?
- ✓ Where are the chemicals stored? Are appropriate procedures and secondary containment followed?
- ✓ Is there a pesticide/fertilizer application plan?
- ✓ Does the permittee practice integrated pest management (IPM) or use alternatives to pesticides?
- ✓ How does the permittee implement alternative landscaping to minimize the use of fertilizers and pesticides?
- ✓ What types of educational activities does the permittee conduct for applicators?
- ✓ What types of BMPs are used during application of pesticides in public rights-of-way?
- ✓ What types of BMPs are used during application of pesticides at municipal facilities such as parks?

STANDARDS, BMPS, AND OUTREACH

Municipal Staff

- ✓ Have standard operating procedures or their equivalent been developed to ensure that municipal field staff integrate stormwater quality BMPs into their daily activities?
- ✓ Have BMPs or standards been officially adopted by the permittee for use by municipal field staff?
- ✓ What reference materials or guidance documents are provided to field staff regarding BMP specifications and details?
- ✓ How does the permittee ensure that staff are fulfilling their responsibilities as outlined in standard operating procedures? Do managers provide oversight on a regular basis?

Contracted Services Staff

- ✓ Does the permittee require contractors to incorporate stormwater quality BMPs into their activities?
- ✓ How are BMPs required? Are the requirements outlined in requests for proposals? Are they included in contracts?
- ✓ Have BMPs or standards been officially adopted by the permittee for use by contractual staff?
- ✓ What reference materials or guidance documents are provided to contractual staff regarding BMP specifications and details?
- ✓ How does the permittee ensure that contractors are fulfilling their responsibilities as outlined in their contracts? Are inspections performed? Are periodic reports submitted?

TIP:

Educational programs for pesticide, herbicide, and fertilizer applicators used by the permittee may be addressed during the public education and participation portion of the evaluation.

General Public

- ✓ Does the permittee provide any information to the public regarding:

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- o Cleaning up after pets
- o Household hazardous waste disposal
- o Oil recycling
- o Litter reduction

TRAINING AND EDUCATION

- ✓ What type of general stormwater training is provided to staff that are not involved in field activities? How often?
- ✓ How are new employees trained?
- ✓ What types of activity-specific training is provided to field staff? Is information on specific BMPs provided?
- ✓ Is any training provided to contract staff?

<u>In-Field Program Evaluation Activities</u>

The primary in-field evaluation activity is an inspection of the permittee's public works yard(s) or other type of permittee owned or operated facility (i.e. fleet maintenance). The intent of this inspection is to verify that activities are performed as described in the SWMP. The facility should be inspected as if it were a typical industrial facility. During the inspection, look for the following:

TIP:

Other MS4 facilities, such as parks, marinas, and household hazardous waste collection facilities, should be visited if there is adequate time.

- ✓ Are chemicals, bulk materials, or other potential pollutants stored outside? Is there secondary containment? Are the materials covered?
- ✓ Where are the permittee's vehicles washed? Are wash racks and dewatering areas plumbed to sanitary sewers, if allowed? If not allowed, are wastewaters from wash racks and dewatering areas prohibited from entering the MS4?
- ✓ Where are the permittee's vehicles maintained? If outside, what BMPs are used to prevent polluted runoff?
- ✓ Does the facility have structural stormwater BMPs (e.g., stormwater detention ponds, stormwater filter devices) installed?
    - o If so, how are they maintained?
    - o What is the frequency of maintenance?
- ✓ Are inoperable vehicles stored and maintained in a way to prevent polluted runoff and leaching of contaminants to groundwater?
- ✓ Are storm drain inlets at the yard free of debris and regularly cleaned?
- ✓ Is the yard swept regularly? Are there oil stains and spills at the yard?

An additional in-field evaluation activity could include visiting maintenance staff as they conduct maintenance. For example, you could visit staff as they clean catch basins, perform street repairs, or conduct other similar activities to ascertain whether stormwater BMPs are being implemented and identify whether staff are knowledgeable about BMPs.

Document all findings in the field in as much detail as possible. An MS4 Facilities Inspection Worksheet has been included as Appendix C to assist in this documentation.

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Common Issues Identified During Program Evaluations

The following are some typical problem areas associated with MS4 maintenance programs. These areas should be closely considered during evaluations:

- ✓ The permittee's MS4 maintenance staff lack training on and awareness of stormwater management BMPs.
- ✓ Permittee staff lack adequate guidance (e.g., MS4 maintenance BMP manual, SOPs, fact sheets) on proper stormwater management BMPs.
- ✓ Stormwater BMPs and procedures are not incorporated during routine MS4 maintenance activities.
- ✓ Maintenance yards lack SWPPPs and adequate controls to prevent stormwater contamination.
- ✓ Contractual staff performing operation and maintenance activities for the permittee are not required to consider stormwater quality and implement appropriate BMPs.

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4.4 Construction Activities

Regulatory Requirements

EPA's federal regulations for the stormwater NPDES Phase I and Phase II regulations are listed at right. NPDES MS4 permits must address these requirements and often include more specific state requirements.

Federal NPDES Regulations

NPDES MS4 permits must address these requirements and often include more specific state requirements:

- ✓ Phase I MS4 Regulations
  40 CFR 122.26(d)(2)(iv)(D)
- ✓ Phase II MS4 Regulations
  40 CFR 122.34(b)(4)

General Permits

As described above, stormwater Phase I and Phase II MS4 permittees must implement a SWMP that includes erosion and sediment controls on construction sites disturbing at least one acre. In addition to the regulation of construction site stormwater at the local level, EPA regulations also require construction sites disturbing greater than one acre to obtain an NPDES permit. This permit can be issued by the state permitting authority or EPA, depending on whether the state has been delegated the NPDES authority. This dual regulation of construction sites at both the local and state or federal level can be confusing to permittees and construction operators.

TIP:

MS4 permittees are not required to enforce the NPDES (state or federal) construction general permit, but they are required to comply with this permit for their own public construction projects (e.g., capital improvement projects, road construction). This includes the submittal of a notice of intent, development of a SWPPP or equivalent, inspections, and other requirements specified in the state's construction general permit.

Although there are many similarities between the NPDES construction general permit and the MS4 construction program requirements, Municipalities are not required to ensure that local construction projects comply with NPDES construction general permits. Federal NPDES MS4 regulations describe broad requirements for a stormwater program to control construction site runoff to the MS4 and give the permittees flexibility in designing a local program to meet their needs. However, to avoid duplication and confusion between the two programs, some permittees choose to require the same BMPs and plan submittals (i.e., SWPPPs) as required by NPDES regulations.

Common Activities

Ordinance/Legal Authority

Many municipal permittees address legal authority for construction site stormwater runoff control in a grading or stormwater ordinance. The ordinance(s) should specify which sites are required to implement controls (i.e., MS4 regulations require all sites greater than one acre, but many permittees use a smaller area or volume threshold, such as 50 cubic feet of earth moved or proximity to water bodies). The ordinance should require erosion and sediment control BMPs to be implemented and maintained, a performance standard, and penalties for noncompliance.

Resources

- ✓ Menu of BMPs
  http://www.epa.gov/npdes/menuofbmps
- ✓ Construction Industry Compliance Assistance Center
  http://www.cicacenter.org/
- ✓ International Erosion Control Association
  http://www.ieca.org/
- ✓ Kentucky Erosion Prevention and Sediment Control Field Guide
  http://www.tetratech-ffx.com/wstraining/pdf/esc_guide.pdf

Construction Site Inventory

The permittee should have an inventory of active and completed construction projects that includes information about the site and inspections that the permittee has conducted, including inspection findings and follow-up (letters, enforcement actions, additional inspections). Permittees should consider prioritizing the inventory to

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better target inspections based on project size, location, threat to water quality, or other factors. The permittee should also develop procedures for the receipt and consideration of complaints submitted by the public. Ideally, this information would be managed in a database and linked to a GIS for optimum tracking.

Resources (continued)

- ✓ California Stormwater Quality Association's Stormwater Best Management Practice Handbooks http://www.cabmphandbooks.com/Construction.asp
- ✓ MPCA Inspection guide and compliance assistance toolkit http://www.pca.state.mn.us/water/stormwater/index.html

Construction Requirements and BMPs

While the legal authority described above should require BMPs at construction sites, a permittee should also have additional specifications or guidance on what types of BMPs are expected at sites. These requirements and standards and specifications for BMPs should be readily available to project applicants.

Plan Review Procedures

The review of erosion and sediment control plans (or SWPPPs if required under an NPDES construction permit) should be based on formal review specifications, a checklist, or similar criteria. Plan review staff should document the BMPs considered, whether they were addressed on the plans, and any identified deficiencies.

TIP:

You should have a clear understanding of the plan review and approval process and how stormwater and erosion and sediment control requirements are included in this process.

Some municipal permittees require that projects submit a copy of the **notice of intent (NOI)** that has been submitted to the State or EPA before approving a project. In some states, the state requires that the permittee receive local erosion and sediment control approval prior to submitting a NOI. At a minimum, permittees should make sure that project applicants are aware of the requirement to apply for NPDES permit coverage for projects disturbing greater than one acre.

Some municipal permittees use contract staff to review some or all plans. Be sure to review plans completed by contractual as well as municipal employees.

Construction Site Inspections

A key element of the construction component is the frequency at which sites are inspected. Some permittees identify a minimum frequency of inspections (such as weekly and/or following a rain event) for all projects. Other permittees will rely on building inspectors to conduct erosion and sediment control inspections at the same time as other types of required inspections (e.g., electrical). This approach, however, can result in sites not being inspected for long periods of time if the building inspector is not called out for an inspection. Also, building inspectors are not necessarily trained to recognize erosion and sediment control problems or have other priorities besides stormwater.

TIP:

Some municipal permittees have different inspectors for their public and private projects, be sure to evaluate each in the field.

Inspections are often targeted to specific types of sites or during specific periods (especially immediately following a rain event). For permittees with numerous active construction projects, it is recommended that a prioritization process be developed to ensure that the sites with the greatest threat to water quality are considered high priority and inspected more frequently. Inspection results should be documented using paper forms or electronic databases.

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Program Support and Resources

Permittees should have an established source of funding for their construction program, including adequate resources for frequent inspections and plan review. Funds often come from fees paid by the construction operators. If general funds are used to support the program, permittees should ensure that construction inspections are a line-item appropriation not subject to reduction or elimination based on board politics or budget constraints.

Enforcement

Permittees should have an established, escalating enforcement policy that clearly describes the action to be taken for common violations. Enforcement authority typically includes verbal and written warnings, fines, and "stop work" orders. Verbal warnings should be documented in addition to all written violation notices. The enforcement policy should also address how repeat or serious violations will be addressed, including referral of the case to the NPDES permitting authority in the most egregious cases.

TIP:

Review enforcement cases to assess whether the permittee is adequately ensuring compliance. Lack of fines, "stop work" orders, or other enforcement actions do not necessarily indicate that the permittee's enforcement program is inadequate. A lack of enforcement cases could be the result of an effective inspection program, or it could indicate problems with the inspection records, inspector training, inspection procedures, or even the lack of commitment from the permittee to escalate enforcement.

Training and Education

A SWMP should include training to plan review and inspection staff. This training should include classroom presentations, in-field training, and follow-up evaluations to determine whether the training was effective. Although some permittees also provide training to construction operators, most simply provide educational materials such as fact sheets or brochures that describe local requirements and recommended BMPs.

Public Construction Projects

Public construction projects must comply with both the local program and the applicable NPDES construction general permit (state or federal). This requires the permittee to take on dual roles as both local regulator and permittee. Permittees must apply the same local requirements to public construction projects as are required of private projects. Some permittees develop and design public construction projects in-house without direct involvement from the department that reviews most private construction projects; therefore, it is important that the public project designers are trained and proficient in stormwater BMPs as well. If a permittee hires outside designers for public projects, it is important that stormwater guidelines be provided to them to ensure compliance with local and NPDES permit requirements.

After the project is designed, many permittees will hire contractors to build the project. Interested applicants submit proposals to bid on the project. To ensure that successful applicants will abide by all stormwater requirements, it is recommended that the request for proposals (RFP) include specific language regarding installation and maintenance of all BMPs. Many permittees also include additional language in subsequent contracts (if there is a document separate from the proposal) obligating contractors to appropriate stormwater measures and outlining potential enforcement penalties (i.e. delayed or reduced payment). An evaluation of public construction projects should include a review of RFP or contract language relating to stormwater controls.

Evaluating Construction Programs

The evaluation of a permittee's construction program should focus on the regulatory mechanism to require and enforce the program, plan review procedures, and erosion and sediment control inspection procedures. The evaluation should begin with a thorough review of the permittee's ordinances, standards,

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approved plans, and other relevant written materials. Ask staff to walk through the planning and approval process from initial plan receipt to final approval.

You should determine how erosion and sediment control BMPs are required in construction site plans and how they are implemented and enforced in the field. Inspectors from multiple departments might also inspect different portions of a development project. For example, building department inspectors may be charged with site inspections during the construction of the buildings, whereas public works inspectors may be responsible for the inspection of construction activities within the right-of-way, such as streets, sewer, and water. Various departments may inspect a site during different stages of the project. You must be sure to interview all applicable staff and departments, which could include building, planning, engineering, or public works. Questioning planners and engineers in addition to questioning inspectors is helpful in determining how well various staff work together to achieve "on the ground" BMP implementation.

Some municipal permittees manage public construction projects (including capital improvement projects or CIPs) differently than private construction projects, for example, in some communities private projects are reviewed and approved by the planning or building department, whereas public projects may be entirely planned, reviewed, approved, and developed by the public works department. Make sure you distinguish between these two types of projects during the evaluation, and if necessary, repeat the same questions for both private and public projects.

Before the Program Evaluation

To prepare for the construction program evaluation, an evaluator should review or obtain the following information:

Pre-Evaluation Checklist

- ✓ MS4 permit provisions
- ✓ SWMP provisions
- ✓ Most recent annual report
- ✓ State or EPA Construction General Permit
- ✓ List of NPDES construction projects
- ✓ NPDES Construction inspection reports

- **MS4 NPDES permit provisions.** Review the permit requirements for the construction program to identify any specific requirements (such as a minimum inspection frequency). The NPDES permit will serve as the primary basis for the program evaluation.
- **SWMP provisions.** The permittee's SWMP planning document(s) will describe the activities and BMPs it is committed to implement and include measurable goals that provide deadlines for program implementation.
- **Latest annual report.** The most recent annual report should be reviewed to identify past activities and help the inspector become familiar with the permittee's program.
- **State or EPA NPDES Construction General Permit.** You should be very familiar with the requirements of the state or EPA's construction general permit, whichever applies, to ensure that conflicts between the SWMP and the state or EPA permit can be identified and violations of the state or EPA permit can be found.
- **List of NPDES construction projects.** Obtain a recent list of construction projects within the permit area that have been issued coverage under an NPDES general permit by the permitting authority (one acre or greater disturbed area). This list can be used during the program evaluation to determine whether the permittee has any public construction projects. The list can also help identify potential construction sites for field inspections. The list can also be crosschecked with a similar list requested and obtained from the permittee. Obtain information such as the operator name, name of the construction site, address, size, and other relevant information.
- **NPDES construction inspection reports.** Review inspection reports from construction inspections in the permittee's jurisdiction conducted by the permitting authority and/or EPA. Talk

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to state or federal construction inspectors to determine if there have been past stormwater violations at construction sites in the permitted area and any role the permittee played in resolving the violations.

Records Review

The following records might help in evaluating the compliance and performance of the permittee's construction program. Ask for copies of relevant information where it will help in writing a report or documenting a permit violation.

Documentation	What to Look For
Local ordinances	One or more of the following ordinances may be used by a municipal permittee to regulate erosion and sediment control. ▪ Grading ordinance ▪ Erosion control ordinance ▪ Stormwater ordinance ▪ Landscaping ordinance ▪ Health and safety codes
Design standards, BMP manuals, and fact sheets.	These can be state or local standards or be taken from a non-regulatory source
Construction plans reviewed and approved by the permittee	Where possible, try to review the plans for projects that you will also visit during the field portion of the evaluation
Construction project inventory or database	▪ Does one exist? ▪ How often is it updated? ▪ What is the source for the inventory?
Enforcement escalation response plan or procedure	▪ Is the enforcement process documented and codified? ▪ Are roles of individuals or departments clearly defined?

Elements to Address During the Program Evaluation

Although not specified in detail in NPDES regulations, a successful construction program will generally be composed of the following elements:

- Ordinance/legal authority
- Construction project inventory
- Construction requirements and BMPs
- Plan review procedures
- Construction site inspections

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- Program support and resources
- Enforcement/referrals
- Training and education

The common program elements are the key issues to consider during the review.

ORDINANCE/LEGAL AUTHORITY

- ✓ What legal authority does the permittee have to require erosion and sediment control BMPs on construction sites and to ensure compliance?
- ✓ Does the permittee's legal authority address stormwater quality for all projects disturbing at least one acre?
- ✓ What exemptions does the ordinance or other legal authority allow?
- ✓ Does the legal authority authorize the permittee to require erosion and sediment control plans?

CONSTRUCTION SITE INVENTORY

- ✓ How does the permittee track construction projects?
- ✓ What information is collected?
  - The number and status (active/inactive/completed) of construction sites
  - The number, frequency, results, and follow-up actions resulting from inspections
  - The actions taken to resolve the issues and dates when compliance was achieved.
  - The number and type of enforcement actions taken at sites in violation
  - Complaints submitted by the public
- ✓ Does the inventory include construction sites disturbing less than 1 acre?
- ✓ What is the threshold for tracking projects?
- ✓ Does the inventory track which sites have submitted an NOI for coverage under a state/EPA construction general permit?
- ✓ How is the inventory updated? How often?
- ✓ Does the permittee prioritize projects for more frequent or targeted inspections?
  - If yes, based on what criteria?

CONSTRUCTION REQUIREMENTS AND BMPS

- ✓ What technical guidance (e.g., BMP manual or fact sheets) does the permittee use as the standard for design and selection of nonstructural and structural construction BMPs?
  - Are project applicants required to follow these technical manuals?
  - Does the guidance set minimum operation and maintenance requirements for BMPs?

TIP:

You should ask the permittee for a copy of the information packet that they provide to new project applicants. What type of stormwater information is included? Does it describe the types of BMPs and stormwater requirements that could apply to their project?

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- Does the guidance include installation requirements for the BMPs?
- Does the guidance provide proper siting and use criteria for BMPs to ensure that adequate BMPs are being selected and implemented?

✓ Does the permittee provide guidance as to recommended BMPs to be used?

✓ Does the permittee have different requirements or standards for different times of the year (i.e., during the rainy season vs. the dry season)?

PLAN REVIEW PROCEDURES

✓ Does the permittee hold pre-application meetings on any construction projects? Are stormwater and erosion and sediment control requirements addressed at these meetings?

✓ Is there any plan review coordination with other city departments such as smart growth, redevelopment, traffic engineering, etc.?

✓ What is the permittee's threshold for plan review? (For example, does the permittee review plans for all projects disturbing greater than 1 acre, or do they use another threshold?)

✓ Does the permittee apply standard conditions that incorporate erosion and sediment control requirements into its plan review process?

- Get a copy of the standard conditions to determine if they specifically address erosion and sediment control

✓ Do the plan reviewers verify whether the project applicant has submitted an NOI to the state or EPA? Is evidence of NOI submission required before a plan can be approved or a local permit issued?

✓ Do plan reviewers use specific criteria or a checklist when reviewing plans?

✓ Does the permittee consider during the review process whether the construction project discharges to a TMDL/impaired water?

✓ When reviewing plans approved by the permittee, you should:

- Look for whether adequate BMPs are included on plans, details, and drawings for the installation of certain BMPs when applicable, what types of standard conditions or notes are included, and whether maintenance requirements are specified.
- Are inadequate or incomplete plans automatically returned to the applicant? Are these returns accompanied by an explanation of what is needed for approval?
- Are BMPs addressing other construction activities, such as materials storage and waste disposal, incorporated into the construction plans?
- Do the plans include notes addressing the prohibition of non-stormwater discharges?
- Were comments provided by the permittee to the project proponent reasonable and appropriate?

TIP:

You should select at least 2 to 3 approved projects with erosion and sediment control plans to review with the permittee. Try to choose different project types (residential, commercial) and sizes. Also review at least one public project plan to see if the permittee is applying adequate standards to municipal construction.

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CONSTRUCTION SITE INSPECTIONS

- ✓ Does the permittee adequately inspect all phases of construction?
  - o Clearing and grubbing and site preparation
  - o Mass grading and public infrastructure/utility construction
  - o Building construction and final grading
  - o Final stabilization
- ✓ What departments are charged with erosion and sediment control inspections? Is the department responsible based on the location of the site (i.e. right-of-way vs. building site) or phase of development (i.e., grading vs. building)?

TIP:

Review inspection records to determine how the permittee corrects identified problems. If an inspection report identifies missing BMPs or a non-stormwater discharge, verify that there is an inspection record showing that the site was reinspected within a reasonable timeframe. Was the problem corrected?

- ✓ Do the inspectors use a checklist or inspection form during each inspection?
- ✓ How many inspectors does the permittee use to verify erosion and sediment control compliance at construction sites?
- ✓ Does this number appear adequate to assess active construction occurring in the permitted area? Compare this to the total number of construction sites that need to be inspected at any one time (number of inspections per construction site per year). Consider project durations and phasing, local conditions (e.g., dry vs. wet seasons), and additional duties assigned to inspectors.
- ✓ Does the permittee have an established prioritization process for establishing inspection frequency? If so, on what factors is the prioritization based (i.e., size, proximity to water body, sensitive areas)?
- ✓ How often are sites inspected?
- ✓ Does the permittee target inspections during and immediately after wet weather events? If so:
  - o What size rain event triggers an inspection?
  - o How soon after a rain event?
- ✓ Is there an established rainy season for the area? Are sites inspected prior to the start of the rainy season to determine preparedness?

PROGRAM SUPPORT AND RESOURCES

- ✓ Does the program have a dedicated source of funding to support plan review staff and inspectors?

ENFORCEMENT

- ✓ What types of enforcement actions are provided for in applicable ordinances (e.g., notices of violation, “stop work” orders, fines)?
- ✓ Is use of these actions outlined in an established, escalating enforcement policy?
- ✓ Review with the permittee statistics on enforcement of construction site erosion and sediment controls.
  - o How many enforcement actions are taken per year?
  - o Are follow-up inspections conducted to verify compliance?

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- ✓ Are there limitations on the permittee's enforcement authority (e.g., limits on the dollar amount of fines, inability to issue civil penalties)?
- ✓ Do staff feel that their enforcement authority is adequate to achieve compliance on construction projects?
- ✓ What is the relationship with the City Attorney or other relevant prosecuting authority?

TRAINING AND EDUCATION

Staff training

- ✓ What type of training do construction inspectors receive? Are plan reviewers trained on erosion and sediment control BMPs and requirements?
- ✓ How often is training conducted? How many staff have been trained?
- ✓ What type of follow-up is conducted by the permittee to verify that the training is effective?

Construction operator education

- ✓ What types of educational materials have been developed and distributed to construction operators?
- ✓ How are they distributed? At the permit desk? During inspections?
- ✓ What type of training does the permittee provide or advertise to local construction operators?
- ✓ How often is this training conducted? How many construction site operators have been trained?
- ✓ Are contractors and developers required to attend?
- ✓ Does the training cover any of the following?
  - o Local and state erosion and sediment control requirements and permits
  - o Proper erosion and sediment control BMP design and installation
  - o Maintenance requirements for BMPs
  - o General construction stormwater permit requirements (state or federal)
- ✓ Are training sessions held in cooperation with other local permittees or regional authorities?

TIP:

Permittees must train their primary inspectors, but they should also provide at least basic stormwater training to other field inspectors not directly involved in the stormwater program, such as building inspectors and code compliance staff. At a minimum, this will encourage these staff to refer stormwater problems to the permittee's designated stormwater inspector.

PUBLIC CONSTRUCTION PROJECTS

- ✓ Do RFPs or contracts include language specifying stormwater requirements?
- ✓ Are inspection and maintenance requirements specified in the contract?
- ✓ What oversight does the permittee implement to ensure the contractor is implementing all requirements appropriately and adequately?
- ✓ What penalties are in place to require compliance from the permittee's contractors?

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In-Field Program Evaluation Activities

In-field activities to evaluate the construction inspection program typically consist of accompanying one or more construction inspectors in the field as they conduct inspections. The construction inspector is to conduct the inspection; you are to strictly observe. Discourage construction inspectors from merely describing the inspection process. It is best to accompany more than one construction inspector, if possible, to see whether the permittee is providing adequate training to all inspectors.

TIP:

Let the inspector lead the inspection—just observe. Don't let the inspector "explain" how they would conduct the inspection—tell them to show you.

The main purpose of the field evaluation is to assess the permittee's construction inspection program—how knowledgeable the inspectors are about stormwater requirements and BMPs, how thorough of an inspection they conduct, and how they handle problems identified at construction sites. This assessment can sometimes be made after only one or two construction site inspections, while for other permittees it may take multiple inspections and visits with several inspectors to assess their inspection program. Try to limit the number of people that join each inspection—too many staff can overwhelm a construction site, making it harder for the construction inspector to conduct an actual inspection.

Schedule at least a half-day for construction inspections. Travel time between sites may be significant, so plan accordingly. For a large permit area with a lot of active construction, schedule a full day if possible to visit both private and public projects. Stress the need to visit as many construction projects as possible while still following the inspector's standard procedures. Try to observe a large variety of sites, such as small residential projects, larger housing developments, commercial projects, and public construction projects, projects in mass grading, projects close to completion, and projects adjacent to waterways.

As the inspector conducts the construction inspection, observe the following:

- ✓ Is the inspector knowledgeable about stormwater BMPs, requirements, and ordinances?
- ✓ Is the inspector familiar with the applicable construction stormwater general permit?
- ✓ Does the inspector check the approved plans at the construction site? (Note that some inspectors visit sites frequently and this is not always practical. Also, plans at small construction sites might not be kept on-site.)
    - o Ask the inspector if he or she has visited this particular site before. If the answer is no, the inspector should ask to see the plans, have reviewed them ahead of time, or brought a copy so he or she knows what BMPs have been approved for that site.
- ✓ Does the inspector use a checklist or otherwise document inspection findings in the field?
- ✓ What kind of written feedback is provided to the operator and within what timeframe do violations need to be addressed?
- ✓ What kind of report is generated as a result of the inspection? Does it detail all problems found at the site or does it document only that the inspection occurred?
- ✓ Are findings from inspections tracked in a central location or database?

TIP:

Be aware that permittees will often match you up with their "best" inspectors and want to take you to the most compliant sites. Visiting sites that are "bad actors" or typically non-compliant can also be very helpful in characterizing the inspector's knowledge and abilities. "Dirty" projects do not necessarily indicate inadequate inspections or inept inspection staff. It is sometimes helpful to the inspectors to have another set of eyes at a problem site to assess the issues and provide insight for solutions.

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- ✓ How does the inspector track required follow-up inspections or enforcement actions?
- ✓ Is the inspector thorough? Does the inspector walk the entire site and identify all potential problems?
- ✓ Does the inspector note flow pathways and check for discharges from the site at outfalls or to storm drain inlets?
- ✓ What type of stormwater training has the inspector received?

The in-field activity is a good opportunity for you to ask the inspectors some of the same questions asked during the office portion of the program evaluation to see if the answers differ. Often, inspectors are more open to discussing "problems" with the program than are the program managers. Try to spend some time with the construction inspector talking informally about the program. (The drive between inspections is a good time for this talk.)

Document all findings in the field in as much detail as possible. A Construction Inspection Worksheet has been included in Appendix C to assist in this documentation.

Common Issues Identified During Program Evaluations

The following are some common problems with construction programs. These areas should be closely considered during evaluations:

- ✓ When erosion and sediment control inspections are included as part of building inspections, erosion and sediment control is seen as a less important aspect of the inspection compared to other aspects, such as electrical or plumbing.
- ✓ The inspectors may lack the training and time necessary to conduct thorough erosion and sediment control inspections.
- ✓ Construction inspectors sometimes lack the authority to enforce the local ordinance.
- ✓ The inspectors may not follow a formal, written, escalating enforcement policy, or such a policy does not exist.
- ✓ Construction inspectors do not document inspection results using a checklist or other document.
- ✓ Inspectors do not conduct thorough inspections (i.e., drive-by inspections are common).
- ✓ Construction inspectors do not verify that BMPs approved on plans are actually installed at the project.
- ✓ Construction inspectors do not inspect to determine if BMPs are adequately maintained.
- ✓ The permittee is not adequately tracking inspections and inspection results.
- ✓ The permittee is not verifying general permit coverage before approving plans for construction disturbing one acre or more.
- ✓ Plan review staff lack adequate guidance and criteria for reviewing erosion and sediment control plans.
- ✓ Inspectors of public projects (in-house or contractual staff) are not knowledgeable about the applicable construction general permit (this is a significant liability because the inspector is usually responsible for ensuring compliance with this permit).

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4.5 Post-Construction Controls

Regulatory Requirements

EPA's federal regulations for the stormwater Phase I and Phase II NPDES MS4 regulations are listed at right. NPDES MS4 permits must address these requirements and often include more specific requirements.

General Permits

As described above, stormwater Phase I and Phase II permittees must implement a SWMP that includes a post-construction component that addresses stormwater runoff at the completion of construction of new or redevelopment sites that disturb at least one acre.

Federal NPDES Regulations

NPDES MS4 permits must address these requirements and often include more specific state requirements:

- ✓ Phase I MS4 Regulations
  40 CFR 122.26(d)(2)(iv)(D)
- ✓ Phase II MS4 Regulations
  40 CFR 122.23(b)(5)
  40 CFR 122.23(b)(5)

Common Activities

Ordinance/Legal Authority

The ordinance should have language requiring that all new development and significant redevelopment projects incorporate stormwater management BMPs and submit a plan that complies with design standards, zoning codes and comprehensive or master plans. Some permittees review required construction general permit SWPPPs, while others require the development and submittal of a separate post-construction plan to address local stormwater requirements. In addition, some permittees require that projects smaller than one acre implement post-construction stormwater controls. These requirements should be detailed in an ordinance to establish legal authority. Ideally, the ordinance will outline the contents of an approvable plan and responsibilities for operation and maintenance of approved BMPs. The operation and maintenance section should also describe who is responsible for inspections and maintenance (e.g., the homeowner, homeowners' association, permittee, etc.).

Resources

- ✓ Menu of BMPs
  www.epa.gov/npdes/stormwater/menuofbmps
- ✓ California Stormwater Quality Association's New Development and Redevelopment Handbook
  http://www.cabmphandbooks.com/Development.asp
- ✓ Georgia Quality Growth Program
  www.georgiaqualitygrowth.com
- ✓ EPA Smart Growth Web site
  www.epa.gov/dced/
- ✓ Smart Growth Online
  www.smartgrowth.org/
- ✓ EPA Low Impact Development Resource Center
  www.epa.gov/owow/nps/lid/
- ✓ Low Impact Development Center
  www.lowimpactdevelopment.org

Comprehensive or Master Planning

Often, when the MS4 is a municipality, the permittees address stormwater management using the established local comprehensive or master planning process. Comprehensive or master planning typically is required by state law and is to be used as guide in decision-making about the built and natural environment by the governing body of the permittee (i.e., city council, planning commission, county board). A comprehensive plan contains long-term planning recommendations for the community and often addresses water quality issues either directly with specific water quality goals or indirectly through the encouragement of land use practices that minimize impervious surface (i.e., high density "villages") or encourage open space.

The inclusion of water quality-related goals in the comprehensive plan could assist local planners and policymakers to institutionalize the stormwater principles necessary to implement an effective SWMP.

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However, the comprehensive plan is not a substitute for a SWMP Plan because it cannot be changed or updated readily and does not include necessary implementation details of the stormwater program.

Post-Construction BMP Standards
While the legal authority described above should require the installation of BMPs at sites, a permittee should also have additional specifications or guidance on what types of BMPs are expected or required. Ideally, the ordinance will include language that refers to a guidance manual for BMP design and implementation. The recommended manual should contain sizing criteria, performance criteria, and guidance on selection and location of BMPs. The manual and preferred BMPs should be available to project applicants early in the planning phase of a project. The standards should include guidance for proper district or subarea design (e.g., a redevelopment district), proper site design (e.g., sending gutter water into landscaping), source control (e.g., covering trash cans), and stormwater treatment BMPs (e.g., sand filters).

Plan Review and Approval Procedures
The review of post-construction plans should be based on formal review specifications, a checklist, or similar criteria. Plan review staff should document the BMPs considered, whether they were addressed on the plans, and any identified deficiencies. Some permittees use contract staff to review some or all plans. Be sure to review plans completed by contractual as well as permittee staff.

TIP:

Review several types of recent development projects that have gone through the review process. Include small residential and large commercial development projects as well as both new development and redevelopment projects, if applicable.

Post-Construction BMP Inventory
The permittee should maintain inventory detailing the types and locations of planned and installed post-construction BMPs projects. There may be two types of inventories: (1) a traditional database for site-level structural BMPs, and (2) a tracking system for planning or development practices BMPs. Ideally, both types of information would be managed in a database and linked to a GIS for optimum tracking. Structural post-construction BMPs must be inspected and maintained to remain effective. Tracking the locations, conditions, ages of the structural BMPs as well as the inspection findings is critical to ensuring the proper maintenance occurs for the life of the BMP. For planning-related BMPs, tracking systems may be linked to code revisions or development permits. Note that some revisions may occur with State or regional codes or standards, which might require a separate tracking system.

BMP Inspection and Maintenance
Proper BMP installation, operation, and maintenance are critical to optimizing the effectiveness of post-construction BMPs. If BMPs are not maintained, they can become concentrated sources of pollutants themselves. Comprehensive "as built" inspections are necessary at the conclusion of a project to ensure the BMP has been built properly and regular inspections are critical to ensure the BMP is being maintained as needed. Permittees may inspect private BMPs or require that the owners/operators of the facility inspect them through maintenance agreements or other mechanisms. Often, permittees require that facility owner/operators submit documentation detailing inspection dates and maintenance performed.

Enforcement
Legal authority is needed to require owner/operators to maintain BMPs. This can be outlined in a maintenance agreement or other binding contract, but it must be included in municipal code or regulation as well. The permittee should have available enforcement actions to require the owner/operator to perform necessary inspections and maintenance. Some permittees have authority to abate problem facilities (i.e., maintain the facility and charge the owner/operator) if necessary.

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Public Construction Projects

Municipal permittees must apply the same local requirements to public construction projects as is required of private projects. Some municipal permittees develop and design public construction projects in-house without direct involvement from the department that reviews most private construction projects; therefore, it is important that the public project designers are trained and proficient in stormwater BMPs as well. If the permittee hires outside designers for public projects, stormwater guidelines should be provided to them to ensure compliance with local and general permit requirements. Permittees should have an inventory of publicly owned stormwater management and treatment facilities and should have an inspection and maintenance program established.

TIP:

A review of existing codes and land development regulations can be extensive. The following are previous efforts to evaluate development codes that may be helpful in this process:

Center for Watershed Protection Codes and Ordinances worksheet
http://www.cwp.org/COW_worksheet.htm

EPA list of smart growth scorecards
www.epa.gov/smartgrowth/scorecards/project.htm

King County Washington "Built Green" Checklists
http://www.builtgreen.net/checklists.html

Training and Education

Permittees should provide training to plan review and BMP inspection staff (if applicable). This training should include classroom presentations and in-field training as well as follow-up evaluations to demonstrate that the training was effective.

Evaluating Post-Construction Programs

Development can significantly alter landscapes by increasing imperviousness (e.g., roofs, driveways, parking lots) and changing drainage patterns, thereby increasing the volume and velocity of runoff from the site. Increased volume leads to degradation of receiving waters and increased flood frequency. Stormwater from newly developed impervious areas can also contain a variety of pollutants that are detrimental to water quality, such as sediment, nutrients, road salts, heavy metals, pathogenic bacteria, and petroleum hydrocarbons. Two groups of BMPs can minimize the impacts of stormwater from new development and redevelopment projects: nonstructural site design or source control measures, which prevent or reduce the generation of pollutants, and structural treatment BMPs that detain and treat stormwater to control the volume of runoff and reduce pollutant loading to receiving waters.

Postconstruction stormwater impacts are not likely to be controlled entirely with site-level BMPs. Thus regional, district and subarea planning is increasingly recognized as a means to control overall imperviousness. Postconstruction BMP standards are likely to include many interlinking requirements that affect common land development practices, such as street design, community layout, and land use mix. The aim of such standards is to revise building practices that drive impervious surface generation within a watershed to reduce the effects of the built environment at a meaningful scale. Note that this approach to stormwater management is new, so an evaluation of this area may address future planning activities in addition to current activities.

There are several approaches permittees may use to implement planning-level BMPs, each of which is are appropriate in different development settings and offers a unique set of benefits. Four of these approaches or frameworks—redevelopment, infill, compact design, and conservation development—are described below and may be found in a comprehensive plan or SWMP:

- *Redevelopment*: Under this framework, a permittee is looking to redevelop already impervious districts and lots. Programs to support redevelopment include downtown redevelopment plans, vacant property reforms, brownfields redevelopment, and corridor redevelopment plans. These programs are typically more successful when supported by financial programs (e.g., tax incentives and grants), policy support (e.g., priority infrastructure), and technical assistance and staffing support.

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- *Infill*: Infill development, like redevelopment, takes place in areas supported by existing road, water, and sewer infrastructure. Infill development tends to have a smaller footprint than conventional new development projects. Infill sites, whether individual lots or larger parcels, are generally undeveloped and may be able to manage stormwater flows onsite. The policies described above for redevelopment would apply to infill development, as well as any policies to mitigate flows from infill.

- *Compact Design*: Compact designs seek to meet development needs on a smaller footprint to achieve both development and conservation goals. These designs can be used in redevelopment (e.g., transit-oriented development) or new development (e.g., cluster housing or rural or urban villages) situations and are suitable in urban, urbanizing, and rural settings. The key to successful designs lies in coordinating interlinking aspects of transportation, land use, and open spaces. This framework is particularly amenable to design guidelines for a district, including stormwater management.

- *Conservation Development*: This framework, typically used in rural areas or along the urbanizing fringe, is targeted for the lowest impact development. Successful programs will be tied to specific conservation objectives (e.g., habitat preservation, groundwater recharge) and will link the rural development scheme with rural economic development objectives.

TIP:
When permittees review development codes to identify areas where stormwater benefits can be incorporated, the following are typically examined:

- ✓ Review of parking demand or indications of overly high parking ratios
- ✓ Overlarge setbacks from the street or other lot lines
- ✓ Minimum lot size requirements in urbanizing areas
- ✓ Highly separated uses embedded in codes
- ✓ Subdivision and street requirements
- ✓ A review of barriers to low impact development, redevelopment or other land efficient forms, including State or institutional barriers and standards

When evaluating the post-construction, new and redevelopment component of a SWMP, it is helpful to discuss the process chronologically in the order that a project would occur. Ask the permittee's planning staff to walk you through the process as if you were a developer proposing a project. Discuss what post-construction stormwater BMPs are required for new and redevelopment projects, how and when developers are informed of the stormwater requirements in the initial planning stages, how plans are reviewed for stormwater standards, on what legal authority requirements and standards are based, what is required for plan approval, how the BMPs are inspected during and after construction, and how the permittee ensures that BMPs are adequately operated and maintained.

Typically, an on-site evaluation for post-construction BMPs will involve interviewing planning and engineering staff. Planners usually work with developers to determine what is required for plan submittal, but engineering staff may actually review the plans and verify design calculations.

<u>Before the Program Evaluation</u>
To prepare for the post-construction program evaluation, you should review or obtain the following information:

- **NPDES MS4 permit provisions.** Review the permit requirements for the post-construction program to identify any specific requirements (such as a design standard for post-construction controls). The NPDES permit will serve as the primary basis for the program evaluation.

Pre-Evaluation Checklist
- ✓ MS4 permit provisions
- ✓ SWMP provisions
- ✓ Most recent annual report
- ✓ Comprehensive plans
- ✓ Economic development plans

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- **SWMP provisions.** The permittee's SWMP planning document(s) will describe the activities and BMPs the permittee has committed to implement and include measurable goals that provide deadlines for program implementation.
- **Latest annual report.** The annual report should be reviewed to identify past activities and help the inspector become familiar with the permittee's program.

Records Review

The following records might help in evaluating the compliance and performance of the permittee's post-construction program. Ask for copies of relevant information where it will help in writing a report or documenting a permit violation.

Documentation	What to Look For
Local ordinances	One or more of the following ordinances may be used by a permittee to regulate post-construction BMPs ▪ Grading ordinance ▪ Stormwater ordinance ▪ Landscaping ordinance ▪ Other portions of the code used by code enforcement staff to enforce aesthetic concerns ▪ Zoning codes or land development regulations (where the permittee chooses to amend existing codes to implement post-construction improvements) ▪ Economic development and capital improvement plans that support the district or comprehensive planning goals ▪ Design guidelines for larger development areas (e.g. subdivisions, mixed use districts, downtown redevelopment programs) ▪ Local and district open space and park plans that serve to support the post-construction program
Comprehensive or General Plans	Review for language that requires consideration of water quality concerns when evaluating development projects
Design standards, BMP manuals, or fact sheets	These can be state or local standards or be taken from a non-regulatory source
Post-construction plans reviewed and approved by the permittee	Where possible, try to review the plans for projects that you will also visit during the field portion of the evaluation
Post-construction BMP tracking system	Database or other system used to track the location of post-construction BMPs that have been installed and the maintenance performed or required for each BMP

Elements to Address During the Program Evaluation

Although not specified in detail in NPDES regulations, a successful post-construction program will generally be composed of the following elements:

- Ordinance/legal authority
- Comprehensive or master planning
- Post-construction BMP standards

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- Plan Review and approval procedures
- Post-construction BMP inventory
- BMP inspections
- Enforcement
- Public construction projects
- Training and education

The common program elements are the key issues to consider during the review. For each of the elements listed above, this Guidance presents common program activities and questions to consider during the program evaluation. The questions are suggested for you to address each program component. Of course, a comprehensive program evaluation must be tailored to the specific issues associated with each permittee and should include more specific questions regarding the permittee's permit structure and management challenges.

ORDINANCE/LEGAL AUTHORITY

- ✓ What legal authority does the permittee have to require post-construction BMPs on development sites and to ensure maintenance?
- ✓ Does the permittee's legal authority address post-construction requirements for all projects disturbing one acre or more?
- ✓ Does the legal authority require site design, source control, and stormwater treatment BMPs?
- ✓ What exemptions does the ordinance or other legal authority allow?
- ✓ What procedures for alternative compliance (i.e., planning-level BMPs and other non-structural controls) are allowed?
- ✓ Does the legal authority authorize the permittee to require stormwater management plans to address post-construction impacts?

COMPREHENSIVE OR MASTER PLANNING

- ✓ Does the comprehensive or master plan include elements encouraging the control of water quality or quantity (e.g., flooding) from existing or new developments?
- ✓ Does the plan include elements to encourage protection of natural features (such as wetlands, buffer strips, etc.)?
- ✓ Does the comprehensive or master plan include elements to encourage minimization of impervious surfaces?
- ✓ Does the comprehensive plan include elements to encourage open space?

POST-CONSTRUCTION BMP STANDARDS

- ✓ What technical guidance (e.g., BMP manual) does the permittee use as the standard for design and selection of post-construction BMPs? It is not necessary to do a thorough review of the manual or standards used by the permittee. Question the planners regarding the following key items:
  - o Are project proponents required to follow the technical manual?

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- Does the guidance provide siting and use criteria for the BMPs to ensure proper and adequate BMPs are being selected and implemented?
- Does the guidance provide siting and use criteria for BMP selection based on the development context (i.e., BMP selection appropriate for ultra urban-areas versus those more appropriate for more rural settings with larger parcels)?
- Are pollutants of concern that are typically generated by the proposed development type considered when selecting or approving BMPs?
- Does the technical manual provide guidance on sizing, performance, and location of BMPs?
- When was the BMP manual last updated?

✓ Does the permittee have different requirements or standards for different types of developments (e.g., specific post-construction requirements for gas stations or automobile repair facilities)?

✓ Does the permittee have design manuals related to land-efficient site designs (e.g. better site design, better models for large retailers)?

✓ Does the permittee promote source control and site design standards to reduce the generation of pollutants in addition to treatment BMPs?

✓ Does the permittee include in standards and manuals specifications for innovative site design practices, such as low-impact development and other techniques that manage runoff on-site?

✓ Are project applicants encouraged or required to use vegetative BMPs that promote infiltration, such as swales, biofiltration practices, etc., where possible?

✓ Does the permittee offer financial incentives to support post-construction stormwater goals (e.g., programs to support redevelopment, such as enterprise zones, or stormwater utility credits)?

PLAN REVIEW AND APPROVAL PROCEDURES

✓ What is the project size threshold for the permittee to require post-construction BMPs?

✓ Does the permittee apply standard conditions that incorporate post-construction installation and maintenance requirements into its plan review process?

- Obtain a copy of the standard conditions. Do they specifically address post-construction stormwater management?

✓ Do plan reviewers use specific criteria or a checklist when reviewing plans?

✓ Does the permittee consider pollutants of concern or whether the project discharges to a 303(d) listed impaired water when determining which BMPs are required?

✓ Does the permittee consider such regional concerns as smart growth initiatives, watershed master plans, and other larger-scale planning efforts to ensure that each new development and redevelopment plan is consistent with the goals of these initiatives?

✓ When reviewing plans approved by the permittee:

TIP:

Select 2 to 3 approved projects with post-construction BMPs to review with the permittee. Try to choose different project types (residential, commercial) and sizes. Also review at least one public project plan to see if the permittee is applying adequate standards to municipal developments.

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- Look for whether adequate BMPs are included on plans, details, and drawings, what types of standard conditions or notes are included, whether maintenance requirements are specified, and whether the location of BMPs would hinder maintenance.
- Look for BMPs that may not be easily characterized, in particular the comprehensive planning and land-efficient planning BMPs.
- For commercial/industrial projects, review whether adequate source control BMPs are required on plans.
- Were comments provided by the permittee to the project proponent reasonable and appropriate?

✓ What types of projects must be reviewed by the permittee for post-construction stormwater controls? Does the permittee have a process to identify priority projects identified in the MS4 NPDES permit?

✓ What types of standards or technical guidance do the permittee's reviewers use to review projects?

✓ Does the permittee condition improvements to existing developments with requirements for post-construction stormwater controls? How are these redevelopment requirements triggered?

POST-CONSTRUCTION BMP INVENTORY

✓ How does the permittee track the installation and maintenance of post-construction BMPs?

✓ What information is collected?

- Location
- Owner/operator
- Recommended maintenance schedule
- Inspection findings

BMP INSPECTION AND MAINTENANCE

✓ Does the permittee require maintenance agreements for all projects with post-construction BMPs?

✓ Are "as-built" inspections required at the conclusion of a development project?

- Do staff conduct these inspections or are they self-certified?

✓ Does the permittee inspect private facilities or require inspections by owner/operators?

✓ If the permittee performs the inspections, how often are they performed?

✓ If owner/operators are required to inspect and maintain their BMPs, how is this authorized? Through a MOU? Through conditions of approval? Through another type of agreement?

✓ How does the permittee ensure inspections are occurring?

- Does the permittee send reminder notices?
- Does the permittee require the owner/operator to submit inspection reports?

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ENFORCEMENT

- ✓ How does the permittee require proper maintenance and repair after the inspection?
- ✓ What types of enforcement actions are provided by ordinance (e.g., notices of violation, abatement)?
- ✓ Is the permittee's enforcement authority limited (e.g., limits on the dollar amount of fines, inability to issue civil penalties)?

PUBLIC CONSTRUCTION PROJECTS

- ✓ Does the permittee use post-construction BMPs for public projects?
- ✓ Has the permittee instituted a pilot program to test and showcase innovative BMPs on public property or in public buildings?
- ✓ Are they tracking the location, inspection history, and condition of the BMPs?
- ✓ Who inspects them? How often?

TRAINING AND EDUCATION

Training for staff

- ✓ Are plan reviewers trained on post-construction BMPs and requirements?
- ✓ What type of training do staff performing "as built" and post-construction inspections receive?
- ✓ How often are the trainings conducted?
- ✓ How many staff have been trained?
- ✓ What type of training or education does the permittee provide to city-contracted developers and engineers on post-construction requirements?

Developer and plan designer education

- ✓ What types of educational materials have been developed and distributed to developers and designers regarding post-construction BMPs and application requirements?
- ✓ How are the materials distributed? At the permit desk? During inspections?
- ✓ What type of training does the permittee provide or advertise to local developers and designers?
  - o How often is this training conducted?
  - o How many developers and designers have been trained?
- ✓ Are they required to attend?

<u>In-Field Program Evaluation Activities</u>
In-field evaluation activities primarily focus on verifying that structural and source control BMPs approved by the permittee were installed and are being maintained properly in the field. Select several completed projects that were subject to post-construction requirements. Take along the approved plans so that the locations and types of BMPs can be verified.

Note whether BMPs are installed as designed or if BMPs have been modified or removed after the project has been completed. For example, trash storage areas could have been modified after installation, slopes might have become destabilized, or storm drain stenciling could have been removed or become illegible.

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In addition, in-field evaluation activities should include inspections of publicly owned stormwater BMPs, such as detention basins, to verify that they are being adequately maintained.

Common Issues Identified During Program Evaluations

The following are some areas where past on-site evaluations have found problems in post-construction programs. These areas should be closely considered during evaluations:

- ✓ The plan review staff lack training on design requirements for development standards and conditioning of new development projects.
- ✓ The permittee lacks review criteria, checklists, or a formal plan review process to assist plan review staff in reviewing development projects.
- ✓ The permittee does not assess BMPs for effectiveness at more than one scale (e.g., at both the site and watershed scales).
- ✓ The permittee institutes blanket BMP requirements (i.e., those that apply to all projects) that do not take into account the development setting.
- ✓ The permittee institutes BMP requirements that act as unintended barriers to better models for development and redevelopment.
- ✓ The permittee developed its program from a "Menu of BMPs" that has resulted in BMPs that are easy to administer but are not the most effective or do not address target stressors.
- ✓ The permittee does not consistently condition plans with post-construction stormwater controls.
- ✓ The permittee does not require inspection and maintenance of post-construction controls.
- ✓ The permittee lacks a system to track approved structural and source control BMPs for inspections and ongoing maintenance.
- ✓ The permittee's BMP tracking system is based on conventional, structural measures that are more readily quantified than non-structural techniques that work on a watershed basis, such as comprehensive planning or improved street designs.
- ✓ The permittee has not updated approved BMP lists to reflect advances in low impact development or comprehensive planning-related BMPs.

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4.6 Industrial/Commercial Facilities

Regulatory Requirements

Applicable federal regulations for the NPDES stormwater Phase I and Phase II MS4 regulations are listed at right. NPDES MS4 permits must address these requirements and often include more specific state requirements. This program area is mainly applicable to Phase I MS4 permittees; Phase II MS4 permittees address stormwater discharges from industrial facilities and commercial businesses as part of their education programs.

Federal Regulations

NPDES MS4 permits must address these requirements and often include more specific state requirements:

✓ Phase I MS4 Regulations
40 CFR 122.26(d)(2)(iv)(C)
40 CFR 122.26(d)(2)(i)(A)
40 CFR 122.26(d)(2)(ii)

✓ Phase II MS4 Regulations
40 CFR 122.34(b)(ii)

Resources

✓ EPA Menu of BMPs
www.epa.gov/npdes/stormwater/menuobmps

✓ Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices
www.epa.gov/npdes/pubs/contents_indguide.pdf

✓ Sacramento County Industrial Stormwater Compliance Program
www.sactostormwater.org/industrial/compliance.asp

✓ Multi-Sector General Permit
www.epa.gov/npdes/msgp

General Permits

To minimize the impact of stormwater discharges from industrial facilities, the NPDES program includes an industrial stormwater permitting component. Operators of industrial facilities included in one of the 11 categories of stormwater discharges associated with industrial activity that discharge or have the potential to discharge stormwater to an MS4 or directly to waters of the United States require authorization under an NPDES industrial stormwater permit. Construction activity is one of these 11 categories, but because of the nature of construction stormwater controls, the category is discussed separately from the other 10 categories. Most states are authorized to implement the NPDES stormwater permitting program. EPA remains the permitting authority in several states and territories, on Indian Country lands, and at some federal facilities.

For those areas where EPA is the permitting authority, the **Multi-Sector General Permit (MSGP)** provides facility-specific requirements for many types of industrial facilities with a single permit. The permit outlines steps that facility operators must take prior to being eligible for permit coverage, including development and implementation of a SWPPP.

It is important to note that some permittees will also have coverage under industrial stormwater general permits or have individual permits for maintenance facilities that fall under one of the covered industrial categories, such as landfills, waste transfer stations, or transportation facilities. Please refer to the "MS4 Maintenance Activities" section of Conducting an Evaluation for information regarding municipal facilities that may also require industrial stormwater permit coverage.

Common Activities

The industrial and commercial facilities program component can be implemented by various departments and staff. Many municipal permittees use existing pretreatment and restaurant inspectors to fulfill the stormwater requirements. Some permittees choose to hire outside consultants to perform inspections and maintain the inventory of facilities.

Legal Authority

Many municipal permittees have adopted stormwater ordinances that outline general or specific discharge prohibitions that apply to industrial and commercial properties. These ordinances should list discharge exemptions, inspection requirements, and penalties for non-compliance. Some permittees, however, must

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rely on multiple existing codes (i.e., health, building, hazardous materials) designed to protect health and human safety. In these cases, the program coordinator and inspection staff should be able to articulate the combination of codes that provide the authority to inspect, prohibit, or stop illegal discharges, require BMPs, and enforce instances of noncompliance.

Facility Inventory

The types of industrial and commercial facilities that a permittee needs to inspect can vary significantly from permittee to permittee. Some localities may have large industrial areas with few commercial businesses, while others may have a large number of restaurants and retail businesses but no industrial facilities at all. Still other permittees may have a mix of many different types of industrial and commercial facilities. Permittees should characterize the facilities and prioritize them based on their potential impact on stormwater quality, and the inspection program should be based on this prioritization approach.

Many permittees have developed a database to inventory industrial/commercial facilities and manage the inspection program. The inventory can be created using multiple resources, such as the permitting authority's list of facilities that are covered under the state industrial general permit, business licenses, list of pretreatment significant industrial users, and phone books or other professional directories. As per the federal regulations, the inventory should be organized by watershed with a description (such as standard industrial classification (SIC) codes) that "best reflects the principal products or services provided by each facility which may discharge, to the municipal separate storm sewer, stormwater associated with industrial activity." The database inventory should include facility type, past inspection or enforcement results, proximity to receiving waters, potential pollutant sources on-site, and other pertinent information to assist in inspection prioritization and management. Many permittees use the same database to manage the construction inspection program as well.

Standards, BMPs, and Outreach

Many municipal permittees have stormwater ordinances that include specific BMPs or standards for industrial and commercial facilities to protect water quality and minimize stormwater pollution. Others have adopted pollution prevention standards for new or redevelopment of industrial/commercial facilities that are required through conditions of approval, improvement permits, etc. Phase I MS4 permittees have developed brochures, fact sheets, and posters to hand out to operators during inspections to educate them about appropriate BMPs. Many permittees have developed these materials in multiple languages to use in a variety of communities. Some permittees have Web sites with links to relevant outside resources for more information. Many permittees also acknowledge that educating facility operators is essential to implementing BMPs and minimizing stormwater pollution and should be done, not only during inspections, but also through workshops, conferences, and professional meetings.

Staff Training

To ensure that inspectors are knowledgeable and proficient in the newest and most effective approaches to minimizing stormwater pollution from industrial/commercial facilities, many permittees require annual BMP training for inspection staff. This training may be presented in-house or staff may attend trainings provided by the permitting authority or industry. It is important to cross-train any other staff (e.g., pretreatment, health department) used for stormwater inspections as well.

Inspections

Most effective industrial/commercial inspection programs maintain a complete facility inventory and group them according to priorities established by the permittee. An inspection frequency is determined based on priority, and a database is used to manage such information as inspection findings, enforcement actions, and required follow-up activities. Many permittees use and cross-train existing staff to perform industrial/commercial inspections, but some permittees may need to maintain an exclusive stormwater inspector due to a potentially large number of high-priority facilities. There should be an inspection

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standard operating procedure that has been formalized and documented. It should include a checklist to be used during the inspection and possibly a report format. Inspectors should be aware of federal, state, and local stormwater regulations that may apply to industrial/commercial facilities. Inspectors should be familiar with various types of BMPs commonly used at the types of facilities typically found in the permit area and should be able to educate facility operators about such BMPs. In addition, inspectors should understand and use the permittee's established enforcement escalation response plan to gain compliance as necessary. The inspection staff should be proficient in the enforcement escalation procedure and should properly document all enforcement actions accordingly. Inspections should be used not only to identify non-compliance issues, but as an opportunity to educate facility operators about proper stormwater BMPs.

Program Support and Resources

Permittees should have an established source of funding for their industrial/commercial facilities program, including adequate resources for frequent inspections. Funds can come from fees paid by the business owners. If general funds are used to support the program, permittees should ensure that industrial and commercial inspections are line-item appropriations not subject to reduction or elimination based on board politics or budget constraints.

Enforcement

The ordinance establishing legal authority for the industrial/commercial inspection component of the SMWP should define all stormwater discharge prohibitions, describe any exemptions or waivers, detail the enforcement escalation procedure, and outline any fines or other penalties for noncompliance. Inspectors should have the ability to levy a penalty such as a compliance directive, notice of violation (NOV), or administrative fine to the facility during an inspection if non-compliance is noted. Significant fines or penalties should be included in the ordinance for egregious violations or recidivism.

Evaluating Industrial/Commercial Inspection Programs

The evaluation of an industrial/commercial inspection program focuses on the permittee's legal authority to require and enforce their program, prioritization of facilities, and in-field inspection procedures. The evaluation should begin with a thorough review of the permittee's ordinances, standards, guidance, and other relevant written materials.

Before the Program Evaluation

To prepare for the industrial/commercial inspection program evaluation, you should review or obtain the following information prior to the evaluation:

Pre-Evaluation Checklist
- ✓ MS4 permit provisions
- ✓ SWMP provisions
- ✓ Most recent annual report
- ✓ List of NPDES facilities
- ✓ Inspection reports

- **MS4 NPDES permit provisions.** Review the permit requirements for the industrial/commercial inspection program to identify any specific requirements (such as a minimum inspection frequency). The NPDES permit will serve as the primary basis for the program evaluation.
- **SWMP provisions.** The permittee's SWMP planning document(s) will describe the activities and BMPs the permittee has committed to implement and may include measurable goals that provide deadlines for program implementation.
- **Latest annual report.** The most recent annual report should be reviewed to identify past activities and help you become familiar with the permittee's program.
- **List of NPDES industrial facilities.** Try to obtain a list of industrial facilities in the permit area that are covered under an industrial stormwater general permit issued by the permitting authority or are included in the pretreatment program of local or regional POTWs. This list can be used during the program evaluation to determine whether the permittee is including these facilities in

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the inspection program and to understand the types of facilities that are found in the permit area. The list can also help identify potential sites for field inspections. The list can also be crosschecked with a similar list requested and obtained from the permittee.

- **Industrial inspection reports.** Review reports from inspections performed by the permitting authority and talk to state or EPA inspectors to determine if there have been past industrial stormwater violations at facilities located in the permit area.

Records Review

During the evaluation, you should ask for copies of relevant information to assist in writing the report or documenting a permit violation. The following records might help in evaluating the compliance and performance of the permittee's industrial/commercial inspection program.

Documentation	What to Look For
Local ordinances, regulations, or policies that might apply to industrial/commercial facilities	▪ Stormwater ordinance ▪ Health codes ▪ Municipal code sections dealing with aesthetics; vehicles; dumpsters, trash, solid waste; and litter, trash, sweeping ▪ Building codes
Enforcement escalation procedure or response plan	Flow chart or procedure that specifies a process by which fines can be levied and legal action taken against facility operators or business owners who violate stormwater rules and ordinances
Tracking system	Database or other system used to track the following information: ▪ The number and type of industrial facilities in the permit area ▪ Prioritization scheme or other method that determines inspection schedule and frequency ▪ The number, frequency, and results, along with follow-up actions resulting from inspections ▪ The number and type of enforcement actions at facilities
Examples of inspection reports	▪ Hand-written field notes and formal write-ups if both are used
Examples of enforcement files or cases	▪ Records should document enforcement and follow-up activities ▪ Review both a completed file and one that is in progress if possible
Training	▪ Review any records documenting how often training has been provided to municipal inspectors, who prepared and delivered the training, who attended, and how long the training lasted, as well as any examples of the training materials used ▪ Educational information, brochures, or other BMP guidance used by staff or distributed to facility operators

Elements to Address During a Phase I MS4 Program Evaluation

Although not specified in detail in the NPDES Phase I MS4 regulations, a successful industrial/commercial inspection program will generally be composed of the following elements:

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- Legal authority
- Facility inventory/prioritization
- Standards, BMPs, and outreach
- Staff training
- Facility inspections
- Program support and resources
- Enforcement/referrals

The common program elements are the key issues to consider during the review.

LEGAL AUTHORITY

- ✓ Does the Phase I permittee have the authority to require industrial and commercial facilities to implement stormwater BMPs? Does the Phase I permittee have the authority to conduct inspections and enforce requirements?
    - o What ordinance(s), code, or policy provides this legal authority?
- ✓ What types of facilities are covered under this legal authority?
- ✓ Who (e.g., specific staff, department, etc.) has the authority to enforce the ordinances and/or inspect the facilities?
- ✓ What exemptions does the ordinance or other legal authority allow?

FACILITY INVENTORY

- ✓ Has the permittee completed an inventory of industrial/commercial facilities discharging to the stormwater system?
- ✓ What types of facilities are included on the inventory?
- ✓ What sources were used to create the inventory?
    - o Facilities that filed NOIs for EPA MSGP or state industrial general permit coverage?
    - o Significant industrial users within the pretreatment program?
    - o Business licenses?
    - o Phone book?
    - o "Windshield" survey?
- ✓ Does the inventory include all the industrial/commercial facilities subject to the industrial general permit?
    - o Does the permittee periodically check to see if new facilities that must be covered by an industrial stormwater general permit have filed an NOI?
    - o What is the process for notifying the permitting authority of non-filers?
- ✓ If applicable, does the inventory include all the facilities specified as required in the MS4 NPDES permit?
- ✓ How is the inventory updated? How often?

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- ✓ What information is maintained about the facilities?
- ✓ How is the inventory maintained and stored?
- ✓ Does the permittee prioritize the facilities?
- ✓ Is the prioritization based on facility type, past inspection or enforcement results, proximity to receiving waters, potential pollutant sources on-site, and so forth?
- ✓ Is the prioritization used to determine frequency of inspections?
- ✓ Has the permittee mapped the locations of prioritized facilities to cross-reference reports of dumping, illicit discharges, or other water quality issues?

STANDARDS, BMPS, AND OUTREACH

- ✓ Has the permittee adopted standards or BMPs that industrial/commercial facilities are required to implement (e.g., all car dealerships must install a wash rack plumbed to the sanitary sewer)?
- ✓ Are the requirements for new developments only or are they triggered by improvements of existing facilities? Are there schedules for implementing retrofits?
- ✓ Are these standards applicable to existing facilities, new facilities, or both?
- ✓ Does the permittee refer facility operators to specific stormwater BMP or standards guidance documents?
- ✓ What type of educational program has been developed for industrial and commercial facility operators?
- ✓ What type of brochures, handouts, or guidance on BMPs is provided to these facilities by the permittee?
- ✓ When is this information provided? During inspections? During training events? During professional organization presentations?

STAFF TRAINING

- ✓ What type of training do the industrial and commercial inspectors receive?
- ✓ How often?
- ✓ If additional inspectors are used (e.g., food safety inspectors for restaurant inspections, pretreatment inspectors), are they trained specifically on stormwater BMPs and requirements? By whom?

INSPECTIONS

- ✓ Who performs inspections and for what types of facilities (e.g., health inspectors for restaurants, pretreatment inspectors for industrial facilities with a pretreatment permit)
- ✓ How often are industrial and commercial facilities inspected?
    - o How is the frequency determined?
- ✓ Does the permittee's industrial/commercial inspector(s) use a standard checklist during inspections?

TIP:
It is a good idea to ride with the inspector during the in-field portion of the evaluation. This is a good time to talk informally about the any program, staffing, and noncompliance issues.

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- ✓ Is a report written after the inspection? How is the inspection documented in the file?
- ✓ Does the permittee verify NPDES permit coverage for facilities?
- ✓ For industrial facilities, does the inspector review the SWPPP and monitoring data during the inspection?
- ✓ Does the permittee refer non-filers to the permitting authority?
- ✓ Do inspectors provide educational materials during inspections? What types?
- ✓ If multiple departments or agencies perform inspections, how is information transferred or cataloged?

PROGRAM SUPPORT AND RESOURCES

- ✓ Does the program have a dedicated source of funding to support inspectors?

ENFORCEMENT

- ✓ In instances of noncompliance, do the inspection staff use a formalized, approved enforcement escalation procedure?
- ✓ How was the enforcement escalation procedure developed? Is it used? Is it effective?
- ✓ Who is authorized to apply various enforcement procedures (e.g., NOVs, fines)?
- ✓ What types of penalties are readily available to the inspection staff?
- ✓ What is the most common method of gaining compliance (e.g., NOVs, fines, abatement)?
- ✓ Have the permittee describe a recent non-compliance issue at an industrial/commercial facility to assess how compliance was achieved.
- ✓ At what point are non-compliance cases referred to the NPDES permitting authority? How many have been referred in the last 12 months?

<u>In-Field Phase I Program Evaluation Activities</u>
To determine whether the permittee is adequately inspecting for compliance at industrial/commercial facilities, it is necessary to observe the inspectors “in action.” Discourage inspectors from merely describing the inspection process; you need to observe an actual inspection in process.

Schedule at least a half-day for this in-field activity being sure to allow enough time for travel between facilities. If the permittee is conducting both commercial and industrial inspections, try to observe inspections at each type of facility. If the permittee has more than one inspector, accompany a different inspector at each type of facility. In general, small, less complex facilities are better to visit than large industrial facilities. Work with the permittee to select typical facilities. For example, if the vast majority of facilities are vehicle maintenance facilities, visit several of those. It should be made clear that the inspectors are to conduct the inspections; you are only to observe.

Try to limit the number of people that attend each inspection. Too many staff can overwhelm a small facility, making it harder for the inspector to conduct a representative inspection. Discuss which facilities are to be inspected early in the evaluation process. This will allow enough time to schedule inspection staff and arrange transportation logistics.

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Many times, inspectors do not participate in the office evaluation, so the in-field activity is a good opportunity to ask the same questions to see if the answers are consistent. Also, many inspectors are more open to discussing "problems" with the program than are stormwater program managers. Try to spend some time with the municipal inspector talking informally about the program.

First and foremost, during a site visit the municipal inspector should be able to determine whether illegal discharges are occurring or could be imminent from industrial/commercial facilities. Visiting a site during a rain event is optimal to observe potential issues. In the event that the inspector does feel immediate action is necessary, it is important that the inspector either have the legal authority to cease discharges and require immediate BMPs, or be aware of who does have this ability and under what legal authority. The inspector should be aware of all applicable ordinances, as well as administrative, civil, and criminal recourse in the event of non-compliance. The inspector should be aware of the enforcement escalation procedure or plan as well.

As the inspector conducts the industrial or commercial inspection, observe the following:

- ✓ Is the inspector knowledgeable about stormwater BMPs, requirements, and ordinances?
- ✓ Is the inspector familiar with the applicable industrial stormwater general permit (state or federal)?
- ✓ When inspecting an industrial facility, does the inspector check whether the facility has a waste discharge identification number, and does the inspector review the facility's SWPPP?

TIP:

It is a good practice to visit at least one facility with historic or existing compliance issues. This can be an excellent way to demonstrate how effective the inspection and enforcement program is, and often the inspector will welcome outside assistance and advice.

- ✓ Does the inspector use a checklist or otherwise document inspection findings in the field?
- ✓ What kind of written feedback is provided to the operator and within what timeframe do violations need to be addressed?
- ✓ What kind of report is generated as a result of the inspection? Does it detail all problems found at the facility or does it document only that the inspection occurred?
- ✓ Are findings from inspections tracked in a central location or database?
- ✓ How does the inspector track follow-up inspections or enforcement actions?
- ✓ Is the inspector thorough? Does the inspector walk the entire site and identify all potential pollutant sources?
- ✓ Does the inspector note flow pathways and check for discharges from the facility at outfalls or to storm drain inlets?
- ✓ Is the inspector able to educate the facility manager on proper BMPs or requirements? What educational material is provided?

Document all findings in the field in as much detail as possible. An Industrial/Commercial Inspection Worksheet has been included as Appendix C to assist in this documentation.

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Elements to Address During a Phase II MS4 Program Evaluation

- ✓ Has the permittee identified specific business sectors that might be a significant source of stormwater pollutants to the MS4?
- ✓ What type of educational program has been developed to address stormwater discharges from industrial facilities and commercial businesses?
- ✓ What type of brochures, handouts, or guidance on BMPs is provided to these businesses by the permittee?
- ✓ How is this information provided? As a result of complaints or illicit discharge incidents? During training events? During professional organization presentations?
- ✓ How does the permittee evaluate the effectiveness of education and outreach efforts in terms of measuring changes in stormwater management and pollution prevention practices at industrial facilities and commercial businesses?

Common Issues Identified During Program Evaluations

The following are some typical problem areas associated with the industrial/commercial SWMP component. These areas should be closely considered during evaluations:

- ✓ The permittee has yet to fully implement an inspection program for industrial and/or commercial facilities.
- ✓ The inventory of industrial/commercial facilities is not complete and is not regularly updated.
- ✓ Facilities have not been prioritized according to water quality threat.
- ✓ The permittee has not conducted outreach to facilities on the types of stormwater BMPs that should be implemented.
- ✓ Industrial/commercial inspectors have not been trained on stormwater BMPs and requirements.
- ✓ The permittee does not have a process to identify non-filers to the permitting authority.
- ✓ The permittee lacks written procedures and standards for conducting industrial/commercial inspections and for enforcement.
- ✓ The permittee cross-trains existing inspectors (e.g., pretreatment, food safety) to perform stormwater inspections but does not provide adequate time and resources to perform them.

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4.7 Illicit Discharge Detection and Elimination

Federal Regulations

- ✓ Phase I MS4 Regulations 122.26(d)(2)(iv)(B)
- ✓ Phase II MS4 Regulations 40 CFR 122.34(b)(3)

Resources

- ✓ Menu of BMPs www.epa.gov/npdes/stormwater/menuofbmps
- ✓ Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments www.cwp.org/
- ✓ Illicit Discharge Detection and Elimination Manual www.neiwpcc.org/PDF_Docs/iddmanual.pdf

Regulatory Requirements

EPA's federal regulations for the stormwater Phase I and Phase II MS4 regulations are listed at right. NPDES MS4 permits must address these requirements and often include more specific requirements.

Common Activities

Legal Authority

Permittees must develop and implement an effective program to prohibit illicit discharges from entering the MS4. The prohibition of illicit discharges should be linked to legal authority to ensure proper enforcement. This legal authority can be included in public health and safety regulations, specific stormwater regulations, sewer use bylaws, local ordinance, or a combination of several parts of the code.

Mapping

Phase I MS4 permittees should have developed a map of known municipal outfalls discharging to waters of the United States as part of their source identification conducted for Part I of their NPDES application. Phase II permittees are required to develop a map of outfalls and the names of locations of all waters of the United States that receive discharges from those outfalls. To be useful, these maps should also include the storm drain pipe network and catch basin locations, along with other relevant information such as the location of stormwater treatment facilities, watershed boundaries for each outfall, critical land uses and pollutant sources, and municipal facilities. Outfalls and drainage areas should be prioritized in order of their potential to be a source of illicit discharges. Ideally, this information would be managed in a database linked to a GIS.

Field Screening

Field screening of outfalls during dry weather can help to identify illicit discharges in priority areas. Of particular concern are areas of older development, areas with a high concentration of automobile-related industries, and areas with high concentrations of industrial facilities among others. Documentation of the illicit discharge detection and elimination (IDDE) program component in the SWMP Plan should include a detailed summary of the departmental responsibility for field activities, frequency of inspections, inspection procedures, inspection equipment, and documentation procedures for field activities.

Investigation of Potential Illicit Discharges

Municipalities should have a written procedure for how they will locate, eliminate, and prevent illicit discharges to the MS4. The procedure should address both spills and illegal connections to the MS4 and should be available to all staff responsible for responding to illicit discharges. The procedure should also specify how spills and illicit discharge incidents are tracked.

Spill Response and Prevention

The purpose of spill response programs is to reduce the risk of spills and improve response and cleanup when they occur. These programs usually require coordination among fire, police, health, and public works departments. The departments responsible for implementing the program should be identified and the SMWP should address employee training, reporting procedures, spill containment, storage and

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disposal activities, documentation, and follow-up procedures. For each of these elements, particular attention should be given to good housekeeping and materials management practices. Procedures can be implemented through modification of ordinances and enforcement or through coordination with existing spill prevention or spill containment programs. Most permittees address this element through the development of a spill response plan.

Public Awareness and Reporting Program

Permittees should promote, publicize, and facilitate public reporting of illicit discharges or water quality impacts associated with discharges to the MS4 or receiving waters. Typical public awareness and reporting programs may include developing a hotline number, educating school students, using inserts in utility bills, and developing media announcements. Permittees should have a system in place to quickly route all public calls to appropriate staff, track the calls, and document response and enforcement, if used, for reporting purposes.

TIP:

IDDE public awareness efforts are often discussed during the evaluation of the public education and involvement program.

Proper Management of Used Oil and Toxics

Permittees should provide information on where the public can safely recycle or dispose of used oil and toxic materials to minimize illegal dumping.

Preventing Sanitary Sewer Discharges

Although not a specific requirement of Phase II programs, Phase I MS4 permittees are required to limit infiltration to the MS4 of seepage from municipal sanitary sewers. Many permittees have developed a sanitary sewer overflow program to address discharges from their sanitary sewers. Others have developed programs to promote proper maintenance of septic tanks.

Education and Training

Training for staff should include spill response procedures and procedures on how to locate, eliminate, and prevent illicit discharges. Permittees should also educate the public on the hazards of illegal dumping and illicit discharges to the MS4.

TIP:

Maintenance field crews are usually the best "eyes and ears" available to the permittee to detect illicit discharges and illegal dumping activities. It is important that the information observed in the field is communicated the appropriate staff for follow up and outreach.

Evaluating Illicit Discharge Detection and Elimination Programs

Common sources of illegal, non-stormwater discharges include sanitary wastewater, automobile maintenance waste products such as motor oil or antifreeze, laundry wastewater, household toxic substances, spills from car accidents, runoff from excess irrigation, and industrial sources of cooling waters, rinse water, and other process wastewater. Although these illicit discharges can enter the storm sewer system in various ways, they generally result from either direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g., infiltration into the storm drain system or spills). Illicit discharges can be further divided into those discharging continuously and those discharging intermittently.

Phase I NPDES MS4 regulations require that a program be developed to detect and remove illicit discharges into the storm sewer by prohibiting these discharges, field screening outfalls, investigating potential illicit discharges, controlling the infiltration of sanitary sewage into the storm sewer, and developing programs for spill response and prevention, public awareness and reporting, and used oil and toxics disposal.

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Typically, staff charged with implementing the IDDE SWMP component are from multiple departments and agencies, although this varies from permittee to permittee. The primary responsibility for detecting and investigating illicit discharges normally falls to the public works department. Public works field crews are in the field every day and are the best source of information about what is happening in the permit area. Also, public works departments often have access to the maps and equipment necessary to track discharges to their source. Normally, public works field staff are not authorized to use enforcement against dischargers, so code enforcement staff may be necessary to investigate cases. Many permittees use the fire department for cleanup of spills, and sometimes police departments are charged with manning a "hotline" for complaints called in by citizens and for ultimately investigating dumping or other illegal activities.

Before the Program Evaluation

To prepare for the IDDE program evaluation, an evaluator should review or obtain the following information prior to the evaluation:

Pre-Evaluation Checklist

✓ MS4 permit provisions
✓ SWMP provisions
✓ Most recent annual report

- **MS4 NPDES permit provisions.** Review the permit requirements for the IDDE program to identify any specific requirements, such as a proactive outfall screening. The NPDES permit will serve as the primary basis for the program evaluation.
- **SWMP provisions.** The permittee's SWMP planning document(s) will describe the activities and BMPs they have committed to implement and may include measurable goals that provide deadlines for program implementation.
- **Latest annual report.** The annual report should be reviewed to identify past activities and help you become familiar with the IDDE program.

Records Review

Consider reviewing the following records during the on-site evaluation to determine the permittee's capabilities and extent of implementation.

Documentation	What to Look For
Ordinance and policies	▪ Code which allows the permittee to prohibit illicit discharges from commercial, industrial, or residential sources ▪ Should include or reference an enforcement escalation policy
Enforcement escalation policy	▪ Should describe the process for eliminating the source of an illicit discharge and for obtaining recourse or abatement if necessary ▪ Should describe which staff are authorized to enforce the applicable ordinances and which enforcement mechanisms are available
Illicit discharge tracking records and databases	Database or other system used to track the following information: ▪ The number and type of illicit discharges located in the permit area ▪ Follow-up actions once discharges are located ▪ Locations of discharge incidents (e.g., on a map or in a GIS)

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Documentation	What to Look For
Dry-weather monitoring or screening records	▪ Describes the location and description of dry weather flows ▪ Monitoring data associated with a discharge ▪ Information about the source of a discharge and actions take to identify sources
Spill Response Plan and records	▪ These records may be maintained by a different agency such as the fire department, but the permittee should have access to the information and be provided a regular report of spills that impact the MS4
Recycled oil and household hazardous waste educational materials	▪ These materials may be presented during the public outreach part of the evaluation
Web site or other educational materials for reporting illicit discharges and dumping	▪ Review educational materials to determine if the general public has adequate information to identify and report illicit discharges ▪ Materials should have a reporting number that is viable 24 hours a day
Training records	▪ Training records should be available to document that the permittee's employees are regularly trained on recognize an illicit discharge

Elements to Address During the Program Evaluation

The NPDES regulations specifically require the following elements in an IDDE program for both Phase I and Phase II programs:

- Legal authority
- Mapping
- Field screening
- Investigation of potential illicit discharges
- Spill response and prevention
- Public awareness and reporting program
- Proper management of used oil and toxics
- Preventing sanitary sewer discharges
- Education and training

The common program elements are the key issues to consider during the review. For each of the elements listed above, this Guidance presents common program activities and questions to consider during the program evaluation. The questions are suggested for you to address each program component. Of course, a comprehensive program evaluation must be tailored to the specific issues associated with each permittee and should include more specific questions regarding the permittee's permit structure and management challenges.

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LEGAL AUTHORITY

- ✓ Does the permittee have an ordinance to prohibit illicit discharges and dumping to the MS4?
- ✓ What exclusions are included in this ordinance?
- ✓ What enforcement mechanisms are authorized in the event of an illicit discharge being detected?
- ✓ Has an enforcement escalation plan been developed?

MAPPING

- ✓ Does the permittee have a map showing storm drain pipes, outfalls, and storm drain inlets?
- ✓ Is the map readily available to the personnel who would respond to an illicit discharge incident?
- ✓ Does the permittee have a map of the storm drain system showing the locations of outfalls and municipally maintained structural stormwater controls?

TIP:

The IDDE mapping and field screening discussion may need to be coordinated with the discussion of MS4 maintenance activities. Ideally, the maps developed for public agency activities and for IDDE would be the same because often public works field maintenance crews are involved with inspections of outfalls.

FIELD SCREENING

- ✓ How are field screening areas identified?
- ✓ Are areas of the MS4 prioritized based on incidents of illicit discharges, land use, dumping reports, etc.?
- ✓ How often are field screening areas evaluated?
- ✓ Are outfalls inspected during dry weather to identify any potential dry-weather discharges? What does the inspection include?
- ✓ If dry-weather flows are present, are they being sampled to determine potential sources of pollutants? For what parameters?
- ✓ Does the permittee have a database (or other method) to track locations of illicit discharges, spills, and illegal dumping?
- ✓ Does the database track dry-weather monitoring or screening data?

INVESTIGATION OF POTENTIAL ILLICIT DISCHARGES

- ✓ Does the permittee have a procedure for tracing the source of an active illicit discharge?
- ✓ Who performs the investigations?
- ✓ Are these procedures written in a document or plan?
- ✓ What equipment does the permittee use to find illicit discharges?
- ✓ Does the permittee have equipment to videotape storm drains, or can it quickly contract out this work?
- ✓ How are investigations tracked?
- ✓ Has an enforcement response plan been adopted for use when an illicit discharge source has been located?

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- ✓ Review complete paperwork trails for several illicit discharge events (including a spill and an unknown illicit discharge in the storm drain system).
  - Was the full investigation process documented?
  - Are adequate enforcement actions taken when required?
- ✓ Does the permittee have the ability to collect cleanup and abatement costs from the responsible party?

SPILL RESPONSE AND PREVENTION

- ✓ Does the permittee have a clear set of procedures in place that details who is responsible for responding to spills and emergency situations?
- ✓ Do field staff have spill containment supplies in their vehicles, and are they trained to contain minor spills?
- ✓ Is a contractor or other entity available for larger spills?
- ✓ Does the permittee have the ability to collect cleanup and abatement costs from the responsible party?
- ✓ How are spills and spill response tracked to ensure adequate reporting?

PUBLIC AWARENESS AND REPORTING PROGRAM

- ✓ Does the permittee prioritize subwatersheds or neighborhoods and assign resources for educational efforts based on frequency and types of illicit discharge incidents?
- ✓ Is there a general phone number or "hotline" in the phone book or Web site that people can call to report a spill or dumping?
- ✓ What types of public outreach materials are available to publicize public reporting?
- ✓ Does the permittee track the number of public calls or complaints reporting illicit discharges?

PROPER MANAGEMENT OF USED OIL AND TOXICS

- ✓ Assess education activities, public information activities, and other appropriate activities to facilitate the proper management and disposal of used oil and toxic materials such as household hazardous waste.
- ✓ Does the permittee have recycling or collection facilities to which the public can take used oil and other toxics?
- ✓ What type of toxics does the permittee manage recycling and disposal?

PREVENTING SANITARY SEWER DISCHARGES

- ✓ Has the permittee conducted any studies or evaluations to determine whether sanitary sewers are contributing pollutants to the MS4?
- ✓ What is the extent of infiltration and inflow into the sanitary sewer system? How is this impacting discharge from the MS4?
- ✓ If the permittee also operates a sanitary sewer system, do they have procedures to prevent sewage spills and SSOs to the MS4?

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EDUCATION AND TRAINING

- ✓ What type of training do field staff (e.g., storm sewer maintenance crews, street sweepers) receive on spill response and IDDE?
- ✓ Are staff generally educated about what illicit discharges are and how to report them?

In-Field Program Evaluation Activities

IDDE activities can be difficult to evaluate in the field. If, during an on-site evaluation, the permittee receives a report of a potential illicit discharge, you could accompany the response staff (if allowed) to view their response procedures. Other in-field activities include viewing the equipment available for responding to illicit discharge events (e.g., response trucks, spill containment equipment, video equipment for investigating storm drains) and talking to field staff about their knowledge of and training in illicit discharge identification, reporting, and response.

Another field activity is observing the dry-weather screening program. Staff can take you to screening/sampling points to demonstrate the permittee's dry-weather sampling procedures. An Outfall Visual Inspection Worksheet has been included in Appendix C to assist in this field inspection.

Although field activities are somewhat subjective, during all field activities you should get a sense of whether the staff are aware of illicit discharges and proactive in identifying and addressing them. For example, if the industrial inspector observes obvious illicit discharges while driving to an inspection, does the inspector ignore these incidents or stop and report them?

Common Issues Identified During Program Evaluations

The following are some areas in which past on-site program evaluations have found problems with IDDE program components. Consider these activities as you conduct evaluations:

- ✓ IDDE programs are largely reactionary spill response programs and do not contain a proactive element to detect or prevent discharges.
- ✓ The permittee lacks adequate documented procedures for how to conduct illicit connection and illegal discharge investigations (e.g., the permittee does not have written procedures for tracking and identifying the source of a discharge).
- ✓ The permittee fails to conduct any dry-weather screening to identify illicit discharges.
- ✓ If a discharge is found, the permittee does not have specific criteria, which could include numeric criteria, to determine whether the discharge is illicit. In most cases, unless the discharge is obviously illicit (e.g., presence of discoloration, oil sheen), the permittee assumes the discharge is either irrigation runoff or groundwater and does not conduct further investigation of the quality or source of the discharge.
- ✓ Staff are not adequately trained on illicit discharge identification, reporting, and response.
- ✓ The permittee does not track illicit discharge events and does not target areas of the MS4 for additional inspection based on areas with past incidents.

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5. Post-Evaluation Activities

5.1 Preparing the Written Report

After the MS4 SWMP evaluation, it is important that a written description of findings is provided to the permittees. Using only an oral outbrief is not a sufficient way to convey any recommendations or requirements for program improvement. Keep in mind that an NPDES permit is a contract between the permittee and the permitting authority and all correspondence regarding that contract should be in writing. Also, remember that a SWMP evaluation is typically taken very seriously by MS4 staff and management. The written findings often are distributed amongst upper management or to the governing body of the MS4 (i.e., city council). And finally, the permittee has undoubtedly invested numerous staff hours preparing for the evaluation and providing you with necessary information during the on-site evaluation itself. Therefore, it is incumbent upon you to take the necessary time to develop a concise, thorough, and fair written assessment of the findings obtained.

As soon as possible after the evaluation, it is recommended that you review all notes and supporting information obtained prior to and during the on-site evaluation and document the findings and conclusions. As a general guideline, the final report should be provided to the permittee within 6 to 8 weeks after the evaluation. Less time may be needed to prepare a report for an abbreviated program evaluation or for a screening level evaluation. On the other hand, more time may be needed if contractors perform the evaluation because the draft report would need to be reviewed by permitting authority staff to approve all findings, conclusions, and recommendations.

Conclusions drawn should be defensible and based on permit requirements and conditions, the SWMP, measurable goals, or a best professional judgment interpretation of the NPDES regulations and Clean Water Act. In addition, it is critical that conclusions drawn are consistently applied to all permittees evaluated. If a permitting authority uses more than one staff person to conduct an evaluation, an effort should be made to calibrate assessment techniques to ensure equitable evaluations. This can be accomplished by daily discussions amongst the evaluators to compare findings during the evaluation as well as quality assurance reviews of the resulting evaluation report.

The report should state which permittee(s) were evaluated, for what SWMP components, the date, a basic description of how the evaluation was conducted, relevant findings, and any recommendations for future evaluations or follow-up activities.

Depending upon the goals of the evaluation, there are many different ways to document the findings:

- **Determination of compliance status.** If assessing the compliance status of a permittee with its MS4 permit and SWMP is the only goal of an evaluation, then the report can very simply, describe each permit requirement the MS4 is not complying with and the associated requirement. The report can also indicate the areas of compliance as well, or state up front that if the permit requirement is not discussed in the report, no recommendations or requirements apply to that item.
- **Assistance with permit issuance or renewal process.** If the evaluation is conducted after the issuance of a new permit or during renewal of an existing permit (Phase I or Phase II MS4s), the report might discuss recommendations for effective implementation of the new SMWP or discuss recommended changes to the existing SWMP determined during the audit.

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- **Assessing pollutants of concern.** If the permitting authority conducted the evaluation to assign an applicable waste load allocation, or to assist the permittee in implementing the waste load allocation for a particular pollutant of concern, the report may focus on only those components which minimize that pollutant. Or the report may make recommendations about how the SWMP could be changed to better address an existing waste load allocation.

As previously stated, the most common goal of an evaluation is to determine compliance with an existing permit. In this instance, in addition to providing recommendations for improvement or required actions to gain compliance, the permitting authority may find it helpful to provide positive feedback as well. Typically, it is not advisable to describe SWMP components that are not associated with a particular evaluation finding as this type of descriptive detail is found in the annual reports.

Findings can be divided into three categories:

1. **Permit violations.** Permit violations are areas where the evaluation found the permittee not in compliance with a specific permit requirement or SWMP commitment. Use of the qualifier "potential" can be used depending on the severity of the violation.
2. **Program deficiencies or recommendations for improvement.** Program deficiencies are areas of concern impeding effective program implementation. They are typically areas where the permit or SWMP does not describe specifically how the permittee should conduct an activity, yet the permitting authority evaluator believes the permittee should alter how they conduct the activity to meet water quality goals. Deficiencies can also be areas where future permit violations could result if the permittee continues on its present path.
3. **Positive or commendable program elements.** Positive program elements indicate activities that are "above and beyond" the requirements of the permit and SWMP. It is always a good idea to commend innovative approaches and techniques utilized by permittees. Not only does this encourage the permittee to continue implementing the program, it allows other permittees to learn about the approach if they read the evaluation document.

The following are format suggestions to use when drafting findings from the MS4 program evaluation:

- Organize findings by program component (e.g., all findings related to the industrial/commercial facilities component)
- Group similar findings for that component together (i.e., all positive attributes)

EXAMPLE FINDING:

The Parks and Recreation Department has developed a pollutant-based BMP manual.

The manual is innovative in that a diverse work group first identified the pollutants of concern and then developed suites of BMPs to minimize their occurrence or impacts on receiving waters. The resulting manual provides about 30 individual BMPs grouped into four categories: organic, chemical, maintenance, and administrative.

Each BMP description provides procedures; maps; monitoring frequency; additional references; the names of city and non-city employees who perform the task; site-specific equipment needs; possible locations of use; possible surfaces affected; procedures for spilled, dumped, or mishandled products or activities; evaluation criteria; and the staff responsible for BMP development.

People from multiple department sections collaborated on the BMPs to ensure that they are appropriate and can be implemented. The manual could be a guide for other city departments or Phase I and II programs throughout the country because it describes the entire BMP development process from conception through field-testing.

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- Provide a heading for each individual finding that is a complete sentence and that clearly summarizes the significant point. For example, if there is a permit violation, the heading should state what the permittee is doing that is a violation: "The City does not currently inspect all industrial facilities annually as required by the permit."
- Describe each finding in detail. The narrative description should clearly define the finding and then describe the supporting information obtained or observed during the evaluation that led to this conclusion. The finding narrative should describe what the permittee was required to do (which is particularly important for a permit violation), briefly restate (paraphrase) the finding, and then provide the information obtained during the evaluation that supports this finding in as much detail as possible. When describing a positive attribute the finding should clearly state how the activity being described is innovative and not merely compliant.
- Insert applicable permit citations and language in potential permit violations. If a program deficiency relates to a particular part of the permit or SWMP, be sure to cite the appropriate language as well.

EXAMPLE FINDING:

The City has failed to notify industries and commercial facilities of the stormwater requirements and appropriate BMPs for implementation.

Part F.3.b(4) of the permit requires the permittee to implement, or require the implementation of, designated minimum BMPs (based on the site's threat to water quality rating) at each industrial site within its jurisdiction. BMP implementation was to occur by no later than 365 days after the permit was adopted. At the time of the evaluation, the City had yet to implement, or inform applicable industrial sites of their responsibility to implement, appropriate BMPs. The City needs to inform all applicable industrial sites of their responsibility and also needs to provide them with the minimum BMPs outlined in the SWMP.

In some cases, it might not be possible to determine compliance with a program component because of the limitations of the MS4 program evaluation process (i.e., not reviewing each industrial inspection report), because of time constraints, or because the requirement itself is not definable. The written report should then state that this is the case and provide as much supporting information as possible, such as "Compliance with public education and participation permit requirements could not be determined because…" If there were no findings of note for a particular SWMP component, it is important to state this fact so it is clear that the component was reviewed: "No recommendations or requirements were identified for this program component."

After an MS4 program evaluation report is developed, the permitting authority typically distributes the report to the permittee(s) evaluated with a cover letter summarizing the findings of the evaluation and any enforcement action being taken or corrections required. It is important that the report be distributed in a timely manner to ensure that requirements and recommendations can be instituted by the permittee(s).

The cover letter should request a written response within a specific time period (e.g., 30 to 60 days) addressing any permit violations or deficiencies noted. Normally, permittees are given an opportunity to refute findings or appeal violations noted. A meeting also can be scheduled with the permittee(s) to discuss proposed modifications to its SWMP to address the permit violations and deficiencies described in the report. In either case, the permitting authority should request a formal response describing the compliance process and schedule including appropriate milestones. The permitting authority should review the response and continue to work with the permittee(s) to improve the SWMP per the evaluations findings.

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Photo Logs

Photo logs are used to visually illustrate items noted during field inspections. A photo log can be an important part of an MS4 program evaluation report and can assist a permitting authority in assessing potential permit violations. It is important to keep in mind that you are not inspecting the actual construction sites and industrial facilities visited for compliance with general permit or SWPPP conditions, but documenting the condition of these facilities with photos can help to assess compliance with MS4 permit conditions.

TIP:

Photos do not need to be used in the MS4 program evaluation report. An evaluator can take photos to help remember issues identified during field visits. The photos can also help you build a photo library of stormwater BMPs and problems.

To address potential legal concerns related to digital photographs, EPA published a guidance document on the use of digital photographs—*Digital Camera Guidance for EPA Civil Inspections and Investigations*. This document identifies requirements necessary to ensure the integrity of digital pictures. It addresses image capturing, storage, and handling and provides an overview of digital camera technology, peripheral equipment, and recommended steps. If digital images are to be used in court, their credibility usually depends on reliability, reproducibility, and security. As stated in the guidance, it is acceptable to make changes to digital images such as cropping, enlarging, or making them lighter/darker to improve the sharpness, provided the evaluator does all the following:

- Records how, when, and where the picture was taken,
- Logs the steps used in processing the image when they include techniques other than those used in a traditional photographic darkroom,
- Complies with a written SOP that includes the recommended steps set forth in this document, and
- Ensures the preservation of the original digital image.

To view EPA's *Digital Camera Guidance for EPA Civil Inspections and Investigations*, visit http://www.epa.gov/compliance/resources/publications/monitoring/cwa/inspections/npdesinspect/npdesinspectapph.pdf.

In general, it is important to keep careful notes of the photographs taken, including location and why the photograph was taken. It is helpful for the first photo taken to be of the facility sign or building. This helps to orient the photo log layout when photos are viewed after the evaluation.

For an MS4 program evaluation, it is not necessary to photo document all aspects of the facilities inspected, however, photos should be used to highlight issues on site that may lend credence to an issue described in the MS4 program evaluation report. For example, stormwater problems at a municipal maintenance yard should be documented with photos to provide additional documentation of problems. During inspections of construction sites or industrial facilities, photos can help document the issues the permittee's inspector addressed. At a minimum, even if the photos are not used in a formal report, the photos can help recall conditions at the sites visited.

Taking Photos

A digital camera should be used to take pictures where possible. Also, it is usually not necessary to set the resolution of the camera to its highest settings—most photo logs do not need high-resolution photos. Additional tips on taking good photos during an MS4 program evaluation include:

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- **Take lots of pictures.** With digital cameras, deleting extra photos is easy. For something particularly important, take at least 4-5 pictures.
- **Use photos to identify sites.** When inspecting multiple sites, use the first picture to photograph the sign, SWPPP cover, or file name to be able to identify the facility later.
- **Consider perspective.** Have someone stand in the photo or place something of recognizable size, like a hard hat or clip board, to gain perspective.

Creating Photo Logs
Photo logs are often created using word processing software or presentation (e.g., PowerPoint) software. The following steps for creating a photo log are based on Microsoft Word:

- It is recommended that photo logs be created in Microsoft Word and the photos saved in a standard format such as jpeg or gif. Consider the resolution of the photos: many reports are made available electronically, and high-resolution photos can cause file size to exceed many users' download capabilities.
- Size the photos to be 3.5" tall with the width set by Microsoft Word for landscape view and 3.5" width with the height set by Microsoft Word for portrait view.
- Center the photos and captions on the page. (Note: Microsoft Word requires that the picture layout not be "in line with text" in order for the photo to be centered on the page.) Generally a page will have two landscape oriented photos or one portrait.
- Each photo should be numbered.
- Document the date and/or time to help identify photos.
- Photo captions should briefly describe what is observed in the picture and the location (both the facility or site name and the location within the facility or site).
- A photo log can contain a separate narrative to describe the findings, or individual photos can be referred to within the body of the MS4 program evaluation report.

Photo 1: Improperly installed silt fence

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5.2 Follow-Up Activities

An MS4 program evaluation can result in several different follow-up activities, from enforcement to technical assistance to permit reissuance. Several of these activities are described below.

Technical Assistance

Many MS4 program evaluation findings will result in a deficiency that requires the permittee to modify or improve a program area to achieve compliance. The permitting authority can help ensure compliance by providing technical assistance to the permittee on issues related to these deficiencies. As a reference and useful tool for permittees, EPA has developed case studies of selected stormwater programs available at http://cfpub.epa.gov/npdes/stormwater/casestudies.cfm

Where necessary, the permitting authority may wish to provide additional technical assistance or training to address specific deficiencies identified during the evaluation.

Follow-Up MS4 Program Evaluations

Follow-up MS4 program evaluations should be conducted where major deficiencies have been identified and the permittee needs additional time to correct them. The permittee should be given time to correct any deficiencies, but a follow-up evaluation should be scheduled for deficiencies that cannot be documented via annual reports or written correspondence.

Targeted Evaluations

If an MS4 program evaluation identifies a program area that appears to be a common problem amongst several permittees, then the permitting authority may want to conduct targeted evaluations of that program area at additional permittees. For example, if stormwater compliance problems are identified at most of the public works yards visited, the permitting authority might want to target additional inspections for those yards.

Permit Issuance or Renewal

A thorough review of submitted annual reports along with an on-site evaluation is very helpful when issuing MS4 permits. Specific permit requirements could be drafted to address any deficiencies identified during the evaluation. Also, the evaluation may reveal current permit requirements that are no longer applicable or need to be revised to meet current conditions. An MS4 program evaluation is also an excellent time to collect additional data for permit reissuance, or verify data or clarify information submitted with the permit reapplication.

MS4 Enforcement

Taking enforcement on a violation identified during an evaluation will obviously depend on a variety of factors including the severity of the violation, any discharge to a water of the U.S., history of past violations, and other factors. To make a case for an enforcement action, it is important to collect information that documents the violation, including copies of records, photographs, or other documentation. An enforcement action is the last course of action to ensure compliance, but even the possible threat of an enforcement action will usually help bring about compliance.

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Appendix A – Glossary & Acronyms

Authorized Program Or Authorized State – A state, Territorial, Tribal, or interstate NPDES program which has been approved or authorized by EPA under 40 CFR Part 123.

Best Management Practice (BMP) – Policies or practices that prevent, reduce, or mitigate the impacts of stormwater runoff. These methods can be structural (e.g., devices, ponds) or non-structural (e.g., policies to reduce imperviousness). BMPs classified as "non-structural" are those that rely predominantly on behavioral changes rather than construction in order to be effective. "Structural" BMPs are engineered or constructed to prevent or manage stormwater. BMPs are often further classified into (1) source control BMPs to prevent pollution, (2) water quality BMPs to reduce or prevent pollutants in runoff, (3) flow control BMPs to reduce the volume of stormwater and (4) infiltration BMPs to increase infiltration.

Best Professional Judgment (BPJ) – Using all reasonably available and relevant data to make a decision.

CIP – Capital Improvement Project

Clean Water Act – Clean Water Act or the Federal Water Pollution Control Act, 33 U.S.C. section 1251 et seq.

Construction General Permit (CGP) – Where EPA is the permitting authority, the Construction General Permit (CGP) outlines a set of provisions construction operators must follow to comply with the requirements of the NPDES stormwater regulations. The CGP covers any site one acre and above, including smaller sites that are part of a larger common plan of development or sale, and replaces and updates previous EPA permits.

Co-permittee – A permittee to a NPDES permit that is only responsible for permit conditions relating to the discharge for which it is operator.

Combined Sewer Overflow (CSO) – A discharge of untreated wastewater from a combined sewer system at a point prior to the headworks of a publicly owned treatment works. CSOs generally occur during wet weather (rainfall or snowmelt). During periods of wet weather, these systems become overloaded, bypass treatment works, and discharge directly to receiving waters.

Comprehensive Plan – A general plan that identifies a community's long-range growth and development goals. Comprehensive plans and watershed plans often overlap in areas of natural resources, analysis of current conditions, and growth trends. Comprehensive and/or watershed plans often include smaller subarea plans, with additional details on infrastructure, open space, parks, neighborhood design, drainage, and circulation.

DOT – Department of Transportation

EPA – United States Environmental Protection Agency

Floatables – Plastics and other floating debris (e.g., oil, grease, toilet paper).

General permit – An NPDES permit issued under 40 CFR 122.28 that authorizes a category of discharges under the CWA within a geographical area. A general permit is not specifically tailored for an individual discharger.

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Geographic Information System (GIS) – A computer application used to store, view, and analyze geographical information, especially maps (*taken from the American Heritage Dictionary*).

IDDE – Illicit Discharge Elimination and Detection

Illicit Discharge – Any discharge to a municipal separate storm sewer that is not composed entirely of stormwater, except discharges pursuant to a NPDES permit and discharges resulting from fire fighting activities.

Impervious Surface – A hard surface area that either prevents or retards the entry of water into the soil mantle as occurs under natural conditions (prior to development), and from which water runs off at an increased rate of flow or in increased volumes. Common impervious surfaces include, but are not limited to, rooftops, walkways, patios, driveways, parking lots, compacted soil, and roadways. "Effective impervious surface" is commonly used to describe impervious surfaces connected to receiving water directly or with a conveyance device (e.g., curbs, pipes, gutters).

Integrated Pest Management (IPM) – Planned program that coordinates economically and environmentally acceptable methods of pest control with the judicious and minimal use of toxic pesticides. IPM programs are based on a careful assessment of local conditions, including such factors as climate, crop characteristics, the biology of the pest species, agricultural practices, soil quality, and government regulations. The tactics employed range from changes in agricultural methods, such as better tillage to prevent soil erosion and interplanting of different crop varieties; natural biological weapons, such as the introduction of beneficial insects that eat the harmful species; and mechanical tools, such as vacuums that pull the insects off of the crops. Toxic pesticides are used only when all other methods have failed (*taken from the Columbia Press Encyclopedia*).

MOU – Memorandum of Understanding

MEP – Maximum extent practicable

Multi-Sector General Permit (MSGP) – Authorizes the discharge of stormwater from industrial facilities, consistent with the terms of the permit, in areas of the United States where EPA manages the NPDES permit program.

Municipal Separate Storm Sewer System (MS4) – A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law)...including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the Clean Water Act that discharges into waters of the United States. (ii) Designed or used for collecting or conveying stormwater; (iii) Which is not a combined sewer; and (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) – A national program under Section 402 of the Clean Water Act for regulation of discharges of pollutants from point sources to waters of the United States. Discharges are illegal unless authorized by an NPDES permit.

Notice of Intent (NOI) – Submission of a completed NOI constitutes notice that the entity intends to be authorized to discharge pollutants to waters of the United States, from the facility or site identified in the

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form, under a State or EPA general permit such as the Phase II MS4 General Permit, the Multi-Sector General Permit (MSGP) for industrial stormwater, or the Construction General Permit (CGP).

Notice of Violation (NOV) – Enforcement mechanism used to inform regulated entities of noncompliance

Outfall – A point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.

Permitting Authority – The United States Environmental Protection Agency, EPA, a Regional Administrator of the Environmental Protection Agency or an authorized representative.

Pollutant of concern (POC) – Any pollutant that has been identified as a cause of impairment in any water body to which the MS4 discharges.

Publicly Owned Treatment Works (POTW) – A treatment works, as defined by Section 212 of the CWA, that is owned by the state or municipality. This definition includes any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes, and other conveyances only if they convey wastewater to a POTW treatment plant [40 CFR 403.3]. Privately-owned treatment works, Federally-owned treatment works, and other treatment plants not owned by municipalities are not considered POTWs.

Sanitary sewer overflow (SSO) – Occasional unintentional discharges of raw sewage from municipal sanitary sewers. SSOs have a variety of causes, including but not limited to severe weather, improper system operation and maintenance, and vandalism. EPA **estimates that there are at least 40,000 SSOs each year**.

Stormwater – Stormwater runoff, snow melt runoff, and surface runoff and drainage.

Stormwater Pollution Prevention Plan (SWPPP) – Plan developed to minimize the discharge of pollutants from an industrial site (including construction activities) to the maximum extent practicable using BMPs.

Total Maximum Daily Load (TMDL) – A water quality assessment that determines the source or sources of pollutants of concern for a particular waterbody, considers the maximum amount of pollutants the waterbody can assimilate, and then allocates to each source a set level of pollutants that it is allowed to discharge (i.e., a wasteload allocation).

Waters of the United States – 1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; 2. All interstate waters, including interstate wetlands"; 3. All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters: a. Which are or could be used by interstate or foreign travelers for recreational or other purposes; b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or c. Which are used or could be used for industrial purposes by industries in interstate commerce; 4. All impoundments of waters otherwise defined as waters of the United States under this definition; 5. Tributaries of waters identified

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in paragraphs (1) through (4) of this definition; 6. The territorial sea; and 7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs 1. through 6. of this definition.

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Appendix B – Program Evaluation Worksheets

These program evaluation worksheets are intended to guide an evaluator in conducting a detailed on-site evaluation. Each worksheet addresses a separate program component, and includes the key questions commonly covered during an evaluation. Evaluators should use these worksheets as a guide – additional questions are often necessary based on the specific requirements in the MS4 permit and the unique activities described in the SWMP.

These worksheets are also available, without formatting into tables, on EPA's stormwater Web site.

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Program Management Component Worksheet

Date of Evaluation	
Evaluator Name, Title	
MS4 Permittee	

Instructions: Use this worksheet as a guide for questioning MS4 staff and reviewing applicable documents. Keep in mind that additional questions may be necessary based on local regulations, MS4 permit requirements, implementation strategies, or water quality issues. Remember to obtain copies of any applicable documents or files which may assist in writing the MS4 evaluation report.

Staff Interviewed		
Name	**Department/Agency**	**Phone Number/Email**

Comprehensive Stormwater Management Planning SWMP Planning		
Interview Questions	**Response**	
SWMP Plan developed?	YES	NO
If not, what is used to guide planning and implementation?		
If multiple co-permittees, does each have a SWMP document?	YES	NO
Is there an MS4-wide document if multiple co-permittees?	YES	NO
Were stakeholders included in the planning process?	YES	NO
Applicable Documents	**Reviewed**	**Obtained**
SWMP Plan		

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Comprehensive Stormwater Management Planning Intergovernmental, Agency, Departmental Coordination		
Interview Questions	**Response**	
Are roles and responsibilities for multiple co-permittees established?	YES	NO
If multiple co-permittees, is there an "umbrella group" to coordinate activities?	YES Name of Group:	NO
Are the MOUs between co-permittees and outside agencies?	YES	NO
How are in-house departments coordinated?		
Is there a stormwater task force or committee in place?	YES	NO
Are outside groups used to implement the SWMP?	YES Name of Group(s):	NO
Applicable Documents	**Reviewed**	**Obtained**
MOUs or other agreements		
Meeting schedules for in-house or inter-agency task forces or committees		

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Comprehensive Stormwater Management Planning Staff Inventory & Organization		
Interview Questions	**Response**	
Has an organizational chart been developed?	YES	NO
Have roles and responsibilities been assigned?	YES	NO
Applicable Documents	**Reviewed**	**Obtained**
Stormwater program staff lists, responsible parties, contact names, organizational charts		

Notes

Comprehensive Stormwater Management Planning Performance Standards or Goals		
Interview Questions	**Response**	
Have measurable goals or standards been developed for each SWMP program component?	YES	NO
Do the goals address water quality impact or effectiveness? How?	YES	NO
Applicable Documents	**Reviewed**	**Obtained**
Performance standards, measurable goals, schedule		

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Comprehensive Stormwater Management Planning Prioritization of Resources	
Interview Questions	**Response**
Have pollutants of concern (POC) been established? If yes, based on what? • 303(d) list? • TMDLs? • Land uses of concern? • Existing watershed planning efforts?	YES NO Basis:
Have POC-specific strategies been developed in the SWMP?	YES NO
How does the permittee decide program implementation priorities for resource allocation?	

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Assessment and Evaluation	
Interview Questions	**Response**
Is the SWMP regularly measured against goals or standards?	YES NO
Have load reduction goals been established or assessed?	YES NO

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Assessment and Evaluation	
Interview Questions	**Response**
Have other types of improvements been assessed? • Riparian habitat? • Stream corridor? • Aquatic habitat? • Groundwater	YES NO What types?

Notes

Data Collection and Reporting		
Interview Questions	**Response**	
Are reporting requirements in the MS4 permit for the following: • Co-permittees? • An umbrella organization/group?	YES NO YES NO	
How are data or information from outside groups obtained?		
Have internal reporting deadlines been established?	YES NO	
Applicable Documents	**Reviewed**	**Obtained**
Reporting or assessment procedures		

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Public Education/Involvement Component Worksheet

Date of Evaluation	
Evaluator Name, Title	
MS4 Permittee	

Instructions: Use this worksheet as a guide for questioning MS4 staff and reviewing applicable documents. Keep in mind that additional questions may be necessary based on local regulations, MS4 permit requirements, implementation strategies, or water quality issues. Remember to obtain copies of any applicable documents or files which may assist in writing the MS4 evaluation report.

Staff Interviewed		
Name	**Department/Agency**	**Phone Number/Email**

Goals and Objectives		
Interview Questions	**Response**	
Outreach strategy document developed?	YES	NO
Measurable goals included in the document?	YES	NO

Applicable Documents	**Reviewed**	**Obtained**
Outreach strategy		

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Message Development	
Interview Question	**Response**
Specific stormwater messages been developed? Describe:	YES NO
Based on what?	Pollutants of concern ___________ Target audience ___________ Behavior of concern ___________ Other
Illicit discharges being addressed?	YES NO
Pesticides, herbicide, and fertilizer education being conducted?	YES NO

Applicable Documents	Reviewed	Obtained
Materials containing central messages		

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Target Audience		
Interview Questions	**Response**	
Target audiences established?	YES	NO
Based on what:	Behavior ___________ Location/neighborhood ___________ Business ___________ Age Other	
Target audiences regularly reevaluated?	YES	NO
Homeowners a target for pesticide, herbicide, and fertilizer education?	YES	NO

Applicable Documents	Reviewed	Obtained
Studies to establish target audiences		

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Message Packaging	
Interview Questions	**Response**
Types of message "packaging":	
Different language materials distributed?	YES NO

Applicable Documents	Reviewed	Obtained
Bi-lingual materials		
Materials used and distributed		

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Distribution Mechanisms	
Interview Questions	**Response**
Methods and location of materials distribution:	
Distribution tracked?	YES NO

Applicable Documents	Reviewed	Obtained
Tracking information		

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Public Involvement Activities			
Interview Questions	**Response**		
Public participation obtained during stormwater management program changes?	YES	NO	
Stormwater related volunteer activities sponsored or endorsed:	YES	NO	
Applicable Documents		**Reviewed**	**Obtained**
Evidence of public participation in planning			
Volunteer activities descriptions			

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Evaluation Methods	
Interview Questions	**Response**
Public Education and Involvement assessment methods:	
Public awareness survey been performed?	YES NO
Describe most effective materials used:	

Applicable Documents	Reviewed	Obtained
Public awareness survey(s)		

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MS4 Maintenance Component Worksheet

Date of Evaluation	
Evaluator Name, Title	
MS4 Permittee	

Instructions: Use this worksheet as a guide for questioning MS4 staff and reviewing applicable documents. Keep in mind that additional questions may be necessary based on local regulations, MS4 permit requirements, implementation strategies, or water quality issues. Remember to obtain copies of any applicable documents or files which may assist in writing the MS4 evaluation report.

Staff Interviewed		
Name	**Department/Agency**	**Phone Number/Email**

MS4 Mapping			
Interview Questions	**Response**		
Outfalls and receiving waters mapped? Catch basins? Pipes, ditches, other conduits? Public stormwater facilities (BMPs)? Private stormwater facilities (BMPs)?	YES YES YES YES YES	NO NO NO NO NO	
How are maps used (i.e. tracking illicit discharges)?			
Applicable Documents		**Reviewed**	**Obtained**
Map(s) of MS4 system			

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Catch Basin Cleaning		
Interview Question	**Response**	
Schedule established for inspections and cleaning?	YES	NO
Is cleaning and maintenance of catch basin tracked:	YES	NO
How are spoils materials disposed of?		
Are storm drain pipes inspected? Proactive or only in response to blockage event?	YES	NO

Applicable Documents	Reviewed	Obtained
List of active construction projects		
List of projects covered under a state/EPA general permit		

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Stormwater Management Facilities Operation and Maintenance		
Interview Questions	**Response**	
Public facilities inspected? Frequency:	YES	NO
Private facilities inspected? Frequency:	YES	NO
Checklist used for inspections?	YES	NO
Maintenance standards and procedures established?	YES	NO
Data evaluated to target maintenance resources?	YES	NO

Applicable Documents	Reviewed	Obtained
Inspection checklist		

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Road Maintenance		
Interview Questions	**Response**	
Streets regularly swept? Frequency:	YES	NO

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Road Maintenance		
Interview Questions	**Response**	
Frequency based on water quality factors (e.g. proximity to streams)?	YES	NO
How are spoils disposed of?		
BMPs used during road maintenance activities? Describe	YES	NO
BMP guidance available to field staff?	YES	NO
Deicers used by MS4?	YES	NO
Type and amount of deicer tracked?	YES	NO
Sand/salt swept up after application? How soon?	YES	NO

Applicable Documents	Reviewed	Obtained
BMP guidance		
Street sweeping records		

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Flood Management		
Interview Questions	**Response**	
Inventory of flood management structures completed?	YES	NO
Structures been assessed for stormwater retrofit?	YES	NO
New structures include water quality considerations?	YES	NO

Applicable Documents	Reviewed	Obtained
Inventory		

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Facilities Operation & Maintenance		
Interview Questions	**Response**	
Inventory of MS4 facilities complete (i.e. facilities owned and operated by the MS4)? Types of facilities included:	YES	NO

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Facilities Operation & Maintenance		
Interview Questions	**Response**	
Facilities inspected? Frequency:	YES	NO
Checklist used?	YES	NO
Staff which perform the inspections (department or agency:		
Facilities required to have stormwater pollution prevention plan (SWPPP)?	YES	NO
Is there a designated stormwater contact person for each facility?	YES	NO
Describe enforcement procedures used to address noncompliance on a MS4-owner facility:		
Parking lots owned/operated by the permittee swept?	YES	NO
Sanitary sewer systems evaluated to determine storm sewer cross-connections or overflow locations?	YES	NO
Extent of infiltration and inflow into storm sewer system:		
Sewer spill and cleanup procedures in place?	YES	NO

Applicable Documents	Reviewed	Obtained
Facility inventory		
Facility SWPPP		

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Pesticides, Herbicides & Fertilizers		
Interview Questions	**Response**	
Certified applicators used?	YES	NO
Integrated Pest Management (IPM) practices used?	YES	NO
Storage location of pesticides, herbicides, and fertilizers:		
BMPs used during application:		
Fertilizer/pesticide application plan utilized?	YES	NO

Applicable Documents	Reviewed	Obtained
Fertilizer/pesticide application plan		

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Standards, BMPs, & Outreach		
Interview Questions	**Response**	
BMP technical guidance document available to maintenance staff?	YES	NO
MS4 use contractual staff to complete MS4 maintenance activities?	YES	NO
BMP guidance materials provided to contracted staff?	YES	NO
Requirement to consider stormwater impacts and utilize appropriate BMPs in contracts?	YES	NO
Materials used to educate the public regarding stormwater impacts on MS4 property (if applicable, i.e. public spaces):	Pet waste: Litter reduction:	

Applicable Documents	Reviewed	Obtained
BMP manual or guidance document		
Contract language for MS4 operation and maintenance activities		

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Staff Education and Training		
Interview Questions	**Response**	
Staff trained to identify illicit discharges?	YES	NO

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Staff Education and Training	
Interview Questions	**Response**
Frequency:	
Materials used to train staff:	

Applicable Documents	Reviewed	Obtained
Training materials		

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Construction Component Worksheet

Date of Evaluation	
Evaluator Name, Title	
MS4 Permittee	

Instructions: Use this worksheet as a guide for questioning MS4 staff and reviewing applicable documents. Keep in mind that additional questions may be necessary based on local regulations, MS4 permit requirements, implementation strategies, or water quality issues. Remember to obtain copies of any applicable documents or files which may assist in writing the MS4 evaluation report.

Staff Interviewed		
Name	**Department/Agency**	**Phone Number/Email**

Ordinance/Legal Authority	
Interview Questions	**Response**
Ordinance used to require stormwater BMPs at construction sites? Name and/or code section(s).	YES NO
Threshold for coverage (e.g., 1 acre, 100 cubic yards, etc.)	
Exclusions from coverage allowed:	
Other pollutants regulated on construction sites (e.g., construction wastes, trash, chemicals, etc.):	
Permitting mechanism used to require appropriate BMPs (i.e. grading permit, building permit):	
Is a plan required (erosion control plan or SWPPP)?	YES NO

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Ordinance/Legal Authority	
Interview Questions	**Response**
Are minimum construction site BMPs specified? What types?	YES NO
Types of enforcement mechanisms available:	Notices of Violations (NOV) YES NO Administrative fines YES NO Stop-work orders YES NO Civil penalties YES NO Criminal penalties YES NO Other:
Official enforcement escalation plan or procedures in place?	YES NO

Applicable Documents	Reviewed	Obtained
Grading, Erosion and Sediment Control, Stormwater or other related Ordinance(s)		
Enforcement escalation plan or procedures		

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Construction Project Inventory	
Interview Question	**Response**
Construction projects tracked?	YES NO
Projects <1 acre?	YES NO

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Updated at what frequency?	
Information tracked:	Project status YES NO Inspection Findings YES NO Enforcement Actions YES NO Complaints YES NO NOI submittal YES NO Other:
Projects prioritized to determine inspection frequency? Criteria used:	YES NO Proximity to waterbody YES NO Waterbody impairment YES NO Size of project YES NO Slope of project site YES NO Other:
Number of active projects:	

Applicable Documents	Reviewed	Obtained
List of active construction projects		
List of projects covered under a state/EPA general permit		

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Construction Requirements and BMPs	
Interview Questions	**Response**
Technical guidance provided or required?	YES NO
Does guidance include selection criteria?	YES NO

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Construction Requirements and BMPs		
Interview Questions	**Response**	
Does guidance include operation and maintenance requirements?	YES	NO
Does guidance have different requirements or standards for different times of the year (i.e. rainy vs. dry seasons)?	YES	NO

Applicable Documents	Reviewed	Obtained
BMP guidance or technical document		

Notes

Plan Review Procedures		
Interview Questions	**Response**	
Who performs erosion and sediment control plan review (i.e. planning department, building department)?		
Training received and frequency:		
Size threshold for plan review (i.e. 1 acre, 10,000 square feet)?		
NOI submittal verified during review? How (i.e. canceled permit fee check)?	YES	NO
Pre-project meetings conducted with developer?	YES	NO
Standard conditions of approval include erosion and sediment control and/or general storm water	YES	NO

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Plan Review Procedures	
Interview Questions	**Response**
requirements?	
Plan review criteria or checklist used?	YES NO

Applicable Documents	Reviewed	Obtained
Copy of standard conditions of approval		
Example of standard conditions applied to an approved project		
Checklist used by plan reviewers		

In addition to interviewing staff, select at least 2 to 3 approved projects with erosion and sediment control plans to review with the permittee. Try to choose different project types (residential, commercial) and sizes. Also review at least one public project plan to see if the permittee is applying adequate standards to municipal construction.

Private Project Name #1:	
BMPs adequately incorporated into the plan to address erosion control, sediment control, housekeeping?	YES NO
Design specifications and details for all BMPs included on the plans?	YES NO
Standards conditions include erosion and sediment control or stormwater provisions?	YES NO
Maintenance requirements specified?	YES NO
Notes:	

Private Project Name #2:	
BMPs adequately incorporated into the plan to address erosion control, sediment control, housekeeping?	YES NO
Design specifications and details for all BMPs included on the plans?	YES NO
Standards conditions include erosion and sediment control or stormwater provisions?	YES NO
Maintenance requirements specified?	YES NO

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Private Project Name #2:
Notes:

Private Project Name #3:		
BMPs adequately incorporated into the plan to address erosion control, sediment control, housekeeping?	YES	NO
Design specifications and details for all BMPs included on the plans?	YES	NO
Standards conditions include erosion and sediment control or stormwater provisions?	YES	NO
Maintenance requirements specified?	YES	NO
Notes:		

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Construction Project Inspections		
Interview Questions	**Response**	
Who performs construction storm water inspections (i.e. building inspector, dedicated stormwater inspector)? List all if different phases or areas of project are inspected by different staff. (i.e. public right-of-way, building footprint, grading phase, construction phase).		
Training received and frequency:		
How many inspectors for stormwater issues at construction projects? On average, number of projects each inspector is responsible for?		
How often are sites inspected? What determines frequency?		
Inspections triggered by rain events? What size rain event? How soon after the event?	YES	NO
Standard inspection checklist used?	YES	NO
Findings tracked in a database?	YES	NO

Applicable Documents	Reviewed	Obtained
Most recent inspection staff training records		
Example of active construction project inspection checklist		
Records from inspection tracking database or filing system		

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Enforcement/Referrals	
Interview Questions	**Response**
Can construction inspectors administer enforcement actions? If no, who can? If yes, what types of enforcement actions?	YES NO
Enforcement action is most commonly used:	
Enforcement actions tracked? How?	
Average number of enforcement actions (by type) issued in the previous year:	Notices of Violations (NOV) __________ Administrative fines __________ Stop-work orders __________ Civil penalties __________ Criminal penalties __________ Other:
Most common compliance issue on construction projects (i.e. tracking on streets, litter, inadequate concrete washout BMPs)?	
Adequate legal authority and tools available to inspectors to enforce storm water requirements on construction projects? If no, how could the program be improved?	
Who does follow up on enforcement actions?	

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Applicable Documents	Reviewed	Obtained
Enforcement cases files both active and closed		
Example of most typical enforcement action documentation (i.e. NOV)		
List of enforcement actions used in the last year		

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Outreach and Education	
Interview Questions	**Response**
Type of training provided to construction operators:	
Attendance required?	
Training frequency?	
Number of operators trained:	
Training topics:	
Presentations given by MS4 staff to professional groups?	YES NO
Brochures or outreach materials targeted at operators:	

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How/when is the information distributed?	
Web site used to educate operators? Web address:	

Applicable Documents	Reviewed	Obtained
Training materials		
Brochures, outreach materials		

Notes

MS4-Owned Construction Projects	
Interview Questions	**Response**
Projects designed in-house or contracted?	
Designers trained in stormwater BMP implementation?	YES NO
Checklist used during the design and/or review of public construction projects?	YES NO
Are projects greater than one acre covered a general construction permit (has an NOI been submitted)?	YES NO

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MS4-Owned Construction Projects		
Interview Questions	**Response**	
If contracted planners and engineers are used for the design of MS4-owned projects, does the contract language specify that storm water BMPs be incorporated into the design?	YES	NO
In-house inspection staff inspect projects? If so, which department?	YES	NO
Project inspectors trained? Frequency:	YES	NO
If contracted inspectors are utilized, are minimum inspection, maintenance and reporting requirements specified in the contract?	YES	NO

Applicable Documents	Reviewed	Obtained
MS4-owned project storm water design standards and/or checklist		
Contract language for active public project not developed or inspected in-house		

Project Name:		
BMPs adequately incorporated into the plan to address erosion control, sediment control, housekeeping?	YES	NO
Design specifications and details for all BMPs included on the plans?	YES	NO
Standards conditions include erosion and sediment control or stormwater provisions?	YES	NO
Maintenance requirements specified?	YES	NO
Notes:		

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Post-Construction Component Worksheet

Date of Evaluation	
Evaluator Name, Title	
MS4 Permittee	

Instructions: Use this worksheet as a guide for questioning MS4 staff and reviewing applicable documents. Keep in mind that additional questions may be necessary based on local regulations, MS4 permit requirements, implementation strategies, or water quality issues. Remember to obtain copies of any applicable documents or files which may assist in writing the MS4 evaluation report.

Staff Interviewed		
Name	**Department/Agency**	**Phone Number/Email**

Ordinance/Legal Authority	
Interview Questions	**Response**
Ordinance used to require post-construction stormwater BMPs on new development or redevelopment projects? Name and/or code section(s).	YES NO
Threshold for coverage (e.g., 1 acre, 100 cubic yards, etc.)	
Exclusions from coverage allowed:	
Permitting mechanism used to require appropriate BMPs (i.e. building permit):	
Is a plan required (erosion control plan or SWPPP)?	YES NO
Are minimum post-construction site BMPs specified?	YES NO

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Ordinance/Legal Authority			
Interview Questions	**Response**		
What types?			
Applicable Documents		**Reviewed**	**Obtained**
Ordinance(s)			

Notes

Comprehensive or Master Planning		
Interview Questions	**Response**	
Is there an overall comprehensive or watershed plan with detailed information on current and planned development and redevelopment?	YES	NO
If the permittee is a municipality, does the comprehensive plan include stormwater elements? If so, what types? • Imperviousness • Public infrastructure/drainage • Open space • Water body protection	YES	NO
Are there programs and design guidelines to assist in current and future development and redevelopment (including funding programs)?	YES	NO

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Comprehensive or Master Planning		
Interview Questions	**Response**	
Audit or review of existing codes completed?	YES	NO

Applicable Documents	Reviewed	Obtained
Comprehensive or general plan		
Economic development plans		

Notes

Post-Construction Requirements and BMPs		
Interview Questions	**Response**	
Technical guidance provided or required?	YES	NO
Does guidance include selection criteria (i.e. based on land use, location)?	YES	NO
Does guidance include operation and maintenance requirements?	YES	NO

Applicable Documents	Reviewed	Obtained
BMP guidance or technical document		

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Plan Review Procedures		
Interview Questions	**Response**	
Who performs post-construction BMP plan review (i.e. planning department, building department)?		
Training received and frequency:		
Size threshold for plan review (i.e. 1 acre, 10,000 square feet)?		
Pre-project meetings conducted with developer?	YES	NO
Standard conditions of approval include post-construction storm water requirements?	YES	NO
Plan review criteria or checklist used?	YES	NO
Maintenance agreement required?	YES	NO

Applicable Documents	Reviewed	Obtained
Copy of standard conditions of approval		
Example of standard conditions applied to an approved project		
Checklist used by plan reviewers		

Post-Construction BMP Inventory		
Interview Question	**Response**	
Post-construction structural BMPs tracked?	YES	NO
Information tracked:	Location YES NO Maintenance Requirements YES NO Inspection findings YES NO Other:	
Nonstructural BMPs tracked?	YES	NO
Database used?	YES	NO
Number of private post-construction structural BMPs:		

Applicable Documents	Reviewed	Obtained
List of active construction projects		
List of projects covered under a state/EPA general permit		

Notes

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Post-Construction BMP Inspection and Maintenance	
Interview Questions	**Response**
Who performs post-construction BMP inspections?	
Training received and frequency:	
Are "as built" inspections performed?	YES NO
How often are BMPs inspected? What determines frequency?	
Standard inspection checklist used?	YES NO
Findings tracked in a database?	YES NO

Applicable Documents	Reviewed	Obtained
Most recent staff training records		
Example of BMP inspection checklist		
Records from inspection tracking database or filing system		

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Enforcement/Referrals	
Interview Questions	**Response**
Can inspectors administer enforcement actions if private post-construction BMPs are not maintained? If no, who can? If yes, what types of enforcement actions?	YES NO
Enforcement action is most commonly used:	
Enforcement actions tracked? How?	
Average number of enforcement actions (by type) issued in the previous year:	Notices of Violations (NOV) __________ Administrative fines __________ Stop-work orders __________ Civil penalties __________ Criminal penalties __________ Other:
Adequate legal authority and tools available to inspectors to enforce post-construction storm water requirements? If no, how could the program be improved?	

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Enforcement/Referrals	
Interview Questions	**Response**
Who does follow up on enforcement actions?	

Applicable Documents	Reviewed	Obtained
Enforcement cases files both active and closed		
Example of most typical enforcement action documentation (i.e. NOV)		
List of enforcement actions used in the last year		

Notes

Outreach and Education	
Interview Questions	**Response**
Type of training provided to designers and engineers:	
Attendance required?	
Training frequency?	
Number trained:	
Training topics:	

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Outreach and Education	
Interview Questions	**Response**
Presentations given by MS4 staff to professional groups?	YES NO
Brochures or outreach materials targeted at designers and engineers:	
How/when is the information distributed?	
Web site used to educate designers and engineer? Web address:	

Applicable Documents	Reviewed	Obtained
Training materials		
Brochures, outreach materials		

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MS4-Owned Construction Projects		
Interview Questions	**Response**	
Projects designed in-house or contracted?		
Designers trained in post-construction stormwater BMP implementation?	YES	NO
Checklist used during the design and/or review of post-construction BMPs?	YES	NO
If contracted planners and engineers are used for the design of MS4-owned projects, does the contract language specify that post-construction stormwater BMPs be incorporated into the design?	YES	NO
In-house inspection staff inspect post-construction BMPs? If so, which department?	YES	NO
Post-construction inspectors trained? Frequency:	YES	NO
If contracted inspectors are utilized, are minimum inspection, maintenance and reporting requirements specified in the contract?	YES	NO

Applicable Documents	Reviewed	Obtained
Project stormwater design standards and/or checklist		
Contract language for active public project not developed or inspected in-house		

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Industrial/Commercial Component Worksheet

Date of Evaluation	
Evaluator Name, Title	
MS4 Permittee	

Instructions: Use this worksheet as a guide for questioning MS4 staff and reviewing applicable documents. Keep in mind that additional questions may be necessary based on local regulations, MS4 permit requirements, implementation strategies, or water quality issues. Remember to obtain copies of any applicable documents or files which may assist in writing the MS4 evaluation report.

Staff Interviewed		
Name	**Department/Agency**	**Phone Number/Email**

Ordinance/Legal Authority			
Interview Questions	**Response**		
Ordinance which requires industrial/commercial facilities to install BMPs or minimize pollutant discharge? Name and/or code section(s).	YES NO		
Types of facilities covered:			
Facilities exempted:			
Applicable Documents		**Reviewed**	**Obtained**
Ordinance(s)			

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Facility Inventory	
Interview Question	**Response**
Industrial/Commercial facilities inventoried?	YES NO
Types of facilities included in the inventory:	
Facilities prioritized according to risk? Criteria used:	YES NO Proximity to waterbody YES NO Waterbody impairment YES NO Type of facility YES NO Materials produced on-site YES NO Materials stored on-site YES NO
Facilities mapped? GIS?	YES NO YES NO

Applicable Documents	Reviewed	Obtained
Facility inventory		
Facility map		

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Standards, BMPs & Outreach	
Interview Questions	**Response**
Standards adopted which require industrial/commercial facilities to install BMPs (e.g., all car dealerships must install a wash rack plumbed to the sanitary sewer)? Describe:	YES NO
Standards for new development only or do they apply to improvements as well?	
Additional criteria which determine whether BMPs are required (e.g. facilities determined to be "high priority", facilities within 100 feet of stream):	
Specific guidance document or manual utilized:	

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Standards, BMPs & Outreach	
Interview Questions	**Response**
Materials developed to educated operators about required or recommended BMPS:	
Training for operators: Frequency of training:	

Applicable Documents	Reviewed	Obtained
BMP standards or guidance document		
Outreach materials		

Notes

Inspections	
Interview Questions	**Response**
Industrial/Commercial facilities inspected? Frequency:	YES NO
Staff (department or agency) responsible for inspections:	
If multiple departments perform inspections (i.e. health department inspects restaurants, pretreatment	YES NO

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Inspections	
Interview Questions	**Response**
staff inspects heavy industrial), are the stormwater findings compiled?	
Checklist used during inspection?	YES NO
Types of data collected:	Proximity to waterbody ________ Type of facility ________ Materials produced on-site ________ Materials stored on-site ________ Hazardous waste on-site ________ NOI submittal ________ Other
Are non-filers reported to permitting authority?	YES NO
Method of tracking inspection findings:	
Educational materials provided to operators during inspections?	YES NO

Applicable Documents	Reviewed	Obtained
Example checklist		
Examples of outreach materials		

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Enforcement	
Interview Questions	**Response**
Enforcement escalation plan or procedures adopted?	YES NO
Can industrial/commercial inspectors administer enforcement actions? If no, who can? If yes, what types of enforcement actions?	YES NO
Enforcement action is most commonly used:	
Enforcement actions tracked? How?	
Average number of enforcement actions (by type) issued in the previous year:	Notices of Violations (NOV) __________ Administrative fines __________ Civil penalties __________ Criminal penalties __________ Damage abatement __________ Other:
Adequate legal authority and tools available to inspectors to enforce stormwater requirements at industrial/commercial facilities? If no, how could the program be improved?	
Who does follow up on enforcement actions?	

Applicable Documents	Reviewed	Obtained
Enforcement escalation plan or procedures		

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Staff Education and Training	
Interview Questions	**Response**
Staff trained to inspect industrial/commercial facilities? Frequency:	YES NO
Materials used to train staff:	

Applicable Documents	Reviewed	Obtained
Training materials		
Training records		

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Illicit Discharge Component Worksheet

Date of Evaluation	
Evaluator Name, Title	
MS4 Permittee	

Instructions: Use this worksheet as a guide for questioning MS4 staff and reviewing applicable documents. Keep in mind that additional questions may be necessary based on local regulations, MS4 permit requirements, implementation strategies, or water quality issues. Remember to obtain copies of any applicable documents or files which may assist in writing the MS4 evaluation report.

Staff Interviewed		
Name	**Department/Agency**	**Phone Number/Email**

Ordinance/Legal Authority	
Interview Questions	**Response**
Ordinance which prohibits illicit discharges? Name and/or code section(s).	YES NO
Exclusions (non-stormwater discharges) allowed:	
Types of enforcement mechanisms available:	Notices of Violations (NOV) YES NO Administrative fines YES NO Stop-work orders YES NO Civil penalties YES NO Criminal penalties YES NO Other:
Official enforcement escalation plan or procedures in place?	YES NO

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Applicable Documents	Reviewed	Obtained
Ordinance(s) prohibiting illicit discharges		
Enforcement escalation plan or procedures		

Notes

Dry-Weather Screening	
Interview Question	**Response**
Map of MS4 system complete? If yes, hard copy or electronic?	YES NO
Who can access the map and for what purpose?	
Dry-weather field screening used to detect illicit discharges?	YES NO
Frequency and extent of field screening (i.e. 30 percent of major outfalls annually):	
Areas for screening prioritized? Criteria used:	YES NO Land use(s) in watershed YES NO Waterbody impairment YES NO Spills/Dumping incidents YES NO Other:
Checklist or reporting form utilized?	YES NO

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Dry-Weather Screening		
Interview Question	**Response**	
Dry-weather flows sampled and analyzed? Parameters:	YES	NO
Dry-weather screening findings tracked? Database used? Data tracked:	YES YES	NO NO

Applicable Documents	Reviewed	Obtained
Summary of field screening findings from previous year		
Written description of dry-weather field screening procedures		
Checklist or reporting form		

Notes

Investigation of Illicit Discharges		
Interview Questions	**Response**	
Investigation procedure adopted?	YES	NO
Summary of process used:		

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Investigation of Illicit Discharges	
Interview Questions	**Response**
Staff (departments/agencies) utilized:	
Enforcement mechanisms available:	Notices of Violations (NOV) __________ Administrative fines __________ Civil penalties __________ Criminal penalties __________ Abatement charges for damage __________ Other:

Applicable Documents	Reviewed	Obtained
Investigation procedures		

As a part of the audit, review complete paperwork trails for several illicit discharge events (including a spill and an unknown illicit discharge in the storm drain system). Determine if the full investigation process was documented and if adequate enforcement actions taken when required.

Illicit Discharge Location or Case File Name #1:	
Summarize illicit discharge event:	
Full investigation process documented?	YES NO
Source determined?	YES NO
Enforcement action taken?	YES NO
Describe: Describe:	

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Illicit Discharge Location or Case File Name #1:
Notes:

Illicit Discharge Location or Case File Name #2:		
Summarize illicit discharge event:		
Full investigation process documented?	YES	NO
Source determined?	YES	NO
Enforcement action taken?	YES	NO
Describe:		
Notes:		

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Public Awareness & Reporting		
Interview Questions	**Response**	
Spill reporting hotline?	YES	NO
Complaint tracking database or system? Describe:	YES	NO
Outreach materials used to educate public about illicit discharges:		
Subwatersheds or neighborhoods prioritized for outreach based on complaints or land use?	YES	NO

Applicable Documents	Reviewed	Obtained
Examples of outreach materials		
Print out of complaint database or tracking system files		

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Spill Prevention & Response	
Interview Questions	**Response**
Spill response plan or procedures adopted? Who responds?	YES NO
Adequate equipment and training for staff?	
Tracking of spills and response? Database used?	YES NO

Applicable Documents	Reviewed	Obtained
Spill tracking system		

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Used Oil & Toxics Management	
Interview Questions	**Response**
Types of waste managed:	Household Hazardous Waste __________ Used oil/filters __________ Batteries __________ Thermometers __________ White goods (e.g. refrigerators) __________ E-waste (e.g. computers) __________ Pharmaceuticals __________ Paint __________ Other
Describe public outreach materials used:	

Applicable Documents	Reviewed	Obtained
Outreach materials		

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Sanitary Sewer Discharges		
Interview Questions	**Response**	
Sanitary sewer systems evaluated to determine storm sewer cross-connections or overflow locations?	YES	NO
Extent of infiltration and inflow into storm sewer system:		
Sewer spill and cleanup procedures in place?	YES	NO

Applicable Documents	Reviewed	Obtained
Sewer spill and clean procedures		

Notes

Staff Education and Training		
Interview Questions	**Response**	
Staff trained to identify illicit discharges? Frequency:	YES	NO
Materials used to train staff:		

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Staff Education and Training		
Interview Questions	**Response**	
Applicable Documents	**Reviewed**	**Obtained**
Training materials		
Training records		

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Appendix C – Field Inspection Worksheets

This appendix includes the following four field inspection worksheets:

- MS4 Maintenance Facility Field Inspection Worksheet
- Construction Field Inspection Worksheet
- Industrial/Commercial Facility Field Inspection Worksheet
- Outfall Visual Field Inspection Worksheet

Use these field inspections sheets as you accompany MS4 staff on inspections of municipal facilities, construction sites and industrial/commercial facilities. In addition, the outfall visual field inspection worksheet can be used to assess the condition of an MS4's outfall(s), thereby giving an evaluator an indication of the quality of the MS4's maintenance program.

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MS4 Maintenance Facility Field Inspection Worksheet

Permittee:	
Address of facility:	**Size of facility:**
Date of visit:	**Time of visit:**
Provide the name(s) and title(s) of permittee staff present during inspection	
Name	**Title**
Evaluator Observations:	
SWPPP or stormwater plan	
Has the maintenance facility developed a SWPPP or stormwater plan?	
Does the plan include a site map, list of pollutant sources, BMPs, and maintenance procedures?	
Does the permittee conduct and document periodic inspections of the facility?	
Are storm drains labeled and free of debris?	
Vehicle maintenance, fueling and washing	
Are vehicle maintenance activities conducted in a designated place not exposed to stormwater?	
Are fueling stations properly designed with spill kits nearby?	
Are vehicles washed on-site? Is wash water discharged to the MS4 or sanitary sewer?	
Material storage	
Are all materials that are potential stormwater contaminants stored under cover or in secondary containment?	
Hazardous waste management	
Are all hazardous materials properly labeled and stored to prevent exposure to stormwater runoff?	
Waste management	
Are waste bins covered with waste properly disposed in containers?	
How is landscape waste stored?	
Spill response	
Does the facility have a spill response plan, and are spill kits readily available?	
Employee training	
What type of stormwater training do maintenance staff receive?	
Notes or additional information:	

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Construction Field Inspection Worksheet

Permittee:		
Address of project:	**Size of project:**	**NOI?**
Date of visit:	**Time of visit:**	
Name of permittee's inspector(s):		

Provide the name(s) and title(s) of site superintendent or contractor(s) present during inspection	
Name	**Title**

Evaluator Observations:	
Inspector Training/Knowledge	
Is the inspector knowledgeable about: o Erosion and sediment control BMPs, o Stormwater/pollution prevention BMPs, o Local stormwater requirements, and o Legal authority (ordinances)?	
Is the inspector familiar with the requirements in the State stormwater construction general permit?	
What type of stormwater training did the inspector receive? When, and how often?	
Inspection Procedures	
Is a checklist used during the inspection?	
Is the inspector aware of previous stormwater inspection results at this site?	
Does the inspector review the approved plans (erosion and sediment control and/or SWPPP) required to be at the construction site?	
Does the inspector walk the entire site and inspect all points of discharge?	
Does the inspection address: o Erosion control o Sediment control o Waste management practices o Non-stormwater discharges?	
Did the inspector miss obvious violations?	
Are inspection findings documented in writing and presented to the site contact?	
Compliance/Enforcement	
How does the inspector address compliance issues (verbal warnings, NOV, stop work order, etc)?	
If there are compliance issues identified, is a deadline given for correction?	
Education	
Are any materials or brochures given to the site contact to educate them about appropriate BMPs?	

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Industrial/Commercial Facility Field Inspection Worksheet

Permittee:		
Address and Name of facility:	**Size of project:**	**NOI?**
Date of visit:	**Time of visit:**	
Name of permittee's inspector(s):		

Provide the name(s) and title(s) of facility representatives present during inspection	
Name	**Title**

Evaluator Observations:	
Inspector Training/Knowledge	
Is the inspector knowledgeable about: o Source Control BMPs, o Treatment Control BMPs, o Local stormwater requirements, and o Legal authority (ordinances)?	
Is the inspector familiar with the requirements in the State stormwater industrial general permit?	
What type of stormwater training did the inspector receive? When, and how often?	
Inspection Procedures	
Is a checklist used during the inspection?	
Is the inspector aware of previous stormwater inspection results at this site?	
Does the inspector review the BMPs in the industrial SWPPP (if available)?	
Does the inspector walk the entire facility and inspect all points of discharge?	
Does the inspection address: o Good housekeeping practices o Spill prevention and response o Materials handling and storage o Waste management practices o Non-stormwater discharges?	
Did the inspector miss obvious violations?	
Are inspection findings documented in writing and presented to the facility representative?	
Compliance/Enforcement	
How does the inspector address compliance issues (verbal warnings, NOV, stop work order, etc)?	
If there are compliance issues identified, is a deadline given for correction?	
Education	
Are any materials or brochures given to the facility representative to educate them about appropriate BMPs?	

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Notes or additional information:

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Outfall Visual Field Inspection Worksheet

Background

Permittee: ____ Date: ______________Time: ________________

Evaluator: ____ Predominant Watershed Landuse: ______________

Outfall Location: ____________ (Latitude) ___________ (Longitude)/ ______________________________________(Address)

Permittee Staff Interviewed: ____

Date Outfall Last Inspected by Permittee: ___________________ Days Since Last Rainfall _________ Inches __________

Photos Taken? Yes No Photo #s: ____

Outfall Description

End of Pipe Diameter (feet/inches): _____ Open Channel? Yes No	Outfall Submerged: Yes No If yes, in: ❑ Water ❑ Fully ❑ Partially ❑ Sediment ❑ Fully ❑ Partially	Pipe Material: ❑ Concrete ❑ PVC ❑ Steel ❑ Other: ____________	Pipe Condition: ❑ Good ❑ Fair ❑ Poor Describe: ______________ ______________________ ______________________
Shape: ❑ Circular ❑ Elliptical ❑ Box ❑ Other: ______________			

Visual Observations

Flow Present: Yes No
Flow Volume:
- ❑ Low
- ❑ Moderate
- ❑ Heavy
- ❑ Intermittent

Flow Color:
- ❑ Clear
- ❑ Muddy
- ❑ Milky or cloudy
- ❑ Sheen
- ❑ Soapy foam
- ❑ Other: ______________

Debris in Pipe:
- ❑ None
- ❑ Sediment
- ❑ Trash
- ❑ Other: ______________

____

____

Flow Odor:
- ❑ None
- ❑ Petroleum
- ❑ Sewage/rotten eggs
- ❑ Other: ______________

____

____

Debris Around Outfall:
- ❑ None
- ❑ Sediment
- ❑ Trash
- ❑ Other: ______________

Staining and Scum Present:
- ❑ None
- ❑ Red/Orange
- ❑ White
- ❑ Green algae
- ❑ Oily scum

Notes:

____

____

____

If flow is present, ask the following questions of the Permittee contact:

1. Has the outfall been inspected? Yes No If yes, when? ____________________________________

2. Was there dry weather flow during the last inspection? Yes (Go to Question # 3) No (Go to question # 6)

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3. Was there an investigation as to the source of the flow? Yes No If yes, describe the investigation.

4. What was the outcome of the investigation?

5. Does the permittee have documentation detailing the investigation and enforcement which resulted? Yes No Describe.

6. What are the permittee's next steps regarding the flow discovered during the field inspection? Ask the permittee to describe, in detail, how the flow will be investigated including specific staff members responsible, time frames for action, etc.

7. If the source of the dry weather flow is determined, what enforcement actions will the permittee take against the person responsible?

8. Are the actions described by the permittee contact confirmed in the Enforcement Response Plan? Yes No Describe.

Additional Comments or Observations:

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Appendix D – Reviewing an Annual Report

Annual Report Evaluation Worksheet

Date of Evaluation
Evaluator Name, Title
MS4 Permittee

Instructions: Use this worksheet as a guide when reviewing a permittee's annual report, as it highlights the information most useful for assessing the permittee's level of compliance. Keep in mind that additional information may be necessary to determine compliance based on specific local regulations, MS4 permit requirements, implementation strategies, or water quality issues.

Program Management Component
Name of department overseeing NPDES compliance:
Other departments involved in SWMP implementation:
Other municipalities or agencies implementing the SWMP:
Name of umbrella organization, if any:
SWMP or similar planning document?
Stormwater task force or committee: Internal? Intergovernmental?

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Program Management Component
Specific measurable goals referenced?
Revisions to the SWMP noted?
Water quality monitoring data (if any) analyzed for trends?
Program effectiveness assessed?

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Public Education and Participation Component
Name of department overseeing public education and participation:
Is an outreach strategy developed?
Specific stormwater messages used?
Specific target audiences identified?
Behavior changes tracked?
Stormwater hotline?
Methods used to distribute messages (printed material, media, etc.)
Effectiveness of education activities evaluated? Is a survey used?

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Public Education and Participation Component
Changes to the outreach strategy noted?
Attendance at public involvement activities?
Attendance for volunteer programs?
Public comments on the stormwater program?
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MS4 Maintenance Component
MS4 map or GIS?
Departments responsible for the following: • Catch basin maintenance: • Street sweeping: • Storm drain pipe maintenance: • Stormwater management structure maintenance: • Open channel maintenance:
Number or frequency of catch basin inspections/cleaning:
Street sweeping frequency/miles:
Number or frequency of pipe inspections/cleaning:
Number or frequency of inspections/cleaning of stormwater management structures: • Publicly owned: • Privately owned:
Frequency of open channel inspections/cleaning:

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MS4 Maintenance Component
Volume/weight of trash and debris removed from the MS4:
Areas targeted for higher frequency of maintenance?
Maintenance data analyzed to modify schedules or gauge effectiveness?
Locations/amounts used for the following: • Deicing salts or abrasives? • Pesticides? • Fertilizers?
Inspections of municipal facilities?
Inspection of maintenance yard(s)?
Sanitary sewer overflow occurrences?
Household hazardous waste collection: • Number of events? • Amounts collected? • Number of participants?

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MS4 Maintenance Component
Attendance at stormwater training for municipal staff?

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Construction Component
Erosion and sediment control plan review
Department responsible for plan review:
Number of plans reviewed and/or approved:
Size threshold or other criteria to trigger plan review:
Construction site inspections
Department responsible for private construction inspections during the following phases: • Grading phase: • Building phase: • Final inspection:
Different department for public projects? If yes, which department?
Number of inspectors who perform ESC inspections:
Number of active construction projects requiring inspections:
Frequency of routine inspections:

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Construction Component
Number of inspections performed (routine and follow-up):
Number of violations found:
Number of enforcement actions:
Training
Attendees at training for • Plan review staff: • Erosion and sediment control inspectors: • Contractors and developers:
Notes

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Post-Construction Component
Postconstruction plan review
Department responsible for postconstruction stormwater plan review:
Ordinance governing postconstruction controls:
Number of plans submitted for review (private and public projects):
Number of plan reviewers:
Size threshold for postconstruction stormwater plan review:
BMP inspection and maintenance
Department responsible for as-built certifications of structural stormwater BMPs:
Department responsible for structural stormwater BMP maintenance (public and private):
Frequency of inspections/maintenance:

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Post-Construction Component
Party responsible for maintenance (permittee, owner, etc):
Number of enforcement actions taken due to lack of BMP maintenance:
Training
Attendance at training for the following: • Plan review staff: • Stormwater BMP inspectors: • Developers, contractors, and engineers:
Notes

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Industrial/Commercial Component
Department(s) responsible for industrial/commercial stormwater inspections:
Ordinance governing stormwater controls at businesses:
Inventory of industrial facilities?
Number of industrial facilities:
Inventory of commercial facilities?
Number of commercial facilities:
Number of inspectors:
Frequency of inspection:

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Industrial/Commercial Component
Number of violations found:
Number of follow-up inspections performed:
Number of enforcement actions:
Attendees at stormwater inspector training:
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Illicit Discharge Component
Department responsible for illicit discharge complaint response and investigation:
Ordinance(s) governing illicit discharges and illegal dumping:
Calls to hotline:
Number of reported incidents (dry weather flows, illegal dumping, spills):
Source of incident report:
Number of incident responses:
Number of enforcement actions:
Number of completed investigations and outstanding investigations:

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Amount of pollutants entering the MS4 and/or receiving waters:
Number of dry weather screening sites:
Dry weather screening sites monitored each year:
Data analysis performed?
Amount of storm drain system inspected:
Number of sanitary sewer overflows (including volume of sewage discharged to the MS4):
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EXHIBIT 21

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State of California

Memorandum

To : Archie Matthews
Division of Water Quality

Date: FEB 11 1993

Elizabeth M. Jennings
Elizabeth Miller Jennings
Senior Staff Counsel
OFFICE OF THE CHIEF COUNSEL

From : **STATE WATER RESOURCES CONTROL BOARD**
901 P Street, Sacramento, CA 95814
Mail Code: G-8

Subject: DEFINITION OF "MAXIMUM EXTENT PRACTICABLE"

ISSUE

What is the meaning of the standard "maximum extent practicable" (MEP) as used in the Clean Water Act's storm water provisions, and how can this standard be communicated to the regulated community? How can this concept be included in the draft BMP manual?

CONCLUSION

The standard "maximum extent practicable" is not specifically defined for use in the storm water program. It has been defined in other rules, however, to require taking all actions which are technically feasible. I have included draft language for the manual.

DISCUSSION

Section **402(p) of the Clean** Water Act **(33** U.S.C. **§** 1342(p)) provides that permits issued for discharges from municipal separate storm sewers must require controls to reduce the discharge of pollutants "to the maximum extent practicable". The statutory language provides that municipal permits:

> "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

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> provisions as the [EPA] Administrator or the State determines appropriate for the control of such pollutants." Clean Water Act Section 402(p)(3)(B)(iii); 33 U.S.C. § 1342(p)(3)(B)(iii).

Neither Congress nor the U.S. Environmental Protection- Agency (EPA) has defined the term "maximum extent practicable", and yet this is the critical standard which municipal dischargers must attain in order to comply with their permits. (The State could have spelled out the specific controls which the municipalities were required to undertake. However, such an approach would have relinquished the municipal dischargers of any flexibility in implementing their storm water programs.)

On its face, it is possible to discern some outline of the intent of Congress in establishing the MEP standard. First, the requirement is to reduce the discharge of pollutants, rather than totally prohibit such discharge. Presumably, the reason for this standard (and the difference from the more stringent standard applied to industrial dischargers in Section 402(p)(3)(A)), is the knowledge that it is not possible for municipal dischargers to prevent the discharge of all pollutants in storm water. The second point which is clearly encompassed in the standard is that it is the permitting agency, and not the discharger, which is the ultimate arbiter on whether there has been sufficient reduction of pollutants.

The most difficult issue is determining how much pollutants must be reduced, or, in other words, which best management practices (BMPs) must be employed in order to comply with the MEP standard. While the term is not defined in the Clean Water Act or the EPA regulations, the same term does appear in other federal laws and regulations, and there are some definitions or interpretations which may be useful to the storm water program.

In the Uranium Mill Tailings Radiation Control Act of 1978 (42 U.S.C. § 7901, et seq.), the Department of Energy was required to designate within one year of the Act's adoption "to the maximum extent practicable" contaminated areas within the vicinity of uranium processing sites. In addressing a lawsuit brought after the Department designated very few of the "vicinity properties", the federal court declared that MEP means "a substantial majority of the locations" should have been designated within the year. Sierra Club v. Edwards (D.C.D.C. 1983) 19 ERC 1357. Where a NEPA regulation required that "to the maximum extent practicable" environmental clearance was required for uncompleted projects which had never undergone NEPA review, a court held that the regulation "mandates a meaningful

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environmental review" rather than a "perfunctory evaluation". Save the Courthouse Committee v. Lynn (S.D.N.Y. 1975) 408 F.Supp. 1323.

In an interim final regulation recently promulgated by the Department of Transportation, MEP is defined, where operators of onshore oil pipelines must have resources "to the maximum extent practicable" to remove and to mitigate or prevent worst case discharges. 49 CFR Part 194. MEP is defined to mean:

> "The limits of available technology and the practical and technical limits on an individual pipeline operator in planning the response resources required to provide the on-water recovery capability and the shoreline protection and cleanup capability to conduct response activities . . .."

Finally, the term MEP is used in the Superfund legislation, wherein permanent solutions and alternative treatment technologies must be selected "to the maximum extent practicable". CERCLA, Section 121(b). The legislative history of the language indicates that the relevant factors in determining whether MEP is met include technical feasibility, cost, and state and public acceptance. 132 Cong. Rec. H 9561 (Oct. 8, 1986).

While each of the above interpretations and definitions varies, they do follow a pattern. The pattern that emerges is that there must be a serious attempt to comply, and that practical solutions may not be lightly rejected. If a municipality reviews a lengthy menu of BMPs, and chooses to select only a few of the least expensive, it is likely that MEP has not been met. On the other hand, if a municipal discharger employs all applicable BMPs except those where it can show that they are not technically feasible in the locality, or whose cost would exceed any benefit to be derived, it would have met the standard. In any case, the burden would be on the municipal discharger to show compliance.

The definitions contained in the pipeline regulation and the Superfund leg-islative history are most analogous to storm water regulation. The major emphasis in both of these rules are technical feasibility. Similarly, the municipal dischargers should be required to employ whatever BMPs are feasible, i.e., are likely to be effective and are not cost prohibitive. Thus, where a choice may be made between two BMPs which should provide generally comparative effectiveness, the discharger may choose the least expensive alternative and exclude the more expensive BMP. However, it would not be acceptable either to reject all BMPs which would address a pollutant source or to pick a BMP based solely on cost, which would be clearly less effective.

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As you know, the BMP Guidance manual is being published by the Task Force, which is made up of dischargers, rather than by the State Water Board. As far as I know, there is no intention for the State Water Board to adopt the manual as its own guidance document. Therefore, it is important to stress in the manual, both in the section on MEP and in the front of the manual, that this manual is not a publication of the State or the Regional Water Boards, and that these Boards have not specifically endorsed the contents. Rather, the manual was assembled by a group of dischargers in the interest of assisting themselves and others to comply with the storm water permits. In the section on MEP, it should be stated that the final determination regarding whether a discharger was reduced pollutants to the maximum extent practicable can only be made by the Regional or State Water Boards, but that selection and implementation of BMPs through consideration of the listed factors should assist dischargers in achieving compliance.

The following language is suggested in order to clarify that the manual is not the product of the State Water Board:

> "This Manual was produced and published by the Storm Water Task Force, an advisory body of municipal agencies regulated by the storm water program. This Manual is not a publication of the State Water Resources Control Board or any Regional Water Quality Control Board, and none of these Boards has specifically endorsed the contents thereof. The purpose of this manual is to assist the members of the Task Force and other dischargers subject to storm water permits, ,in attaining compliance with such permits."

The following language is recommended in place of Insert A in the manual for municipal dischargers:

> "Although MEP is not defined by the federal regulations, use of this manual in selecting BMPs should assist municipalities in achieving MEP. In selecting BMPs which will achieve MEP, it is important to remember that municipalities will be responsible to reduce the discharge of pollutants in storm water to <u>the maximum extent practicable</u>. This means choosing effective BMPs, and rejecting applicable BMPs only where other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive. The following factors may be useful to consider:
>
> 1. Effectiveness: Will the BMP address a pollutant of concern?

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"2. Regulatory Compliance: Is the BMP in compliance with storm water regulations as well as other environmental regulations?

"3. Public acceptance: Does the BMP have public support?

"4. cost: Will the cost of implementing the BMP have a reasonable relationship to the pollution control benefits to be achieved?

"5. Technical Feasibility: Is the BMP technically feasible considering soils, geography, water resources, etc.?

"After selecting a menu of **BMPs**, it is of course the responsibility of the discharger to insure that all **BMPs** are implemented."

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EXHIBIT 22

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State Water Resources Control Board

Linda S. Adams
Secretary for Environmental Protection

Office of Chief Counsel
1001 I Street, 22nd Floor, Sacramento, California 95814
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(916) 341-5161 ♦ FAX (916) 341-5199 ♦ http://www.waterboards.ca.gov

Arnold Schwarzenegger
Governor

April 18, 2008

Ms. Paula Higashi, Executive Director
Commission on State Mandates
980 Ninth Street, Suite 300
Sacramento, CA 95814

Dear Ms. Higashi:

STORM WATER POLLUTION CONTROL REQUIREMENTS, FILES 03-TC-04, 03-TC-19, 03-TC-20, 03-TC-21: RESPONSE TO TEST CLAIMS 03-TC-04, 03-TC-19, 03-TC-20, 03-TC-21

The State Water Resources Control Board ("State Water Board") and the Los Angeles Regional Water Quality Control Board ("Los Angeles Water Board") jointly file this opposition to Test Claims 03-TC-04, 03-TC-19, 03-TC-20, and 03-TC-21. All of these test claims arise from a single permit that was issued by the Los Angeles Water Board as Order No. 01-182, Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharges within the County of Los Angeles, and the Incorporated Cities therein, Except the City of Long Beach ("the Permit").[1] The requests for reimbursement in the test claims arise almost entirely from two requirements in the Permit and consolidation is therefore proper.

The Permit was issued by the Los Angeles Water Board pursuant to requirements in the federal Clean Water Act ("CWA").[2] The State Water Board and Los Angeles Water Board have been authorized by the United States Environmental Protection Agency ("U.S. EPA") to issue NPDES permits—which are mandated by the CWA—in lieu of issuance of these permits by U.S. EPA. The Permit regulates the discharge of storm water runoff from the municipal separate storm sewer system (MS4) of 84 cities and County of Los Angeles to rivers and the Santa Monica Bay.

The federal Clean Water Act mandates that municipalities must apply for and receive permits regulating discharges of pollutants from their MS4s to waters of the United States. Pursuant to federal regulations, the Permit contains numerous requirements for the cities and County to take actions to reduce the flow of pollutants into the rivers and the Bay, known as Best Management Practices (BMPs). These test claims, filed by 20 cities and the County, seek reimbursement by the State of California for expenses they incur in implementing two of the requirements of the Permit: (1) Inspections of commercial and industrial facilities; and (2) Placement of trash receptacles at transit sites.

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[1] The Permit serves as National Pollutant Discharge Elimination System permit (NPDES) No. CAS004001. It was issued by the Los Angeles Water Board on December 13, 2001.

[2] Federal Water Pollution Control Act [FWPCA; 33 U.S.C.A. §§ 1251 et seq.] The federal Act is referred to herein by its popular name, the Clean Water Act ("CWA") and the code sections used are those for the CWA.

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In order to obtain reimbursement, the claimants must show that the requirements constitute a new program or higher level of service. They must prove either: (1) the program must carry out a governmental function of providing services to the public, or (2) the requirements, to implement a state policy, impose unique requirements on local governments and do not apply generally to all residents and entities in the state. The claimants must also prove that the costs are mandated on them by the state, rather than by federal law. Finally, they must prove that any additional costs beyond the federal mandate are substantial and not *de minimis*. The claimants do not meet any of these tests.

The Permit as a whole, and including the inspection and trash receptacle provisions, is mandated on the local governments by federal law. The federal mandate applies to many dischargers of storm water, both public and private, and is not unique to local governments. The federal mandate requires that the Permit be issued to the local governments; it is not a question of "shifting" the costs from the state to the local governments. The specific requirements challenged are consistent with the minimum requirements of federal law. Even if the Permit were to be interpreted as going beyond federal law, any additional state requirements are *de minimis*. Moreover, the costs are not subject to reimbursement because the programs were proposed by the cities and County themselves, and because they have the ability to comply with these requirements through charges and fees, and are not required to raise taxes. The U.S. EPA has submitted a letter to the State Water Board dated April 10, 2008, in agreement with this position.[3]

Description of the Test Claims

The test claims focus on two discrete requirements in the Permit: the requirement to inspect certain industrial and commercial facilities that discharge into the MS4 and the requirement for some of the permittees to place and maintain trash receptacles at transit stops.

Industrial and Commercial Facilities Control Program (Part 4.C.)

Test claims 03-TC-19, 03-TC-20, and 03-TC-21 claim subvention for costs of complying with permit requirements to reduce pollutants from industrial and commercial facilities. Test claims 03-TC-19 and 03-TC-20 are limited to Part 4.C.2.a. and b., the requirements to inspect industrial and commercial facilities. Test Claim 03-TC-21 refers broadly to Part 4.C., the entire industrial and commercial facilities control program, but the costs discussed in the test claim are those associated with inspections. (See, Declaration of Richard Montevideo, No. 4.) Therefore, the Boards' analysis of the subvention claims for Part 4.C. is generally limited to the inspection requirements.

Part 4.C. of the Permit requires permittees to implement pollutant reduction and control measures at industrial and commercial facilities within their jurisdictions. Permittees may choose from various pollutant reduction and control measures, alone or in combination and

[3] Letter dated April 10, 2008, from Alexis Strauss, Director, Water Division, U.S. EPA to Tam M. Doduc, Chair, and Dorothy R. Rice, Executive Director, State Water Board, Attachment 3.

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before, during, or after the activities that generate pollutants. The permittees are required to track, inspect, and ensure compliance at those facilities that are critical sources of pollutants in storm water.

Critical sources are specified commercial facilities (restaurants and automobile-related businesses), and industrial facilities that are required by federal regulations to obtain their own NPDES storm water permits.

Part 4.C.2.a. and b. contain inspection requirements, which are generally to conduct two inspections of facilities over a 5-year period. The Permit describes what the inspector must look at. (For example, inspectors at restaurants must see if operators pour grease into the street, and gas station inspectors must observe whether fuel-dispensing areas are swept.) The Permit states that for industrial sites, inspection requirements do not apply if the Los Angeles Water Board conducted an inspection of the site within two years.

<u>Trash Receptacle Requirements</u> (Part 4.F.5.c.3)

Test claims 03-TC-04, and 03-TC-20, and 03-TC-21 claim subvention for costs of complying with permit requirements for some of the permittees to place trash receptacles at public transit stops. Claim 03-TC-21 states that it challenges the entirety of the storm drain operation and maintenance and streets and road maintenance requirements, but the only costs in these sections for which it seeks reimbursement are for the placement and maintenance of trash receptacles. The claims are limited to the trash receptacle requirements for those municipalities that are not subject to a separate federal requirement, the "trash TMDL."[4] The requirements are to place trash receptacles at all transit stops and to maintain these receptacles.

<u>Discharge Prohibitions and Receiving Water Limitations</u> (Parts 1 and 2)

Test claim 03-TC-21 appears to claim subvention for costs associated with Parts 1 and 2 of the Permit, which include general prohibitions and requirements to protect water quality. The claim itself fails to specify any particular costs associated with this claim, other than a general study that considers a hypothetical treatment plant. As discussed below, storm water permits are written with the assumption that there will be no treatment plant and the permit certainly does not require one. In any event, there are no signed declarations to support this claim and no estimate of costs to the specific claimants.

<u>Background of Federal Law Requirements for Storm Water Permits</u>

In order to understand the federal mandate that required this permit, some background of the federal law and of MS4s is necessary. In 1972, the federal Clean Water Act was extensively amended to implement a permitting system for all discharges of pollutants from "point sources"

[4] As will be explained below, the Los Angeles Water Board has also adopted a federally-mandated total maximum daily load ("TMDL") for the deposition of trash into rivers and the Bay. The claimants do not claim subvention for the trash receptacle requirements for those cities and portions of the County subject to the TMDL, presumably conceding that those requirements are not reimbursable.

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to waters of the United States.[5] The permits are issued pursuant to the national pollutant discharge elimination system, and are known as "NPDES permits." The 1972 amendments allowed U.S. EPA to authorize states to issue these permits.[6] California was the first state in the nation to obtain such authorization. In order to obtain this authorization, the California Legislature amended the Water Code, finding that the state should implement the federal law in order to avoid direct regulation by the federal government.[7] The California legislature mandated that California's permit program must ensure consistency with federal law.[8] The Water Boards are the state agencies charged with implementing the federal program.[9] The State Water Board incorporates the U.S. EPA regulations for implementing the federal permit program.[10] Therefore, both the CWA and U.S. EPA regulations are applicable to the permit program in California.[11] In California, permits to allow discharges into state waters are termed "waste discharge requirements."[12] The term "waste discharge requirements" is equivalent to the term "permit" in the CWA, when the waste discharge requirements are issued to comply with the CWA.[13] Thus, waste discharge requirements that the Water Boards issue to comply with the CWA are NPDES permits under federal law. When the Los Angeles Water Board, a state agency, adopts an NPDES permit in lieu of U.S. EPA, it must adopt as stringent a permit as the federal agency would have.[14]

The discharge of pollutants from point sources to waters of the United States is illegal, except in compliance with an NPDES permit.[15] In 1973, U.S. EPA issued regulations that exempted certain types of discharges it determined were administratively infeasible to regulate, including storm water runoff. The reason that such regulation is difficult, as will be more fully explained below, is that storm water runoff generally is not subjected to any treatment. Instead, it simply runs off urban streets, into gutters and drainage ways, and flows directly into streams, lakes, and the ocean.[16] This exemption was overruled in *Natural Resources Defense Council v. Costle* (1977) 568 F.2d 1369, which held that the exemption was illegal, and ordered U.S. EPA

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[5] CWA §§ 301 and 402.

[6] CWA § 402(b).

[7] Wat. Code, § 13370 *et seq.*, adding Chapter 5.5 to the Porter-Cologne Water Quality Control Act.

[8] Wat. Code, § 13372.

[9] Wat. Code, § 13370.

[10] Cal. Code of Regs., tit. 23, (C.C.R.) § 2235.2.

[11] The permits *may* also include additional state requirements. (C.C.R., tit. 23, § 2235.3; *City of Burbank v. State Water Resources Control Bd.* (2005) 35 Cal.4th 613.)

[12] Wat. Code, § 13263.

[13] Wat. Code, § 13374.

[14] CWA § 402(b).

[15] CWA § 301(a). In general, "navigable waters" or "waters of the United States," includes all surface waters, such as rivers, lakes, bays and the ocean. (CWA § 502.)

[16] The chief traditional categories of discharges subject to NPDES permits are industrial process wastewater and sanitary sewer effluent. Both of these discharges are typically processed in a treatment plant before they are discharged to surface waters.

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to require NPDES permits for storm water runoff. In *Costle*, the court suggested innovative methods for permitting, including using general permits for numerous sources and issuing permits that "proscribe industry practices that aggravate the problem of point source Pollution."[17] Where permits proscribe actions that dischargers must implement, these requirements are commonly called "best management practices" ("BMPs").

Despite the *Costle* decision, U.S. EPA had not adopted regulations implementing a permitting program for storm water runoff by 1987. That year, Congress amended the CWA, specifically requiring storm water permits for industrial and municipal storm water runoff.[18] The amendments require NPDES permits for "[a] discharge from a municipal separate storm sewer system ["MS4"] serving a population of 250,000 or more."[19] The CWA contains three provisions specific to permits for MS4s: (1) Permits may be issued on a system- or jurisdiction-wide basis; (2) Permits must include a requirement to effectively prohibit non-storm water discharges into storm sewers; and (3) Permits must require controls to reduce the discharge of pollutants to the maximum extent practicable ("MEP").[20] In describing the controls that permits must include, the statute states that the controls shall include: "management practices, control techniques and system, design and engineering methods, and such other provisions as the [permit writer] determines appropriate for the control of such pollutants."[21] Thus, the federal law mandates that permits issued to MS4s must require management practices[22] that will result in reducing pollutants to the MEP. The state is required, by federal law, to select the BMPs.[23]

In 1990, U.S. EPA adopted regulations to implement section 402(p).[24] The regulations define which entities need to apply for permits and also the information they must include in permit applications. The regulations define "industrial activity" to include numerous categories of manufacturing, construction, and other typically private enterprises.[25] The regulations define MS4s as storm sewer systems operated by numerous public agencies, including cities, counties, states, and the federal government.[26] While both industrial activities and MS4s must

[17] *Costle, supra*, at 1380.

[18] CWA § 402(p).

[19] CWA § 402(p)(2)(C). U.S. EPA defines municipal separate storm sewer systems (MS4s) that serve a population over 250,000 as "large" MS4s. The population of the County of Los Angeles is approximately 9.5 million. (Permit, D.1.)

[20] CWA § 402(p)(B).

[21] *Ibid.*

[22] These are commonly referred to as "best management practices," or "BMPs."

[23] *NRDC v. USEPA* (9th Cir. 1992) 966 F.2d 1292.

[24] Vol. 55, Federal Register (Fed.Reg.) 47990 and following.

[25] 40 C.F.R. § 122.26(b)(14).

[26] 40 C.F.R. § 122.26(b)(8).

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obtain permits, the requirements in the industrial permits must be more stringent than in MS4 permits.[27]

In order to obtain coverage under an NPDES permit, as required by the CWA, entities seeking coverage file an application with the permitting authority and the permitting authority holds a public hearing on contested permits.[28] U.S. EPA regulations specify the information that applicants for MS4 permits must include in their applications.[29] For large and medium MS4s, the application requirements are extensive.[30] Some of the application requirements relevant to these Test Claims are: management programs including procedures to control pollution resulting from construction activities (at § 122.26(d)(1)(v)), legal authority to control the contribution of pollutants associated with industrial activity (at § 122.26(d)(2)(i)(A)), programs to control illicit discharges to the MS4 (at § 122.26(d)(1)(v)), and conducting inspections to determine compliance with permit conditions (at § 122.26(d)(2)(i)(F)). The permit applicants must propose management programs that the permitting authority will consider in adopting the permit.[31] The management programs must address oversight of discharges into the system from the general population and from industrial and construction activities within its jurisdiction, and also maintenance and control activities by the permittees.[32]

Most NPDES permits are largely comprised of numeric limitations for pollutants. Compliance is measured by sampling the treated effluent, which is discharged from a treatment plant into surface waters. These permits are written assuming that an engineered treatment plant can be built and operated to obtain a specified effluent. Storm water permits, on the other hand, usually require dischargers to implement BMPs that will result in lessening the pollutants in the runoff, since without a treatment plant the pollutants can flow directly into surface waters. Storm water permits apply to several types of entities—industries, construction, and municipalities—and all usually mandate BMPs. For municipalities that operate MS4s, the BMPs require the municipalities take actions that will lessen the incidence of pollutants *entering* storm drains by regulating the *behavior and practices* of the municipalities, their residents, and their businesses.[33]

U.S. EPA has issued regulations and guidance documents that discuss the types of BMPs that must be included in storm water permits in order to reduce the discharge of pollutants in storm

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[27] *Defenders of Wildlife v. Browner* (9th Cir. 1999) 191 F.3rd 1159. The differences between municipal and industrial permits are complicated, but are relevant to the question whether this permit addresses a uniquely governmental program, and are therefore discussed in more detail below.

[28] CWA § 402(b)(3).

[29] 40 C.F.R. § 122.26(a)(4). The U.S. EPA regulations have varied requirements depending on the size of the population served by the MS4. A "large" MS4 serves a population of 250,000 or more. (40 C.F.R. § 122.26(b)(4).) Los Angeles County and the 84 cities regulated by this permit far exceed the minimum population for a large MS4.

[30] 40 C.F.R. § 122.26(d).

[31] 40 C.F.R. § 122.26(d)(2)(iv).

[32] *Ibid.*

[33] There may also be engineered solutions, and there are some in Los Angeles, but it is important to keep in mind that there is no single engineered storm sewer treatment plant as there is for sanitary sewage.

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water to the "maximum extent practicable." Numerous guidance documents point to inspections of businesses and proper trash collection as important parts of an effective BMP program.[34] U.S. EPA has issued an MS4 Program Evaluation Guide, which includes a lengthy process for conducting inspections of businesses. This Guide makes clear that inspections of businesses are mandatory:

> Inspections
> Most effective industrial/commercial inspection programs maintain a complete facility inventory and group them according to priorities established by the permittee. An inspection frequency is determined based on priority, and a database is used to manage such information as inspection findings, enforcement actions, and required follow-up activities. Many permittees use and cross-train existing staff to perform industrial/commercial inspections, but some permittees may need to maintain an exclusive stormwater inspector due to a potentially large number of high-priority facilities. There should be an inspection standard operating procedure that has been formalized and documented. It should include a checklist to be used during the inspection and possibly a report format. Inspectors should be aware of federal, state, and local stormwater regulations that may apply to industrial/commercial facilities. Inspectors should be familiar with various types of BMPs commonly used at the types of facilities typically found in the permit area and should be able to educate facility operators about such BMPs. In addition, inspectors should understand and use the permittee's established enforcement escalation response plan to gain compliance as necessary. The inspection staff should be proficient in the enforcement escalation procedure and should properly document all enforcement actions accordingly. Inspections should be used not only to identify non-compliance issues, but as an opportunity to educate facility operators about proper stormwater BMPs.[35]

The Guide also states that MS4 programs must address trash and litter.[36]

Adoption of the Los Angeles MS4 Permit

Starting in 1990, pursuant to the CWA amendments of 1987, the Los Angeles Water Board issued storm water permits to the County of Los Angeles and to the cities therein.[37] Without such a permit, the cities would be discharging pollutants in violation of federal law.[38] The permit

[34] See, e.g., Guidance documents at http://cfpub.epa.gov/npdes/docs.cfm?document_type_id=1&view=Policy%20and%20Guidance%20Documents&program_id=6&sort=name , including http://www.epa.gov/npdes/pubs/owm0233.pdf (citing examples from MS4 permits throughout the country).

[35] MS4 Program Evaluation Guidance, at pp. 77-78.

[36] *Id.* at 79.

[37] For reasons not relevant to this matter, one city—Long Beach—has a separate permit. The current permit covers 84 cities.

[38] CWA §§ 301(a), 402(p)(3)(B).

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that is the subject of these test claims is the third such permit, and was adopted December 13, 2001.[39] It is largely comprised of requirements to implement BMPs, most of which were proposed by the permittees.[40] The County and thirty-two of the cities challenged numerous aspects of the permit and the process by which it was issued, culminating in a court of appeal decision upholding the permit in its entirety.[41]

On February 1, 2001, the County, on behalf of all permittees,[42] submitted a Report of Waste Discharge (permit application), including a Stormwater Quality Management Plan (SQMP). The SQMP constituted the permittees' proposal for the BMPs that would be required in the permit.[43] (Permit C.) The permit that was ultimately adopted was based on the SQMP, with some revisions and additions necessary to meet minimum federal requirements. (*Id.*) The SQMP prepared by the County included several proposed BMPs that relate to inspections of commercial and industrial facilities and placement and maintenance of trash receptacles:

(1) Municipalities must conduct site visits to industrial and commercial facilities, including automotive service businesses and restaurants, which must include, "a site walk-through to verify for, at a minimum, evidence of BMP implementation," and shall revisit facilities and take enforcement where illicit discharges are found;[44]

(2) Municipalities will maintain a database of automotive and food service facilities, including whether they have "NPDES stormwater permit coverage;"[45] and

(3) Municipalities must minimize trash from entering recreational water bodies,[46] remove trash from open channels;[47] and control litter and debris in streets.[48]

The SQMP included detailed requirements for municipalities to implement at construction sites, including inspections by the municipality.[49] The SQMP proposed that all municipalities be

[39] NPDES permits generally expire after 5 years, and must be reissued thereafter.

[40] A single permit applies to the County and 84 cities. Thus, while some entities may disagree with some provisions, other entities will agree and the entire group may propose permit terms that some cities oppose. The entire group submits a single proposed storm water management plan.

[41] *County of Los Angeles v. State Water Resources Control Board* (2006) 143 Cal.App.4th 985; referred to hereafter as *County of Los Angeles.*

[42] All permittees include the County and 84 cities. The County and the 21 cities that filed these Test Claims participated jointly with the application and permitting procedures with the remaining 63 cities who did not file Test Claims.

[43] The SQMP is several hundred pages. Relevant sections are attached; the entire SQMP is available should the Commission request it.

[44] SQMP, pp. 22-23 and 28.

[45] *Ibid.*

[46] SQMP, ES-6

[47] SQMP, ES-7

[48] *Ibid.*

[49] SQMP, pp. 24-26.

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required to collect trash along open channels and encourage voluntary trash collection in natural stream channels.[50] The SQMP contains an Illicit Connection and Illicit Discharge Elimination Program, which includes education of inspectors employed by the permittees who will investigate businesses.[51]

Following adoption of the permit and a petition to the State Water Resources Control Board ("State Water Board"), the County, 32 cities,[52] the Los Angeles County Flood Control District and industry groups representing builders filed suit challenging numerous provisions in the Permit. The Superior Court upheld the Permit, and the Court of Appeal affirmed the judgment in its entirety.[53] First, the court held that the permit as a whole "imposes reasonable pollutant discharge requirements." Because the minimum federal requirement is that the permit require the municipalities to reduce pollutants to the maximum extent practicable, the court clearly determined that the permit's requirement are MEP. In its discussion of the consideration of costs to the municipalities, the court found that the permit did not exceed any federal requirements:

> "The permit explicitly states it is intended to provide a cost-effective storm water pollution program to the maximum extent possible. The permit applies the same cost-effective analysis to efforts to reduce the flow of pollutants into receiving waters. Moreover, the [Los Angeles Water Board] in its finding referred to a report specifying how the 'maximum extent practicable' requirement includes considerations of costs and benefits."[54]

The court also discussed various cost analysis reports and U.S. EPA Guidance. It rejected the claim that the permit's requirements exceeded the federal mandatory standard. The court specifically upheld the inspection requirements, stating: "*there is federal regulatory authority* that required [the Los Angeles Water Board] to consider imposing the inspection requirements."

Several of the permittees filed these test claims with the Commission on State Mandates. The Commission rejected the claims, basing its determination on Government Code section 17516, subdivision (c), which exempted Water Board permits from the requirements to reimburse state-mandated local funds. That action also resulted in a Court of Appeal decision finding that subdivision to be unconstitutional and remanding to the Commission to determine the test claims.[55] In its decision, the court stated that the Commission must address factual issues

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[50] SQMP, p. 28

[51] SQMP, App. D

[52] These include 18 of the cities that filed the Test Claims, and Bellflower, Claremont, Diamond Bar, Gardena, Hawaiian Gardens, Industry, Irwindale, La Mirada, Lawndale, Monrovia, Paramount, Rosemead, Santa Clarita, Santa Fe Springs, Torrance, Walnut, and Whittier.

[53] *County of Los Angeles, supra.* Some of the determinations of the appellate court discussed here were not published and thus cannot be cited as precedent in other cases. They are binding on the claimants. A copy of the entire decision is attached.

[54] Unpublished decision, at p. 20.

[55] *County of Los Angeles v. Commission on State Mandates* (2007) 150 Cal.App.4th 898.

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regarding the requirements to conduct inspections and to place and maintain trash receptacles constitute state or federal mandates.

Following *Commission on State Mandates*, each of the four test claims was re-filed without any revisions.[56] All of the test claims are based upon requirements in the permit. Test Claim 03-TC-04 was filed by the County of Los Angeles, and challenges the requirement to place trash receptacles at transit stops.[57] Test Claim 03-TC-19 was filed by the County of Los Angeles, and challenges the requirements to inspect industrial and commercial businesses.[58] Test Claim 03-TC-20 was filed by nine cities[59] and challenges the requirements for trash receptacles and inspections, and the general requirements for a construction program.[60] Test Claim 03-TC-21 was re-filed by ten cities[61] and challenges the following permit requirements: discharge prohibitions, receiving water limitations, industrial program, construction program, storm drain program, and street and road maintenance[62]. While Test Claims 03-TC-20 and 03-TC-21 appear to assert broader requests for reimbursement, they address in detail only the requirements for inspections and trash receptacles, and these are the only requirements that the court in *Commission on State Mandates* stated were subject to the test claims.[63] In light of the absence of the necessary information for such claims and the court's remand, we assume that any claims additional to the inspections and trash receptacles are not valid claims.

In addition to the litigation over this permit, cities made similar arguments against an MS4 permit adopted by the Santa Ana Regional Water Quality Control Board. In a published decision, an appellate court in that case made additional findings applicable to the arguments in this matter[64]. It found that there was no evidence to support an argument that the permit "exceeded federal requirements." This finding is important because the cities in *Rancho Cucamonga* had argued that a ground for overturning that permit was that it used the same provisions as had

[56] The State Water Board and Los Angeles Water Board received several Notices of Complete Test Filing: a letter dated October 16, 2007, stated 03-TC-21 was complete; a letter dated October 29, 2007, stated that 03-TC-04 was complete; a letter dated October 29, 2007, stated that 03-TC-19 was complete; and a letter dated December 12, 2007, stated 03-TC-20 was complete. On December 21, 2007, the Commission extended time to respond to all four test claims until April 21, 2008.

[57] 03-TC-04 challenges Permit Part 4.F.5.c.3.

[58] 03-TC-19 challenges Permit Part 4.C.2.a. and b.

[59] The cities that filed the test claim are Artesia, Azusa, Beverly Hills, Carson, Commerce, Norwalk, Rancho Palos Verdes, Westlake Village, and Vernon.

[60] 03-TC-20 challenges Permit Part 4.C.2.a. and b., 4.E, and 4.F.5.C.3.

[61] The cities that filed the test claim are Arcadia, Baldwin Park, Bellflower, Cerritos, Covina, Downey, Monterey Park, Pico Rivera, Signal Hill, South Pasadena, and West Covina.

[62] 03-TC-21 challenges Permit Parts 1, 2, 4.C, 4.E, 4.F.5 and 6. In a letter dated January 18, 2008, sent to the Commission from Howard Gest, he states that the cities he represents, which include five of the cities that filed the claim, "do not currently intend to pursue a claim" as to Parts 1 and 2, but that the limitation is "without prejudice." In light of the fact that Mr. Gest apparently does not represent all of the cities that filed the claim and the limited nature of this limitation, we will address Parts 1 and 2 and ask the Commission to determine that these parts do not create a reimbursable mandate.

[63] 150 Cal.App.4th 898, 903.

[64] *City of Rancho Cucamonga v. Regional Water Quality Control Board*, 135 Cal.App.4th 1377.

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been crafted for other permittees, including the Los Angeles MS4 permit. The *Rancho Cucamonga* court specifically addressed inspection requirements, holding that federal law, either expressly or by implication, required NPDES permittees to perform inspections for illicit discharge prevention and detection, including inspection of industrial facilities and construction sites. Because the Los Angeles MS4 permit is based on BMPs and courts have determined that it is consistent with MEP, it is necessarily no more stringent than required by federal law.

State Mandate Law

Article XIIIB, Section 6 of the California Constitution requires subvention of funds to reimburse local governments for state-mandated programs in specified situations. There are several exceptions and limitations to the subvention requirements that provide bases for the Commission to determine that the Test Claims are not subject to subvention. Article XIIIB, Section 6 provides: "Whenever the Legislature or any state agency mandates a new program or higher level of service on any local government, the State shall provide a subvention of funds to reimburse that local government for the costs of the program or increased level of service."

Implementing statutes clarify that no subvention of funds is required if: (1) the mandate imposes a requirement that is mandated by a federal law or regulation and results in costs mandated by the federal government, unless the statute or executive order mandates costs that exceed the mandate in that federal law or regulation (Govt. Code, § 17556(c)); or (2) the local agency has the authority to levy service charges, fees, or assessments sufficient to pay (Govt. Code, § 17556(d)); or (3) the local agency proposed the mandate (Govt. Code, § 17556(a)). Each of these exceptions to subvention applies to these Test Claims. All of the mandates for which the Test Claims seek reimbursement are mandated by federal law or regulation. The County and cities can assess fees for all of the costs incurred. The claimants themselves, as part of the group of the County and 84 cities who applied for the permit, proposed most of the specific requirements challenged.

Numerous judicial decisions have further defined limitations on the requirements for subvention of funds. Specifically, subvention is only required if expenditure of tax monies is required, and not if the costs can be reallocated or paid for with fees.[85] In addition, reimbursement to local agencies is required only for the costs involved in carrying out functions peculiar to government, not for expenses incurred by local agencies as an incidental impact of laws that apply generally to all state residents and entities. Laws of general application are not entitled to subvention.[86] The fact that a requirement may single out local governments is not dispositive; where local agencies are required to perform the same functions as private industry, no subvention is required.[87]

[85] *County of Los Angeles v. Commission on State Mandates* (2003) 110 Cal.App.4th 1176; *Redevelopment Agency v. Commission on State Mandates* (1997) 55 Cal.App.4th 976.

[86] *County of Los Angeles v. State of California* (1987) 43 Cal.3d 46.

[87] *City of Richmond v. Commission on State Mandates* (1998) 64 Cal.App.4th 1190.

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The Permit is not subject to subvention; it meets each of these exceptions. The requirements that are the subject of the claims are part of permits that meet, but do not exceed, the minimum federal requirements. The federal mandate is specifically directed at the municipalities and not at the state in general. The costs for the programs can be paid for by levying service charges, including charges to companies for conducting their businesses, fees for collection of refuse, fees for transit services, and fees especially enacted for storm water programs.[68] Compliance with NPDES permits, and specifically with storm water permits, is required by private industry also. In fact, the requirements for industrial and construction entities are more stringent than for government dischargers. In addition, the government requirements apply to all governmental entities that operate MS4s, including state and federal facilities; local government is not singled out. The local agencies can assess fees to perform the required tasks; tax monies are not required. Finally, to the extent that any portion of the claims would otherwise qualify for subvention, they are *de minimis* and therefore do not qualify.

In its remand, the court stated that the most significant issue is "whether the two obligations in question constitute federal or state mandates" and that these present factual issues for the Commission to decide.[69] The court pointed to four cases that the Commission stated would apply in making this determination.[70] Each case is discussed below:

City of Sacramento v. State of California (1990) 50 Cal.3d 51: The court held that application of unemployment insurance law to state and local agencies was not subject to subvention. In discussing whether the requirement was a federal mandate, the court held that the issue is whether compliance with the federal law was "mandatory" or "optional," which is based on the following factors: "A determination in each case must depend on such factors as the nature and purpose of the federal program; whether its design suggests an intent to coerce; when state and/or local participation began; the penalties, if any, assessed for withdrawal or refusal to participate or comply; and any other legal and practical consequences of nonparticipation, noncompliance, or withdrawal."[71]

Hayes v. Commission on State Mandates (1992) 11 Cal.App.4th 1564: The court considered claims for subvention for a special education mandate. It concluded that, although the program was a federal mandate, the state had freely chosen to shift the costs to local governments and that subvention was proper. The court held that the test for whether there is a federal mandate is whether compliance with federal requirements is "a matter of true choice," in other words whether participation in the federal program is "truly voluntary."[72] The court listed the significant factual determinations: "In our view the determination whether certain costs were imposed upon a local agency by a federal mandate must focus upon the local agency which is ultimately

[68] The claimants refer to limitations on assessing services fees under California law. The referenced law concerns only the percent of voters who must approve the assessment. In fact, the largest entity subject to the permit, the City of Los Angeles, has successfully adopted such an assessment.

[69] *Commission on State Mandates*, 150 Cal.App.4th 898, 918.

[70] *Id.*, at 919.

[71] 50 Cal.3d 51, 76.

[72] 11 Cal.App.4th 1564, 1582.

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forced to bear the costs and how those costs came to be imposed upon that agency. If the state freely chose to impose the costs upon the local agency as a means of implementing a federal program then the costs are the result of a reimbursable state mandate regardless whether the costs were imposed upon the state by the federal government."[73]

Long Beach Unified School District v. State of California (1990) 225 Cal.App.3rd 155: The court held that subvention does apply where actions are mandated by the state, which go beyond the federal constitution or case law. Because federal law clearly would not have required steps for de-segregation where there was no finding of segregation, subvention applied.

San Diego Unified School District v. Commission on State Mandates (2004) 33 Cal.4th 859: A school district sought subvention of funds to conduct expulsion hearings. The federal law made expulsions discretionary, but where expulsions occurred, the federal law mandated certain hearing procedures. The state law mandated expulsions whenever firearms were involved, and made all other expulsions discretionary. It also mandated some hearing procedures in addition to the federal requirements. The Supreme Court held that for firearms expulsions, the state mandated a higher level of service, and that all hearing costs for these expulsions were reimbursable, even those attributable to procedures mandated by federal law. It also held that no hearing costs are reimbursable for expulsions that are discretionary under state law. Even if the hearing procedures are mandated by state law, the court found they are incidental to federal due process requirements and are *de minimis* and therefore not reimbursable. In determining that any additional state-mandated hearing costs were *de minimis*, the court found that the state reasonably set forth requirements that were intended to implement the federal hearing requirements: "challenged state rules or procedures that are intended to implement an applicable federal law-and whose costs are, in context, *de minimis*-should be treated as part and parcel of the underlying federal mandate."[74]

<u>The Claims do not Qualify for Subvention</u>

<u>The Programs are Federal Mandates that Apply Directly to Local Governments; the State has not Shifted the Burden; and the Mandates do not Exceed Federal Law</u>

The challenged provisions are mandated by federal law. Two appellate courts have determined that the provisions in this permit constitute MEP—the minimum requirements mandated by federal law. The court in *Los Angeles* has determined that the Permit is cost-effective and based on the MEP standard. The court in *Rancho Cucamonga* found that a very similar permit met the MEP standard and did not exceed the minimum federal standard. That case specifically stated that the requirement to conduct inspections reflected MEP. The federal law specifically requires that permits be issued to the local governments that operate MS4s and that permits must require programs and actions that will result in reducing the pollutants that discharge from the MS4 to waters of the United States to the maximum extent practicable. The permit is a federal mandate on the local governments. It is the local governments that must apply for and obtain a permit. Without the permit, the cities are discharging pollutants in violation of federal

[73] *Id.* at 1593-4.

[74] 33 Cal.4th 859, 889.

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law.[75] If the Water Boards had not been authorized to issue the permit in lieu of U.S. EPA, that federal agency would have issued a similar permit directly to the local governments.

The claimants contend that the Los Angeles Water Board exercised discretion to impose requirements beyond those required by federal law because the Los Angeles Water Board had a choice in establishing the mandated programs and "[t]he [Water Boards] cannot point to any provisions of the Clean Water Act or related regulations that require the programs at issue in this claim."[76] The fact that some discretion is exercised in implementing a federal program does not mean that subvention is required. The court in *Hayes* explained that, where the state has some discretion in mandating the program but ultimately the factual situation requires some type of mandate, there is a federal mandate:

> "The remaining question is whether the state's participation in the federal program was a matter of "true choice" or was "truly voluntary." The alternatives were to participate in the federal program and obtain federal financial assistance and the procedural protections accorded by the act, or to decline to participate and face a barrage of litigation with no real defense and ultimately be compelled to accommodate the educational needs of handicapped children in any event. We conclude that so far as the state is concerned the Education of the Handicapped Act constitutes a federal mandate."[77]

The central issue before the Commission is whether the requirements to conduct inspections and to place trash receptacles at bus and train stops exceed the federal mandate for MS4 permits. As to the inspections, the claimants appear to concede that federal law specifically requires MS4s to conduct inspections of industrial facilities and construction sites, but claim that the Los Angeles Water Board could have conducted all of the inspections and instead exercised its discretion to "shift" the responsibility to the claimants. They base this contention on a permit issued by the State Water Board to industrial facilities[78] and contend that permit obligates the Regional Water Boards, including Los Angeles, to conduct inspections. Therefore, they claim, the Los Angeles Water Board has shifted that responsibility to the municipalities. They also contend that the federal law does not specify that restaurants and automobile-related businesses must be inspected. As to the trash receptacles, they claim that the federal law does not specify this particular BMP.

In order to evaluate these contentions, some more detailed discussion of the storm water permitting scheme established by U.S. EPA is necessary. Of particular importance are: the process of selecting BMPs that are included in MS4 permits; the obligation of MS4s to regulate discharges from businesses into their systems, including discharges that are simultaneously regulated by separate NPDES permits; the process for selecting which businesses to regulate; and the requirement for MS4s to conduct inspections.

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[75] CWA §§ 301(a), 402(p)(3)(B).

[76] Test Claim 03-TC-21, at page 10.

[77] 11 Cal.App.4th 1584, 1593.

[78] Order No. 97-03-DWQ; http://www.waterboards.ca.gov/stormwtr/docs/induspmt.pdf

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The Process for Selecting BMPs

The chief argument regarding trash receptacles is that the federal law does not specify this particular BMP and that, therefore, it exceeds federal law. The claimants appear to rely on *Hayes* to argue that the exercise of any discretion in selecting requirements automatically results in a reimbursable state mandate. As discussed above, however, the federal law specifically requires that the Water Boards prescribe the BMPs that the MS4 must implement. This issue was addressed succinctly in *Rancho Cucamonga*:

> In creating a permit system for dischargers from municipal storm sewers, Congress intended to implement actual programs. [Cite to *NRDC, supra.*] The Clean Water Act authorizes the imposition of permit conditions, 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." [Cite to CWA § 402(p)(3)(B)(iii).] The Act authorizes states to issue permits with conditions necessary to carry out its provisions. [Cite to § 402(a)(1).] The permitting agency has discretion to decide what practices, techniques, methods and other provisions are appropriate and necessary to control the discharge of pollutants. [Cite to *NRDC*.] That is what the Regional Board has created in the 2002 permit."[79]

Because the federal mandate requires the Water Boards to choose specific BMPs that are included in MS4 permits as requirements, the "discretion" exercised in selecting those BMPs is necessarily a part of the federal mandate. It is not comparable to the discretion that the courts in *Hayes* or *San Diego* spoke of, where the state truly had a "free choice." The Los Angeles Water Board was mandated by federal law to select BMPs that would result in compliance with the federal MEP standard. "The [Water Board] must comply with federal law requiring detailed conditions for NPDES permits."[80] This is completely different from the state discretion exercised in *San Diego*, where the state law compelled expulsions for bringing firearms to school, while the federal law clearly did not mandate such expulsions. Therefore, it is clear that the mere exercise of discretion in selecting BMPs, does not create a reimbursable mandate.

It is conceivable that an MS4 permit issued in California could require practices that exceed the federal requirement of MEP. It is clear, however, that inspection requirements do not exceed MEP. That issue has been specifically ruled on by *Rancho Cucamonga* and there are federal regulations, discussed below, that require these inspections. The claimants allege, however, that there is no similar requirement for the placement of trash receptacles at transit stops. The trash receptacle requirements in the Permit are different for those cities subject to a "trash TMDL" than for other cities. The Los Angeles Water Board has adopted TMDLs for some of the water bodies that receive discharges from MS4s subject to the permit. As required by the TMDL and federal law, the permit contains specific provisions for permittees that are subject to the trash TMDLs. The claimants do not seek subvention for those requirements. For

[79] *Rancho Cucamonga, supra*, at 1389.

[80] *Ibid.*

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permittees not subject to a trash TMDL, the permit requires they implement BMPs to reduce trash entering the MS4s, including placing trash receptacles at all transit stops that have shelters by August 1, 2002, and at all other transit stops by February 3, 2003, and that they maintain trash receptacles as necessary. (Permit, Part 4.F.5.c.3.)

The requirements regarding trash receptacles are found in the section of the Permit concerning public agency activities. (Part 4.F.) This section imposes BMPs concerning sewage treatment overflows, construction by public agencies, storm drain maintenance and operation, and municipal construction projects. In other words, these are BMPs concerning the municipalities' own activities, as opposed to its regulation of discharges into its system by others. U.S. EPA storm water regulations address BMP requirements for the MS4s' maintenance and operation of the storm sewer system. Specifically, the MS4s' plan must include maintenance activities and schedules, including a "description of practices for operating and maintaining public streets, roads and highways and procedures for reducing the impact on receiving waters of discharges from municipal storm sewer systems. . ."[81] As early as 1993, the Executive Officer of the Los Angeles Water Board directed all of the cities regulated by the permit to "increase cleaning frequency of and number of roadside trash receptacles in areas where needed."[82]

The requirements to control the release of trash into MS4s and surface waters are at the heart of the storm water program. "Storm sewer waters carry suspended metals, sediments, algae-promoting nutrients (nitrogen and phosphorus), *floatable trash*, used motor oil, raw sewage, pesticides, and other toxic contaminants into streams, rivers, lakes, and estuaries across the United States."[83] In carrying out the federal mandate to select BMPs, the decision to require trash receptacles at transit stops is a reasonable, practicable, and cost-effective method to reduce trash in storm water runoff. The claimants have not, and cannot, explain how such a requirement exceeds the federal standard of actions that reflect the "maximum extent practicable." The Permit also allows individual permittees to substitute BMPs for specific requirements in the Permit.[84]

At bottom, the trash receptacle requirements reflect the federal requirement to reduce pollutants from the MS4 to the maximum extent practicable. It is federal law that animates the requirement and federal law that mandates specificity in describing the BMPs.

<u>The Role of MS4s in Regulating Discharges from Industrial and Commercial Activities</u>

The claimants allege that because the Water Boards have a role in directly regulating businesses within the jurisdiction of MS4s, and therefore conduct inspections at such sites, that the requirements in the Permit for the MS4s to conduct inspections reflect a decision to shift the costs of a federal mandate from the state to local government. The court in *Hayes* discussed

[81] 40 C.F.R. § 122.26(d)(2)(iv)(A)(3).

[82] Letter dated June 17, 1993, from Robert P. Ghirelli to Thomas A. Tidemanson. Attachment 34.

[83] *Environmental Defense Center v. U.S. EPA* (9th Cir. 2003) 344 F.3d 832, 841; emphasis added.

[84] Permit, Part 4.A.1.

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this issue. There, the mandate was to the state generally, and the state government decided to shift the cost for implementing special education to local school districts. Here, there is no general mandate addressed to the entire state. Instead, the federal law clearly required that municipalities that operate MS4s must obtain and comply with a permit. The state does not operate the MS4; the mandate is directed to the municipalities.

In addition to the requirements for permits issued to municipalities, the Water Boards are also mandated to issue permits to entities that discharge storm water "associated with industrial activity."[85] As part of its responsibilities for its in lieu program, the State Boards must administer and enforce all of its permits.[86] The State Water Board has issued permits for industrial and construction discharges of storm water, and the Los Angeles Water Board administers those permits within its jurisdiction. Therefore, the Los Angeles Water Board does conduct inspections at businesses in Los Angeles County to ensure compliance with the state permits. In addition, the MS4 Permit requires the permittees also to conduct inspections. This approach, which may result in two different entities inspecting the same businesses to review storm water practices, was specifically envisioned and required by U.S. EPA in adopting its storm water regulations.[87]

In promulgating its regulations for MS4s and industrial dischargers, U.S. EPA made clear its intent to require industrial facilities that discharge into municipal storm sewers to obtain their own NPDES permits and *also* to require MS4s to regulate and be liable for these same discharges. In 1990, U.S. EPA adopted the regulations that spell out the federal mandates for MS4s to develop and implement plans for regulation of industrial facilities. In its Preamble to the regulations, it explained that MS4 permits "are expected to require that controls be placed on storm water discharges associated with industrial activity which discharge through the municipal system." It presented the rationale for this dual regulatory approach:

> "[U.S. EPA] believes that municipal operators of large and medium municipal systems have an important role in source identification and the development of pollutant controls for industries that discharge storm water through municipal separate storm sewer systems is appropriate. Under the CWA, large and medium municipalities are responsible for reducing pollutants in discharges from municipal separate storm sewers to the [MEP]. Because storm water from industrial facilities may be a major contributor of pollutants to municipal separate storm sewer systems, municipalities are obligated to develop controls for storm water discharges associated with industrial activity through their system in their storm water management program."[88]

[85] CWA § 402(p)(2)(B).

[86] CWA § 402(b).

[87] In fact, the Los Angeles Water Board acted to lessen any duplication of effort and costs to the municipal permittees by exempting them from inspection requirements if the same facility has been inspected by the Board.

[88] Vol. 55, Federal Register (Fed.Reg.), at 48009.

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Thus, U.S. EPA specifically mandated that industrial facilities were to be subject to permits issued directly to them by the Water Boards and also through MS4 permits, where municipalities must regulate the facilities: "Dischargers of storm water associated with industrial activity through municipal separate storm sewer systems will be subject to municipal management programs that address such discharges as well as to an individual or general NPDES permit for those discharges."[89]

Requirements for MS4s to Conduct Inspections

The federal regulations also specifically require local storm water agencies, as part of their responsibilities under NPDES permits, to conduct inspections.[90] Throughout the federal law, there are numerous requirements for entities that discharge pollutants to waters of the United States to monitor and inspect their facilities and their effluent.[91] The claimants are the dischargers of pollutants into surface waters; as part of their permit allowing these dischargers, they must conduct inspections. The Los Angeles Water Board is charged with administering and enforcing the permit. Its policing responsibilities may also include inspecting the facilities and waters it regulates, but that does not mean it is shifting its responsibilities when it properly mandates inspections by MS4s.

The Process of Selecting Which Businesses MS4s Must Regulate

The claimants contend that federally mandated inspections do not include restaurants, automotive service facilities, retail gasoline outlets, or automotive dealerships. Instead, they claim that the federal mandate is limited to municipal landfills, hazardous waste sites, industrial facilities listed under the federal Superfund law, and industrial facilities that the permittees themselves determined are contributing substantial pollutants to their systems.

They base this contention on the U.S. EPA's regulations for MS4 applications. The federal regulation states that the storm water management plan that MS4s must submit must address the municipalities' enforcement against pollutants from "municipal landfills, hazardous waste treatment, disposal and recovery facilities, industrial facilities that are subject to section 313 of title III of [the federal Superfund law], and *industrial facilities that the municipal permit applicant determines are contributing a substantial pollutant loading to the municipal storm sewer system.*"[92] The claim is essentially that, after MS4s submitted their first application for a permit, which was required by the U.S. EPA regulations in 1990,[93] and listed any industrial facilities they deemed to be contributors of substantial pollutant loading, the federal law did not mandate any further actions, regardless of whether new information or monitoring might reveal such

[89] *Id.* at 48058.

[90] 40 C.F.R. § 122.26(d)(2)(iv)(C). While the U.S. EPA regulations are phrased as "application requirements," wherein the MS4 must propose the various BMPs that will achieve MEP, these requirements must be included in the mandatory storm water management program. (*Los Angeles, supra*, 143 Cal.App.4th 985, 993.)

[91] See, e.g. CWA § 402(b)(2)(B); 40 C.F.R. § 122.44(l).

[92] 40 C.F.R. § 122.26(d)(2)(iv)(C); emphasis added.

[93] Vol. 55, Fed.Reg. 47990.

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contributors. This is not a reasonable reading of the federal regulation. In adopting this regulation, U.S. EPA acknowledged that this initial selection by MS4s was only a starting point and that the mandate was to follow where information and monitoring led:

> "The object of [the requirements in 122.26(d)(2)(iv)(C)] is initially to set priorities for monitoring requirements. Then, if the situation requires controls can be developed and instituted. . . . the selection of facilities is only a means of setting priorities for facilities for the development of municipal plans. ¶ EPA agrees. . . that there will be other facilities that are significant sources of pollutants and should be addressed by municipalities as soon as possible under management programs."

As early as 1993, the Executive Officer of the Los Angeles Water Board directed all of the cities regulated by the permit to implement facility inspections of "auto repair shops, auto body shops, auto parts and accessory shops, gasoline stations, and restaurants."[94] The letter noted that the BMPs listed therein constitute the minimum required for area-wide implementation, and that the list "is not an additional requirement, but incorporates BMPs already proposed by some permittees." Thus, it appears that the inspection requirements were, in fact, proposed by permittees.[95] In any event, MEP is not limited to the sources and controls proposed by the permittees. U.S. EPA Guidance documents make clear that MEP requires an iterative process, where municipalities assess sources, conduct investigations, and improve their programs.[96]

<u>The Local Governments have the Authority to Levy Service Charges, Fees, or Assessments to Pay for the Programs</u>

The County and cities need not spend tax monies to comply with the Permit. They can and do adopt fees from their residents and businesses that fund their storm water programs. The City of Los Angeles (the largest entity covered by the permit, and which has not filed any test claims) adopted a fee ordinance, based on property assessments, for implementation of the program. All of the municipalities have the ability to charge fees to businesses to cover inspection costs. The cities' trash collection responsibilities, which include placement of trash receptacles, are also paid for through existing fees. Moreover, the trash receptacle requirements that are the subject of the Test Claims are limited to public transit stops. Any additional costs associated with trash removal at these transit stops, a service cities already provide, could be borne by transit users through higher transit fees.

The cities and the County have failed to show that they must use tax monies to pay for these requirements. It is also clear that any "additional" costs that could conceivably be considered additional to the federal mandate would be *de minimis* and would not require payment from tax monies. For example, it is assumed that most cities routinely place trash receptacles at bus stops. In fact, the claimants make no allegation of any increased costs from this requirement;

[94] Letter dated June 17, 1993, from Robert P. Ghirelli to Thomas A. Tidemanson. Attachment 34.

[95] The issue of proposals by the permittees is discussed below.

[96] See, e.g. U.S. EPA document on Evaluating the Effectiveness of Municipal Storm Water Programs.

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instead, they *conflate any* costs by *listing* "estimated trash receptacles, catch basin, and/or other treatment devices – capital and installation costs."[97]

The Local Governments Applied for the Permit and Proposed the Programs

The County and cities bound by the permit requested the mandate and the Permit allows alternatives in the manner of compliance. The County and cities jointly applied for the permit and proposed a management plan that is consistent with many of the requirements in the permit. Relevant portions of the Report of Waste Discharge that the County submitted are attached. The entire Report of Waste Discharge is available upon request. It is clear from these attachments, which include not only proposed programs but a draft permit, that many of the programs subject to the claims—including regulation of industrial and commercial sites, and specifically restaurants and automobile-service businesses—were proposed in the permittees' original plan submitted in February 2001. For example, the permittees proposed that the permit prohibit discharge of wash waters from gas stations, auto repair garages, and other automotive service facilities.[98] In addition, the permittees proposed a requirement that they "visit" automotive service and food service facilities every two years, and that they "revisit" facilities and take enforcement action if there is evidence of continuing illicit discharges.[99] The permittees submitted a lengthy list of proposed BMPs that site inspectors should look for during site visits.[100] Whether the term is "site visit" or "inspection," it is clear that the permittees proposed the mandate. The permittees also proposed that the permit mandate trash collection alongside, or in improved open channels.[101]

The permit was issued upon the joint request of all of the petitioners, with the County acting as the lead. Where the County and 84 cities apply for a single area-wide permit, the permit writer obviously is not required to write separate requirements for each entity and the County may be presumed to speak for the whole.

The Programs are not Mandates Peculiar to Government

Finally, the NPDES permit program, and the storm water requirements specifically, are not peculiar to local government. Industrial and construction facilities must also obtain NPDES storm water permits. These permits, however, are more stringent than municipal permits because the federal law requires that they meet more stringent technology-based standards and that they attain strict compliance with water quality standards in receiving waters.[102] As such, the only difference between the municipal storm water program and other storm water requirements is that federal law provides separate, more lax requirements for the municipalities.

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[97] Claim 03-TC-21, at p.2.

[98] Report of Waste Discharge at R0000026.

[99] *Id.* at R0000031.

[100] *Id.* at R0000273 – R0000360.

[101] *Id.* at R0000036.

[102] *Defenders of Wildlife v. Browner, supra.*

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The Water Boards' implementation of federal law reflects this dichotomy and the fact that the municipalities receive their own permit, as required by CWA section 402(p)(3)(B) does not change the fact that storm water permit requirements are not peculiar to local government.

It is the municipalities who operate MS4s and who discharge pollutants to surface waters. It is the municipalities who must obtain permits and comply with those permits. Similarly, industrial dischargers who discharge storm water runoff to waters of the United States must also obtain and comply with permits. The state is not the discharger (except in those situations where state agencies operate MS4s, such as the Department of Transportation, where they are themselves subject to permits), and the state is not uniquely shifting a new program or higher level of service onto municipalities.[103]

Discussion of Test Claims that were not Substantiated

Development Construction Program (Part 4.E)

Test claim 03-TC-21 claims subvention of costs for the development construction program. It did not, however, include any substantiation of this claim.

Public Agency Activities Program (Part 4.F.5 and 6)

Test claims 03-TC-04, 03-TC-20, and 03-TC-21 claim subvention for portions of the public agency activities program. Test claim 03-TC-21 claims subvention for the all requirements concerning storm drain operation and streets and roads maintenance, while test claims 03-TC-04 and 03-TC-20 are limited to the requirements to place trash receptacles at transit stops and to maintain these receptacles. Test claim 03-TC-21, however, did not include any substantiation of this claim, apart from the discussion of trash receptacles, above.

Discharge Prohibitions and Receiving Water Limitations (Parts 1 and 2)

Test claim 03-TC-21 challenges the discharges prohibitions and receiving water limitations in the Permit. Parts 1 and 2 contain the basic prohibitions and requirements for attaining compliance with water quality standards through an iterative process. The whole of the claim is that, "if enforced and read to literarily [*sic*] to require the City to prevent any and all exceedances from urban runoff of all water quality standards or water quality objectives" the costs would be excessive. The court in *County of Los Angeles, supra*, rejected this exaggeration of the permit's terms and found the requirements to be entirely reasonable. In addition, the *Rancho Cucamonga* and *Building Industry Association* both upheld identical provisions and found them to be reasonable and to be consistent with the minimum federal standard of MEP.

[103] The State Water Board issues a separate permit to the Department of Transportation, for both its municipal activities (roads and freeways) and its industrial facilities (construction and maintenance yards). The permit is available at http://www.waterboards.ca.gov/stormwtr/docs/caltrans/caltranspmt.pdf.

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Conclusion

For all the reasons set forth above, the Test Claims must be dismissed. The Permit requirements have already been upheld by the courts as reflecting the federal Clean Water Act's requirements for municipal storm water permitting. The permit in its entirety, including the Test Claim provisions, reflects the federally mandated, federal minimum standard of reducing pollutants to the "maximum extent practicable." Further, the cities can pay for any costs associated with the requirements by levying service charges or fees. Finally, to the extent that any portion of the claims would otherwise qualify for subvention, they are *de minimis* and therefore do not warrant subvention.

I certify and declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this document was executed on April 18, 2008, at Sacramento, California.

Sincerely,

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PROOF OF SERVICE

I, JEANNETTE L. BASHAW, declare that I am over 18 years of age and not a party to the within action. I am employed in Sacramento County at 1001 I Street, 22nd Floor, Sacramento, California 95814. My mailing address is P.O. Box 100, Sacramento, CA 95812-0100. On this date, I served the within documents:

LETTER TO COMMISSION ON STATE MANDATES DATED APRIL 18, 2008, REGARDING STORM WATER POLLUTION CONTROL REQUIREMENTS, FILES 03-TC-04, 03-TC-19, 03-TC-20, 03-TC-21: RESPONSE TO TEST CLAIMS 03-TC-04, 03-TC-19, 03-TC-20, 03-TC-21

	BY FACSIMILE: I caused a true and correct copy of the document to be transmitted by a facsimile machine compliant with rule 2003 of the California Rules of Court to the offices of the addresses at the telephone numbers shown on the service list.
X	**BY HAND DELIVERY:** I caused a true and correct copy of the document(s) to be hand-delivered to the person(s) as shown.
	BY OVERNIGHT MAIL TO ALL PARTIES LISTED: I am readily familiar with my employer's practice for the collection and processing of overnight mail packages. Under that practice, packages would be deposited with an overnight mail carrier that same day, with overnight delivery charges thereon fully prepaid, in the ordinary course of business.
X	**BY FIRST CLASS MAIL TO ALL PARTIES LISTED:** I am readily familiar with my employer's practice for the collection and processing of mail. Under that practice, envelopes would be deposited with the U.S. Postal Service that same day, with first class postage thereon fully prepaid, in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if the postal cancellation date or postage meter date is more than one day after the date of deposit for mailing shown in this proof of service.

By placing a true copy thereof in separate, sealed envelopes addressed to:

See Exhibit A attached hereto and made a part hereof.

I certify and declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this document was executed on April 18, 2008, at Sacramento, California.

Jeannette L. Bashaw

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EXHIBIT 23

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C. 20460

OFFICE OF
WATER

March 17, 2011

On November 12, 2010, the Environmental Protection Agency (EPA) issued a memorandum entitled "Revisions to the November 22, 2002 Memorandum "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs". The memorandum is available at: http://www.epa.gov/npdes/pubs/establishingtmdlwla_revision.pdf. The 2010 memorandum reflects the considerable experience States and EPA have obtained in developing TMDLs and stormwater permits since 2002.

A number of stakeholders expressed concern that they did not have the opportunity to provide input before the memorandum was issued and have asked questions about the substance of the memorandum. EPA is soliciting comments on the 2010 memorandum and will accept comments until May 16, 2011. EPA plans to make a decision by August 15, 2011 to either retain the memorandum without change, to reissue it with revisions, or to withdraw it.

A key issue addressed in the 2010 memorandum is the feasibility of including numeric effluent limitations in National Pollutant Discharge Elimination System (NPDES) permits for stormwater discharges. The 2002 memorandum stated that EPA expected that numeric effluent limitations for stormwater discharges would be rarely used. The guidance provided in the 2010 memorandum recognizes developments over the past eight years and reflects current use of numeric limitations in stormwater permits. EPA has found that the use of numeric effluent limitations no longer is a novel or unique approach to stormwater permitting. As such, the 2010 memorandum reflects EPA's view that there has been an incremental evolution of the stormwater permits program and the TMDL program that has been occurring since 2002, such that numeric effluent limitations are no longer as rare as they were in 2002.

Some stakeholders are concerned that the 2010 memorandum can be read as advising NPDES permit authorities to impose end-of-pipe limitations on each individual outfall in a municipal separate storm sewer system. In general, EPA does not anticipate that end-of-pipe effluent limitations on each municipal separate storm sewer system outfall will be used frequently. Rather, the memorandum expressly describes "numeric" limitations in broad terms, including "numeric parameters acting as surrogates for pollutants such as stormwater flow volume or

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percentage or amount of impervious cover." In the context of the 2010 memorandum, the term "numeric effluent limitation" should be viewed as a significantly broader term than just end-of-pipe limitations, and could include limitations expressed as pollutant reduction levels for parameters that are applied system-wide rather than to individual discharge locations, expressed as requirements to meet performance standards for surrogate parameters or for specific pollutant parameters, or could be expressed as in-stream targets for specific pollutant parameters. Under this approach, NPDES authorities have significant flexibility to establish numeric effluent limitations in stormwater permits.

EPA emphasizes that the discussion in the November 12, 2010 memorandum is intended solely as guidance to regulatory authorities as they implement CWA Programs. The statutory provisions and EPA regulations described in this document contain legally binding requirements. This memorandum is not a regulation itself, nor does not it change or substitute for those provisions and regulations. Thus, it does not impose legally binding requirements on EPA, States, or the regulated community, nor does it confer legal rights or impose legal obligations upon any member of the public. In the event of a conflict between the discussion in this document and any statute or regulation, this document would not be controlling.

The general description provided here may not apply to a particular situation based upon the circumstances. Interested parties are free to raise questions and objections about the substance of this guidance and the appropriateness of the application of this guidance to a particular situation. EPA and State permit writers and other decision makers retain the discretion to adopt approaches on a case-by-case basis that differ from those described in this guidance where appropriate.

Comments on the November 12, 2010, memorandum should be submitted by May 16, 2011 by either:

- Email to weiss.kevin@epa.gov
- Mail: Kevin Weiss
  Water Permits Division
  U.S. Environmental Protection Agency
  Room 7334 EPA East
  1200 Pennsylvania Avenue, NW
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If additional information is necessary, please contact Kevin Weiss at (202) 564-0742.

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EXHIBIT 24

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Total Maximum Daily Loads
For Toxic Pollutants
San Diego Creek and Newport Bay, California

U.S. Environmental Protection Agency
Region 9

Established June 14, 2002

Alexis Strauss
Director
Water Division
EPA Region 9

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Summary TMDL Document

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I. Introduction

What Is the Purpose of This Action?

This document describes Total Maximum Daily Loads (TMDLs) being established for several toxic pollutants by U.S. Environmental Protection Agency (EPA) to help protect and restore the water quality of Newport Bay, San Diego Creek, and their tributaries. A TMDL identifies the maximum amount of a pollutant that may be discharged to a water body without causing exceedences of water quality standards and impairment of the uses made of these waters. The federal Clean Water Act requires development of TMDLs for polluted waters to assist in identifying pollutant control needs and opportunities. EPA is establishing these TMDLs pursuant to a 1997 consent decree in which EPA committed to ensure that these TMDLs would be established in 2002. EPA has worked closely with the California Regional Water Quality Control Board, Santa Ana Region (Regional Board) in the development of these TMDLs. Although the State has primary responsibility for developing TMDLs under the Clean Water Act, the State was unable to complete its formal adoption of these TMDLs by the consent decree deadline; hence EPA is required to establish the TMDLs at this time.

What Is A TMDL?

Section 303(d)(1)(A) of the Clean Water Act (CWA) requires that "Each State shall identify those waters within its boundaries for which the effluent limitations...are not stringent enough to implement any water quality standard applicable to such waters." The CWA also requires states to establish a priority ranking for waters on the 303(d) list of impaired waters and establish Total Maximum Daily Loads (TMDLs) for such waters. As part of California's 1996 and 1998 Section 303(d) lists, the Regional Board identified Newport Bay and San Diego Creek as water quality limited due to several toxic pollutants (in addition to other pollutants not addressed in these TMDLs) and designated this watershed as a high priority for TMDL development.

The elements of a TMDL are described in 40 CFR 130.2 and 130.7 and Section 303(d) of the CWA, as well as in EPA guidance documents (e.g., EPA 1991 and EPA 2001). A TMDL is defined as "the sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background" (40 CFR 130.2) such that the capacity of the water body to assimilate pollutant loadings (the Loading Capacity) is not exceeded. A TMDL is also required to be developed with seasonal variations and include a margin of safety to address uncertainty in the analysis. In addition, pursuant to the regulations at 40 CFR 130.6, states must develop water quality management plans which incorporate approved TMDLs and implementation measures necessary to implement the TMDLs.

Upon establishment of TMDLs by EPA or the State, the State is required to incorporate the TMDLs along with appropriate implementation measures into the State Water Quality Management Plan (40 CFR 130.6(c)(1), 130.7). The Regional Board Basin Plan, and applicable state-wide plans, serve as the State Water Quality Management Plan governing the Newport Bay watershed. If the State subsequently adopts and submits for EPA approval TMDLs which are different from the TMDLs established by EPA, EPA will review the State-submitted TMDLs to

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determine if they meet all TMDL requirements. If EPA approves the State TMDLs, they will supercede the TMDLs being established now by EPA.

Why Is EPA Establishing These TMDLs?

The Environmental Protection Agency (EPA) has oversight authority for the 303(d) program and is required to review and either approve or disapprove the TMDLs submitted by states. If the EPA disapproves a TMDL submitted by a state, the EPA is required to establish a TMDL for that water body.

On October 31, 1997, EPA entered into a consent decree (decree), Defend the Bay, Inc. v. Marcus, (N.D. Cal. No. C 97-3997 MMC), which established a schedule for development of TMDLs in San Diego Creek and Newport Bay. The decree required development of TMDLs for several toxic pollutants by January 15, 2002. The agreement also provided that EPA would establish the required TMDLs within ninety (90) days, if the State failed to establish an approved TMDL by the deadline. In early April 2002, the decree was modified to extend the deadline for EPA establishment of these TMDLs to June 15, 2002.

Pursuant to the decree, EPA Region 9 and the Regional Board have already established sediment and nutrient TMDLs for San Diego Creek and Newport Bay. EPA has also approved state-adopted TMDLs for fecal coliform in Newport Bay.

The RWQCB has conducted extensive analysis in support of these toxic pollutant TMDLs and has proposed to adopt TMDLs and associated implementation plans for two pesticides and selenium. However, the State of California has not yet adopted TMDLs for any of the toxic pollutants covered by the decree. Therefore, in compliance with the terms of the decree, EPA is establishing the TMDLs for these toxic pollutants in order to meet the requirements of the decree. On April 12, 2002, EPA published a public notice seeking comment on the proposed toxic pollutant TMDLs for San Diego Creek and Newport Bay. EPA carefully considered comments received during the comment period and made some changes in the final TMDL decisions. EPA also completed a responsiveness summary that describes how EPA considered each comment received.

What TMDLs Are Being Established?

EPA is establishing TMDLs for several toxic pollutants which are exceeding applicable State water quality standards: selenium; several heavy metals; and several organic chemicals including modern pesticides (i.e., diazinon and chlorpyrifos) and legacy pesticides (DDT, Chlordane etc.) and polychlorinated biphenyls (PCBs). The pesticide diazinon is being addressed by these TMDLs because the State found that it is associated with significant water toxicity in San Diego Creek and concluded that it should be addressed by EPA concurrent with the similar pesticide chlorpyrifos, which is addressed by the consent decree. These TMDLs are being developed for specific water bodies in the Newport Bay watershed for which available data indicate that water quality is impaired. Table 1-1 lists the specific water bodies and associated pollutants for which TMDLs are being established.

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Table 1-1. Toxic Pollutants per waterbody requiring TMDL Development

WaterBody (Type)	Element/ Metal	Organic compound
San Diego Creek (freshwater)	Cd, Cu, Pb, Se, Zn	Chlorpyrifos, Diazinon, Chlordane, Dieldrin, DDT, PCBs,Toxaphene
Upper Newport Bay (saltwater)	Cd, Cu, Pb, Se, Zn	Chlorpyrifos, Chlordane, DDT, PCBs
Lower Newport Bay (saltwater)	Cu, Pb, Se, Zn	Chlordane, Dieldrin, DDT, PCBs
Rhine Channel, within Lower Newport Bay (saltwater)	Cu, Pb, Se, Zn, Cr, Hg	Chlordane, Dieldrin, DDT, PCBs

Table 1-1 Toxic pollutants per waterbody requiring TMDL development.

California's Section 303(d) list of impaired waters does not specifically name each of these water body-pollutant combinations. The 1996 Section 303(d) list identified Newport Bay and San Diego Creek as impaired due to metals, pesticides and priority organics. The 1998 Section 303 (d) list added "unknown toxicity" to one specific part of San Diego Creek—Reach 2. During the negotiation of the consent decree, Regional Board staff provided a more specific list of pollutants covered by these general pollutant categories used in the listing decisions, and the consent decree refers to this more specific pollutant list. In 2001-02, EPA and Regional Board staff carefully evaluated more recent water quality data to help determine whether TMDLs were needed for each of the toxic pollutants identified in the decree. As described in EPA Region 9's assessment of water quality in San Diego Creek and Newport Bay (*Decision Document* 2002), and in this summary TMDL document below, EPA and the State determined that the list of water body-pollutant combinations warranting TMDL development should be fine-tuned to reflect the best current information concerning water body impairment. Based on our assessment of the most current local data and national EPA guidance concerning arsenic, EPA has concluded that TMDLs are not needed for arsenic for waters in the Newport Bay watershed.

Why Are These Pollutants Of Concern to EPA and the State?

By definition, toxic substances are poisonous through chemical action that may result in adverse impacts to humans or other living organisms. Adverse impacts may include, but are not limited to, cellular injury, mutagenic impairment, reduced reproductive success, and carcinogenic responses. The impacts of greatest potential concern in these water bodies are: a) chemical bioaccumulation through the aquatic food chain at levels which could harm human health when we consume fish or shellfish and b) chemical concentrations in water, sediment or biota that cause adverse effects in aquatic life or aquatic-dependent species. Available data indicate that the pollutants addressed in these TMDLs were found in water column, bottom sediments, or fish tissue at potentially unsafe levels which exceed applicable water quality standards. There is no current evidence of adverse effects on human health due to consumption of contaminated fish or direct exposure to toxic pollutants. Evidence of adverse impacts to aquatic life as a result of direct or indirect exposures to these toxic pollutants is limited. However, because the pollutants addressed in these TMDLs have the potential to cause short term adverse impacts to aquatic life or long term human health and aquatic life impacts due to pollutant bioaccumulation, actions to reduce discharges of these pollutants to the aquatic environment are warranted. The TMDLs are designed to assist in targeting pollutant reduction activities.

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How Are the TMDL Documents Organized?

This document provides summary information about the Toxic Pollutant TMDLs, including a description of the environmental problems, water body goals, source analysis, loading capacity (i.e., TMDL), and loading allocations for each toxic pollutant TMDL. The document also describes how other federally-required TMDL components (i.e., margin of safety to account of analytical uncertainty, and critical conditions and seasonal variations associated with water body flow and pollutant loadings) are addressed. Individual pollutants have been grouped together based on chemical characteristics as follows:

Organophosphate (OP) Pesticides—diazinon and chlorpyrifos are two organophosphate pesticides with similar sources and impairment primarily limited to San Diego Creek.
Selenium—is a toxic bioaccumulative metal, with significant groundwater sources
Metals—cadmium, copper, lead and zinc have similar aqueous behavior and affect nearly all water bodies
Organochlorinated compounds—PCBs, DDT, chlordane, dieldrin and toxaphene have similar fate (bioaccumulation) and transport mechanisms (primarily from watershed soils to freshwater and saltwater sediments) for all waterbodies.
Mercury and Chromium—are two metals with very small geographical areas of impairment.

The State and EPA initially found that arsenic was present at levels of concern in Upper and Lower Newport Bay; however, based on more recent data and new information concerning arsenic risk in saltwater bodies, EPA has now concluded that Newport Bay and its tributaries are not impaired due to arsenic pollution. This summary document includes a section describing the basis for this conclusion in greater detail. The consent decree governing development of these TMDLs contains provisions that authorize EPA to make a determination that TMDLs are not needed for individual waters and/or pollutants if available data and information support those determinations. Pursuant to these decree provisions, EPA is making the determination that arsenic TMDLs are not needed for waters in the Newport Bay watershed.

EPA has prepared several Technical Support Documents (TSDs) to accompany this summary TMDL document. The TSDs provide considerably more detailed information relevant to each pollutant (grouped together as described above). The TSDs describe chemical characteristics of each toxicant, the basis for numeric targets, a complete source analysis, an explanation of how we calculated the loading capacity and TMDLs, and related information. A TSD is also provided that discusses EPA's analysis of freshwater flows in San Diego Creek, which was used to identify the appropriate numeric targets for certain pollutants, address seasonal variations and critical conditions in flows and pollutant loads, and evaluate the best approaches for calculating pollutant loading capacities and allocations. Another TSD provides more maps of the San Diego Creek, Santa Ana-Delhi Channel and Newport Bay watersheds and analysis concerning water residence times in Upper and Lower Bay. A summary of public comments and EPA's responses to those comments is provided in another TSD.

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What Happens After The TMDLs Are Established?

TMDLs are not self-implementing – they must be implemented by the State and the entities that are discharging pollutants of concern. Federal regulations require states to adopt TMDLs and associated implementation measures in the State Water Quality Management Plan (i.e., the Basin Plan) (40 CFR 130.6). The State of California's procedure for adopting TMDLs and associated implementation measures is through amendments to the Basin Plans. These amendments are developed by the Regional Board staff, then approved by the Regional Board, State Water Resources Control Board, and State Office of Administrative Law. The amendments are then submitted to EPA for approval. (If the TMDLs adopted by the State are different from the TMDLs established by EPA then the TMDLs must be resubmitted to EPA for approval.)

EPA does not establish implementation plans as part of TMDLs under currently applicable federal regulations. However, we have included several implementation recommendations (see Section IX) which are intended to assist the State and local stakeholders in devising appropriate pollutant control and monitoring plans to address these toxic pollutants.

Three general categories of pollutant sources are identified in these TMDLs:

- Nonpoint sources, which discharge pollutants through diffuse runoff from the land, primarily in response to rainfall runoff, and which are addressed by the State through a combination of voluntary and regulatory measures outlined in California's State Nonpoint Source Management Plan.
- Point sources, which discharge pollutants through discrete pipes or conveyances and which are addressed through regulatory provisions of the National Pollutant Discharge Elimination System (NPDES) permit program. Several sources of pollutant runoff from roads and urban areas in the Newport Bay watershed are addressed through NPDES stormwater permits. There are a small number of additional permitted point source discharges in the watershed which are addressed in the TMDLs, including several groundwater dewatering operations.
- Pollutants already in water body sediments, which are usually associated with contaminated sediments discharged to water bodies in the past, but which retain and release significant quantities of pollutants to the ecosystem. These contaminated sediments may be concentrated to the point where remediation or removal action is warranted to remove the contaminated material, or they may be so diffuse that remedial action would be ineffective.

The federal Clean Water Act creates federal regulatory jurisdiction only over point sources. When NPDES permits for point source discharges addressed in the TMDLs are revised, their provisions must be consistent with the requirements and assumptions of any wasteload allocations contained in these TMDLs (see 40 CFR 122.44(d)(1)(vii)(B)). Permit modification may occur when the permits are reopened or reissued. The State has some discretion in determining the appropriate permit provisions to ensure consistency.

Although the TMDLs include allocations which address nonpoint source and contaminated sediments, implementation of these allocations is usually based on the TMDL

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implementation plan developed by the State as part of its Basin Plan amendment process described above. The State of California has broad authority under State law to apply voluntary or regulatory approaches to addressing these source categories. Past TMDL implementation plans in California have provided for State-issued "Waste Discharge Requirements" for some nonpoint sources, remedial action plans to address contaminated sediment sites, and opportunities for voluntary action to comply with load allocations. The Regional Board is currently in the process of developing implementation plans for several of the toxic pollutant TMDLs and will address the remaining toxic pollutant TMDLs in the near future.

Environmental Setting

(see Figure 1-1 in TSD--Part A)

The Newport Bay/San Diego Creek watershed is located in Central Orange County in the southwest corner of the Santa Ana River Basin, about 35 miles southeast of Los Angeles and 70 miles north of San Diego (see Figure 1-1 in TSD—Part A). The watershed encompasses 154 square miles and includes portions of the Cities of Newport Beach, Irvine, Laguna Hills, Lake Forest, Tustin, Orange, Santa Ana, and Costa Mesa. Mountains on three sides encircle the watershed; runoff from these mountains drains across the Tustin Plain and enters Upper Newport Bay via San Diego Creek. Newport Bay is a combination of two distinct water bodies - Lower and Upper Newport Bay, divided by the Pacific Coast Highway (PCH) Bridge. The Lower Bay, where the majority of commerce and recreational boating exists, is highly developed. The Upper Bay contains both a diverse mix of development in its lower reach and an undeveloped ecological reserve to the north.

San Diego Creek flows into Upper Newport Bay and is divided into two reaches. Reach 1 is located downstream of Jeffrey Road and Reach 2 lies upstream of Jeffrey Road to the headwaters. The San Diego Creek watershed (ca. 105 square miles) is divided into two main tributaries:

- Peters Canyon Wash, which drains Peters Canyon, Rattlesnake Canyon, and Hicks Canyon Washes that have their headwaters in the foothills of the Santa Ana Mountains, and
- San Diego Creek itself, which receives flows from Peters Canyon Wash in Reach 1 and includes Bee Canyon, Round Canyon, Marshburn Channel, Agua Chinon Wash, Borrego Canyon Wash and Serrano Creek

Important freshwater drainages to Upper Newport Bay, together covering 49 square miles, include the San Diego Creek, Santa Ana-Delhi Channel, Big Canyon Wash, Costa Mesa Channel and other local drainages.

San Diego Creek is the largest contributor (95%) of freshwater flow into Upper Newport Bay, followed by Santa Ana-Delhi Channel (~5%) (ACOE 2000). Table 1-2 summarizes the drainage areas of the major tributaries.

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Table 1-2 Drainage Areas of the Newport Bay Watershed

Tributary	Drainage Area (acres)	Drainage Area (%)
San Diego Creek	47,300	48
Peters Canyon Wash	28,200	29
Santa Ana-Delhi	11,000	11
Other Drainage Areas	12,000	12
Total	98,500	100

Upper Newport Bay contains one of the highest quality remaining wetland areas in Southern California. The Upper Bay estuary contains a State Ecological reserve in the upper half with habitat designated for sensitive species. Sediment capture basins exist in the Upper Bay and have been dredged periodically by Army Corps of Engineers (ACOE). Another sediment removal/ecological restoration project has been proposed and is currently being evaluated (ACOE 2000). Newport Dunes Recreation area—a small public beach—is in the lower portion of Upper Bay (outside of the Ecological Reserve) along with more small boat marinas down near Pacific Coast Highway Bridge. Historical water uses for Upper Bay included water skiing, commercial and sport fishing although it is now used mainly for wildlife habitat, preservation of rare species, marine habitat, recreation and shellfish harvesting. In Lower Bay, surrounding shores and two islands are highly urbanized with nine boatyards and many (~10,000) small boats. Rhine Channel, a dead-end reach in western side of Lower Bay, is an isolated area with poor tidal flushing and minimal storm drain input. The Regional Board has identified Rhine Channel as a toxic hotspot based on previous investigations (BPTCP 1997). The entire Newport Bay up to the mouth of San Diego Creek is subject to tidal influence.

Climate is characterized by short, mild winters, and warm dry summers. Average rainfall is approximately 13 inches per year. Ninety percent of annual rainfall occurs between November and April, with minor precipitation during summer months. In the past six years, San Diego Creek has a mean base flow rate of approximately 12 cubic feet per second (cfs) (for all flows <20 cfs). Storm events, depending on their magnitude, intensity, and antecedent conditions, can increase this daily mean flow to over 9000 cfs (Dec. 7, 1997). San Diego Creek is freshwater with wide range of hardness and small influences by the slightly saline water table (less than 1 or 2% salinity). Upper Bay is an estuary with saline water conditions during dry weather and yet there is heavy freshwater influx (from San Diego Creek and Santa Ana-Delhi Channel) during major storms. Lower Bay waters are dominated by twice-daily ocean tides via the jetty entrance, thus saline waters exist at 30 to 35 parts per thousand (ppt).

Watershed History

The description below is taken largely from Regional Board staff report prepared for its draft Newport Bay TMDLs (RWQCB 2000).

The nature of the Newport Bay watershed has changed dramatically over the last 150 years, both in terms of land use and drainage patterns. In the late 19th and early 20th centuries, land use changed from ranching and grazing to open farming. During this time the Santa Ana River flowed into Newport Bay, while San Diego Creek and the small tributaries from the

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Santiago Hills drained into an ephemeral lake and the neighboring area called "La Cienega de las Ranas" (Swamp of the Frogs) and then into the River. To accommodate rural farming, the ephemeral lake and Swamp of the Frogs were drained and vegetation cleared. Channels were constructed (but often did not follow natural drainage patterns) to convey runoff to San Diego Creek and then Newport Bay. After a major flood event in 1920's, the Santa Ana River was permanently diverted into the current flood control channel which now discharges to the Pacific Ocean. As a result of these land use and drainage changes, surface and groundwater hydrology have been substantially altered from natural conditions. Following World War II, land use again began to change from grazing and open farming to residential and commercial development. As urban development in the watershed proceeded (and continues), drainages were further modified through removal of riparian vegetation and lining of stream banks to expand their capacity and to provide flood protection. These changes culminated in the channelization of San Diego Creek in the early 1960s by the Orange County Flood Control Department. The channelization isolated the San Joaquin Marsh, the last remaining portions of the historic marsh upstream of Upper Newport Bay, from San Diego Creek (Trimble 1987).

Conversion of rural farmland to residential, commercial and light industrial use has been constant in the watershed. Land use statistics supplied by Orange County demonstrate this urban development (ACOE 2000). In 1983, agriculture accounted for 22% and urban uses for 48% of the Newport Bay watershed. In 1993, agricultural uses accounted for 12% and urban uses for over 64% of the area. As of 2000, agriculture had dropped to approximately 7% (<7,500 acres), including row crops (primarily strawberries and green beans), lemons, avocados and commercial nurseries. Currently, San Diego Creek watershed is greater than 90% urbanized whereas Santa Ana-Delhi is approximately 95% urbanized. Projected land use suggests 81% urban land use, 11% open, 8% rural and no agriculture (ACOE 2000).

Land use and drainage modifications changed the nature and magnitude of toxic substance discharges to the Bay. Converting from grazing type agriculture to orchards and row crops has increased the amount of pesticide use in the watershed, resulting in discharges of pesticides from these areas. The commercial nurseries drain to Peters Canyon Wash via Central Irvine Channel and to San Diego Creek via Marshburn Channel and Serrano Creek. Tustin and El Toro military bases exist within the watershed and have historically used various toxic substances during operations. Both military sites are involved with base closure procedures and may ultimately be converted to more urban/suburban areas. Urban development introduced new sources of toxic substances, including different pesticides and metals associated with human habitation (e.g., buildings, landscaping, and motor vehicles). In addition, land use activities which cause erosion may contribute to the delivery of pesticides and other pollutants that adhere to sediments or normally remain in solid form.

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Table 1-3 Land Use types in watersheds of Newport Bay

Land use type	**San Diego Creek**		**Santa Ana Delhi**		**Newport Bay**	
	Acres	**% total**	**Acres**	**% total**	**Acres**	**% total**
Agricultural/	5092	6.6	0	0	5147	5.2
Residential	11,668	15.2	5285	18.2	19420	19.7
Commercial	6381	8.3	2397	8.3	9641	9.8
Industrial	3965	5.2	1102	3.8	5263	5.4
Education/Religion/ Recreation	15,811	20.6	825	2.8	17,393	17.7
Roads	10,295	13.4	3446	11.9	15,774	16.0
Transportation	1177	1.5	99	0.3	1326	1.3
No assigned land code	440	0.6	339	1.1	936	0.9
Vacant	21,910	28.5	1060	3.7	23,462	23.9
Total	**76,739**	**99.9**	**29003**	**100**	**98,362**	**99.9**

Source: OCPFRD land use data defined by sub-watersheds to compose each watershed. (see TSD Part A) Most accurate and recent land use data provided by OCPFRD GIS Dept., March 1, 2002.

Public Participation

The State and EPA have provided for public participation through several mechanisms. The Regional Board staff has conducted numerous technical workshops (e.g., quarterly meetings since April 2000) on its assessment of toxic pollutant TMDL needs and the specific toxic pollutant TMDLs being developed by the State. The Regional Board held several public workshops as part of their regular meetings to discuss staff TMDL proposals (January 15, September 26, and October 26, 2001). EPA staff provided updates on its TMDL development activities at several of these Regional Board meetings. On October 26, 2001, the State's draft organophosphate (OP) pesticide and Selenium TMDLs were presented before the public as part of a Regional Board meeting. These draft State TMDLs were also available via the Regional Board website after that date.

On April 12, 2002, EPA publicly noticed the availability of the proposed Toxic Pollutant TMDLs and gave the public until May 28, 2002, to provide written comments. The EPA notice of availability was published in the Orange County Register, mailed to the Basin Plan distribution list provided by the Regional Board, and posted on the EPA Region 9 TMDL website. Two public meetings were held during the public comment period – a meeting to discuss the TMDLs in general in Newport Beach on April 16, 2002, and a meeting to discuss specific technical issues in Irvine on May 9, 2002. Copies of the TMDLs and TSDs were available at the public meetings, in EPA and Regional Board offices, and on the EPA Region 9 TMDL website.

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Changes in the Final TMDL Documents

Several changes were made in the final TMDLs in response to comments received during the comment period:

- The numeric targets for some pollutants were modified to follow California screening guidelines or to reflect the most recent screening value studies. The organophosphate pesticide TMDL targets are based on values calculated by the California Department of Fish and Game. The California Office of Environmental Health Hazard Assessment guidelines were applied for organochlorine pollutant fish tissue targets. More recent literature values were applied for the freshwater organochlorine sediment targets.

- The flow records used to calculate flow tiers for several pollutant TMDLs were changed to reflect a longer period of record and to incorporate more recent flow data.

- The selenium TMDLs for the highest flow tier are based on acute water quality standards because, based on analysis of the longer flow record, flow patterns necessary to apply chronic standards were not expected to occur under the highest flow tier.

- The metals TMDLs for San Diego Creek are concentration-based; the metals TMDLs for Newport Bay are both concentration-based and mass-based.

- The organochlorine pollutant TMDLs were revised based on additional modeling analysis and consideration of more recent data. The flow tier approach applied for San Diego Creek organochlorine pollutant TMDLs was slightly modified. The description of analytical methods used for the organochlorine pollutant, chromium, and mercury TMDLs was revised to more clearly explain the analytical methods.

- The allocation methods used for each TMDL were clarified.

- A new section of implementation and monitoring recommendations was added to assist the State in preparing to adopt and implement TMDLs for these pollutants.

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II. Overview of TMDLs and Available Data

TMDL Components

This section describes the components of a TMDL and discusses the analytical approaches used in the Newport Bay watershed TMDLs to address each component.

The goal of the TMDL process is to attain water quality standards and protect the beneficial uses of water bodies, including aquatic habitat, fishing, and recreation. A TMDL is a written, quantitative assessment of water quality problems and contributing pollutant sources. It identifies one or more numeric targets (endpoints) based on applicable water quality standards, specifies the maximum amount of a pollutant that can be discharged (or the amount of a pollutant that needs to be reduced) to meet water quality standards, allocates pollutant loads among sources in the watershed, and provides a basis for taking actions needed to meet the numeric target(s) and implement water quality standards.

For federally established TMDLs, seven components are included:

- **Problem Statement**—a description of the water body setting, beneficial use impairment of concern, and pollutants causing the impairment.
- **Numeric Targets**—for each pollutant addressed in the TMDL, appropriate measurable indicators and associated numeric target(s) based on numeric and/or narrative water quality standards which express the target or desired condition for the water body which will result in protection of the designated beneficial uses of water.
- **Source Analysis**—an assessment of relative contributions of pollutant sources or causes to the use impairment.
- **Loading Capacity/Linkage Analysis**—a connection between the numeric targets and pollutant sources which yields calculations of the assimilative capacity of the water body for each pollutant.
- **TMDL and Allocations**— an expression of the total allowable pollutant loads as divided between pollutant sources through load allocations for nonpoint sources and wasteload allocations for point sources. The TMDL is defined as the sum of the allocations and cannot exceed the loading capacity for each pollutant.
- **Margin of Safety**—an explicit and/or implicit margin of safety must be specified to account for technical uncertainties in the TMDL analysis.
- **Seasonal Variation/Critical Conditions**—an account of how the TMDL addresses various flows and/or seasonal variations in pollutant loads and effects.

Problem Statement

EPA includes problems statements in TMDL documents to assist readers in understanding the context for TMDL development and describe the water quality standards issue(s) which prompted development of the TMDL. The problem statements identify:

- name(s) and location(s) of waterbody segments for which the TMDL is being developed,
- the pollutant(s) for which the TMDL is being developed and information about why the pollutant(s) are being addressed,

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- a description of the water quality impairment or threat which necessitated TMDL development, and
- adequate background information about the watershed setting for the TMDL to help the reader understand the key water quality, pollutant discharge, land use, and resource protection issues in the watershed.

As discussed above, California's Section 303(d) listing decisions only identified general pollutant categories for toxic pollutants impairing waters in the Newport Bay watershed. The consent decree identified suspected individual pollutants of concern, but the decree provides that TMDLs need not be established for individual pollutants and/or waters if subsequent analysis indicates TMDLs are not necessary at this time. To help define the scope of these TMDL studies, EPA Region 9, with assistance from the Regional Board, completed an assessment of available monitoring data for San Diego Creek and Newport Bay to determine which chemicals warrant TMDL development. In our assessment, we reviewed available toxicity and chemical data in three critical water quality categories: water column quality, sediment quality, and fish and shellfish tissue levels. We applied a two-tiered approach whereby all available data were analyzed to determine whether there is clear evidence of impairment with probable adverse effects (Tier 1) or incomplete evidence and/or evidence of possible adverse effects (Tier 2) (EPA Region 9, 2002). If a chemical exceeded the screening criteria in Tier 1 with respect to any *one* of the water quality categories, then it was determined a TMDL is necessary. If a chemical exceeded the screening criteria in Tier 2 with respect to *two or more* categories then a TMDL is necessary. EPA also considered whether TMDLs might be necessary based on evaluation of water quality trends and conditions in water segments adjacent to a segment in question. We examined monitoring data for the past fifteen years; however, to maximize the relevance of our assessment to present-day water quality, we focused on the most recent results (since 1995). Our assessment evaluated each chemical identified in the decree for four separate water bodies: San Diego Creek, Upper Newport Bay, Lower Newport Bay and Rhine Channel. The water body-pollutant combinations for which EPA determined TMDLs are needed at this time are listed in Table 1-1.

The introduction to this document provides a basic discussion of the problems associated with exposures to toxic pollutants addressed in these TMDLs and background information on the watershed setting.

Numeric Targets and Applicable Water Quality Standards

Numeric targets identify the specific water column, sediment, and/or tissue goals or endpoints for the TMDL which equate to attainment of the water quality standards (see EPA Region 9, 2000). In some cases, multiple indicators and associated numeric target values may be needed to interpret applicable water quality standards (e.g. where there is uncertainty that a single indicator is sufficient to measure protection of designated uses). In addition, some TMDLs may incorporate multiple numeric targets to account for differences in acceptable pollutant levels in a particular water body at different time scales (e.g., short term acute toxicity effects versus long term chronic exposure effects).

Water quality standards are comprised of the designated beneficial uses made of water bodies, narrative and numeric water quality criteria (known as "water quality objectives" in California), and anti-degradation policies. Applicable standards of concern for these toxic

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pollutant TMDLs include the designated uses and both narrative and numeric water quality criteria, which are applied in a manner which is expected to result in protection of the designated beneficial uses.

The Regional Board Basin Plan (1995) designates the beneficial uses for Newport Bay, San Diego Creek and its tributaries. All water bodies are designated as wildlife habitat, with San Diego Creek identified as warm freshwater habitat and Upper and Lower Bay identified as estuarine and marine habitat, respectively. The recreation beneficial uses are designated for all of Newport Bay and San Diego Creek. Upper and Lower Bay are also designated for commercial and sport fishing, preservation of biological habitats—spawning, reproduction, development, rare, threatened and endangered species, recreation, and shellfish harvesting. The specific beneficial uses of San Diego Creek and Newport Bay are identified in Appendix A-1 at the end of this summary document.

These toxic pollutant TMDLs focus on two of the most sensitive designated aquatic life and wildlife beneficial uses of concern in the watershed—RARE and WILD. One primary objective is to protect the special biological and wildlife habitat of the Newport Bay Nature Preserve and Ecological Reserve, in the upper part of Upper Newport Bay. The Nature Preserve is considered a critical estuary of Southern California. The Upper Newport Bay Nature Preserve consists of approximately 1,000 acres of open space and is home to seven rare or endangered bird species: Light-footed clapper rail, Belding's savannah sparrow, least tern, brown pelican, peregrine falcon, black rail, and California gnatcatcher. Two endangered plants, the salt marsh birds-beak and the rare Laguna live-forever, are also found at the reserve. The second objective is to reduce build up of toxicants in fish and shellfish within all water bodies, thereby minimizing the potential for adverse impacts associated with wildlife and human consumption of contaminated food. Seventy-eight species of fish inhabit the Upper Newport Bay waters, including the California halibut and barred sand bass—two popular sport fishes.

Narrative water quality objectives considered for each TMDL are specified by the 1995 Regional Board Basin Plan:

- Toxic substances shall not be discharged at levels that will bioaccumulate in aquatic resources to levels which are harmful to human health;
- The concentrations of toxic substances in the water column, sediments or biota shall not adversely affect beneficial uses.

Numeric water quality objectives for several pollutants addressed in these TMDLs were promulgated by EPA in 2000 in the California Toxics Rule (CTR). Pollutants covered by CTR objectives include selenium, cadmium, copper, lead, zinc, chromium, chlordane, dieldrin, DDT, toxaphene and PCBs. Chlorpyrifos and diazinon are not listed as toxic pollutants pursuant to Section 307(a)(1) of the Clean Water Act (see 40 CFR 401.15), and the CTR did not establish numeric objectives for those pollutants. Additionally, the CTR did not establish aquatic life objectives for mercury and the selenium and cadmium objectives were established contingent on an EPA commitment to revise the objectives promptly to better protect wildlife.

In many cases where applicable standards are expressed in numeric terms, it is appropriate to set the numeric target equal to the numeric water quality standard. For most metals addressed in these TMDLs, the numeric targets are equal to the numeric objectives in the CTR. For selenium (Se) the freshwater and saltwater water quality standards are defined by

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CTR. However, EPA acknowledged in its consultations with the U.S. Fish and Wildlife Service (USFWS) that the freshwater standards for Se may not be fully protective of wildlife, and EPA committed to revisit and, if necessary, revise the Se criteria in the near future. In its draft TMDL for Se, the Regional Board proposed to apply more protective Se targets based on USFWS recommendations. In the draft TMDL document, EPA proposed TMDLs based on the promulgated CTR standards, but invited comment on the alternative approach of basing the Se TMDLs on the more protective targets proposed by the Regional Board. The final TMDLs are based on the promulgated CTR standards. (See section IV—Se TMDL for further discussion.)

In some cases, it is necessary to interpret a numeric standard in terms other than the method through which the standard is expressed as long as the target(s) can be shown to relate back to achieving the water quality standard(s). For some pollutants (e.g., bioaccumulative toxins) or receiving water settings (e.g. embayments), it often makes more sense from the standpoint of source control and impact assessment to focus the TMDL on reductions of pollutant mass loads than solely on avoidance of exceedences of concentration-based standards. Moreover, use of sediment and/or fish tissue endpoints may provide more discriminating indicators of the beneficial use impacts of concern in a TMDL (e.g., pollutant bioaccumulation in the food chain and resultant human health or aquatic life impacts from consumption of contaminated organisms). Moreover, selection of targets based on these media enabled EPA to more completely utilize site specific data for several pollutants for which water column data were limited, consistent with the provisions of 40 CFR 130.7(c)(1)(i).

For several pollutants addressed in these TMDLs for which numeric objectives are in place (mercury, chromium, chlordane, dieldrin, DDT, toxaphene, and PCBs), the numeric targets are expressed in terms of protective sediment or fish/shellfish tissue levels. EPA's analysis of the relationship between the levels of these pollutants found in the water column, sediment, and fish/shellfish tissue found that attainment of the sediment and fish/shellfish tissue numeric targets will result in attainment of the water column numeric objectives. The sediment and tissue numeric targets are probably more protective than the numeric objectives for these pollutants. The use of sediment and tissue targets is appropriate in these cases in order to provide an implicit margin of safety to account for uncertainties in the relationship between pollutant loadings and beneficial use effects, and to ensure that both numeric and narrative standards are attained as required by 40 CFR 130.7(c)(1). In addition, EPA's decision to use sediment quality and fish tissue values as numeric targets for these pollutants is based in part on the fact that these substances are much more likely to be associated with particulate matter than to remain in the dissolved phase; that is, these compounds are either sorbed to bottom sediments or associated with extremely fine suspended sediments. Also, there are technological challenges accompanied with sampling and accurately detecting these compounds in water column samples. Therefore, these pollutants are unlikely to be detected in the water column in dissolved form even in waters where they may be present at levels of concern.

In situations where applicable water quality standards are expressed in narrative terms, it is necessary to develop a quantitative interpretation of narrative standards (EPA Region 9 2000). Since a TMDL is an inherently quantitative analysis, it is necessary to determine appropriate quantitative indicators of the water quality problem of concern in order to calculate a TMDL. It is sometimes possible to supplement water column indicators (i.e., pollutant concentrations in water) with measures in sediment or tissue media since these alternative indicators are more directly associated with the pollutant effects of concern.

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Where sediment indicators are used in these TMDLs, they are based on sediment quality guidelines developed by several studies (Long et al. 1995, Smith et al.1996, MacDonald et al. 1996) and compiled by Long and MacDonald in the biological effects database system (BEDS) synthesizing many, many samples throughout North America. These sediment quality guidelines (equivalent to threshold effect levels) have been endorsed by NOAA in the screening quick reference tables (SQuiRTs) for contaminants in sediments (Buchman 1999). Where fish or shellfish tissue indicators are used, they are based on tissue screening values established by the California Office of Environmental Health Hazard Assessment (OEHHA 1999). The specific basis for these target indicators is discussed in the individual TMDL descriptions.

For the organophosphate (OP) pesticides, chlorpyrifos and diazinon, there are no promulgated water quality criteria established by EPA or the State of California. Several entities including EPA (USEPA 1986 and 2000c) and California Department of Fish and Game (CDFG 2000a) have recommended criteria values for these pollutants. To be protective of aquatic resources and to meet beneficial uses, EPA has selected the CDFG values for chlorpyrifos and diazinon at the recommendation of the Regional Board.

Source Analysis

An understanding of pollutant loading sources and the amounts and timing of pollutant discharges is vital to the development of effective TMDLs. These TMDLs provide estimates of the amounts of pollutants entering the receiving water of concern or, in some cases, the amount of pollutant that is bioavailable based on historic loadings stored in the aquatic environment. These pollutant source estimates are documented based on data analysis and modeling studies described in the individual TMDLs and associated TSDs. Source loading estimates can be categorized in many ways, including but not limited to discharge source, land use category, ownership, pollutant production process (e.g. sedimentation processes), and/or tributary watershed areas.

The source analysis for these TMDLs indicated that historical discharges of PCBs and chlorinated pesticides, all of which are no longer authorized to be used, are believed to be primarily responsible for the pollutant levels measured in Newport Bay. Metals loading is associated with historical and ongoing discharges of urban runoff. Selenium loadings are estimated to come primarily from erosion and runoff, and discharges of shallow groundwater. Discharges of OP pesticides are associated with past and ongoing uses of these pesticides for household and agriculture pest control. Some pollutant loads are also estimated to come from seawater and atmospheric deposition.

The individually permitted point sources listed below discharge into waters in the Newport Bay watershed. These TMDLs include wasteload allocations for some of these facilities. A general permit is in place to regulate discharges associated with groundwater cleanup, which affects 21 permittees and focuses principally upon total suspended sediment, petroleum hydrocarbons and chlorinated solvents. Another general permit is in place which regulates groundwater dewatering operations of 12 permittees and focuses principally on suspended sediment discharges. Finally, the statewide general permit for industrial stormwater discharges covers several facilities that may discharge in the Newport Bay watershed, including John Wayne Airport. Runoff from state highways is regulated through the statewide CalTrans NPDES permit.

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Six boatyards are located around Newport Bay; all are regulated for indirect metals discharges to the sewer system. Discharges from these boatyards do not flow to the Bay. Instead, wastewater flows into sumps or into connections to the Orange County Sanitation District pre-treatment system.

Table 2-1: NPDES Permits In San Diego Creek/Newport Bay Watershed

NPDES permits in San Diego Creek watershed	**Comments**
Orange County Stormwater	MS4 Permit; Includes many cities as co-permittees
Tustin Marine Base/GW general	At present this is general permit, although RWQCB is currently drafting an individual permit
Silverado Constructors/GW cleanup	General permit, discharges under emergency conditions only
Irvine Ranch Water District	Individual permit, discharges tertiary treated water into Sand Canyon Reservoir and permit regulates stormwater overflows from Sand Canyon Reservior
Serrano Water Treatment Plant	Individual permit for a drinking water filtering plant
City of Tustin groundwater desalter	Individual permit, irregular discharges
Great Lakes Chemical/GW cleanup	Individual permit, no longer discharges
CalTrans Stormwater	Statewide permit for CalTrans facilities
Industrial Stormwater	Statewide general permit for industrial stormwater discharges

The Regional Board currently regulates three commercial nurseries through waste discharge requirements (WDRs): Bordier's, Hines and El Modeno Gardens. These nurseries are located in the upper reaches of the watershed, and their discharge (normally only during storm events) flows into Peter's Canyon Wash (for Hines and El Modeno) and Marshburn Channel (for Bordier's) before reaching the main stem of San Diego Creek. The Regional Board is currently evaluating whether WDRs are needed for two other nurseries (Nakase Nursery and AKI nursery). There are some unpermitted nurseries that are smaller in size than the permitted nurseries. Runoff from other agricultural operations in the watershed, including row crops, orchards, and vineyards, is not currently regulated.

Loading Capacity/ Linkage Analysis

The loading capacity is the critical quantitative link between the applicable water quality standards (as interpreted through numeric targets) and the TMDL. The loading capacity reflects the maximum amount of a pollutant that may be delivered to the water body and still achieve water quality standards. The linkage analysis investigates the relationship between pollutant loadings and water quality effects in order to calculate loading capacities for each pollutant and water body. The loading capacity sections discuss the methods and data used to estimate loading capacity. A range of methods were used to derive the loading capacities for the various pollutants, including predictive water quality models and linkage methods based principally on data analysis. The individual TMDLs and associated TSDs describe the linkage analysis in detail.

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TMDLs and Allocations

For each pollutant and water body, this document identifies the necessary TMDL (total allowed pollutant amount) and its components: appropriate wasteload allocations for point sources and load allocations for nonpoint sources and natural background. The TMDLs and associated wasteload and load allocations are expressed in quantitative terms as required by federal regulations.

TMDL calculation methods are summarized in this document and described in greater detail in the TSDs. Separate wasteload and load allocations are identified for point and nonpoint sources, respectively. In cases where it is feasible, individual wasteload allocations are established for each existing point source discharge, including permitted stormwater discharges. For several pollutants, insufficient information was available to support delineation of individual WLAs for each NPDES-permitted discharge. Therefore, the TMDLs include wasteload allocations for a category of "other NPDES permittees." This wasteload allocation category covers discharges under the following permits:

- Tustin Marine Base groundwater
- Silverado Constructors
- Irvine Ranch Water District
- Serrano Water Treatment Plant
- City of Tustin desalter
- Great Lakes Chemical
- Statewide Industrial Stormwater
- Statewide Construction Stormwater

EPA is establishing the grouped allocations for the "other NPDES permittees" category based on the following assumptions, which are discussed here to provide information to assist in implementing the allocations through the NPDES permitting process. The State, in consultation with the permittee(s) where appropriate, should gather data and information necessary to characterize the discharge flows and, if feasible, the loads of the specific pollutants for which allocations are established. The State should consider this new data and information when it considers adoption of the TMDLs and associated implementation plans for these toxic pollutants. If this categorical wasteload allocation is not subdivided when the State adopts the TMDLs, we assume that when any permit in this category is considered for revision or reissuance, the State should prepare an analysis as part of the permit fact sheet that (1) identifies the specific proportion or amount of the categorical wasteload allocation that can be discharged by the individual discharger, and (2) shows that the sum of all discharges covered by these permits will not exceed the total categorical wasteload allocation and is otherwise consistent with the TMDLs. Several alternative approaches are available to the State to apportion available loading amounts among the facilities covered in this wasteload allocation category (see *Technical Support Document for Water Based Toxics Control*, (EPA-505-2-9-001), March, 1991, pp. 68-69 for guidance on allocation criteria).

In the absence of additional analysis by the State in support of individual permitting actions consistent with the assumptions discussed above, we assume that available loading capacity identified in the categorical wasteload allocation is to be divided equally among the 8 permitted discharges. We expect that the followup State analysis in support of TMDL adoption

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or permit reissuance may result in different divisions of allocation capacity depending upon the combination of discharge flows, loads, and timing associated with each permitted discharge.

Load allocations for nonpoint sources may be expressed as specific allocations for specific dischargers or as "gross allotments" to nonpoint source discharger categories (40 CFR 130.2). TMDLs usually provide separate load allocations for natural background loads. Separate load allocations for background loads are calculated for the Newport Bay metals TMDLs; however, insufficient information is available to support a conclusion that these loads are completely natural. Separate natural background allocations are inappropriate for pesticides and organochlorine compounds because they of anthropogenic origin and because all known loading sources are accounted for in the TMDL analysis. Separate background allocations could not be calculated for selenium, chromium and mercury because insufficient information was available to support these calculations. Background levels of selenium associated with groundwater inputs to surface water may be significant; however, the physical and hydrological structure of the watershed has been highly altered as a result of hydrologic modifications, groundwater pumping, irrigation practices, and water imports to the watershed. As a result, it would be very difficult to estimate "naturally occurring" selenium discharge levels. Background levels of chromium and mercury are not expected to be substantial.

Allocations may be based on a variety factors. Federal regulations do not establish specific criteria which must be considered in dividing and allocating any available loading capacity between contributing sources. Criteria applied to determine the division of available pollutant loading capacity include:

- <u>Organophosphate Pesticides:</u> All allocations are concentration-based and are applied equally to all discharge sources.
- <u>Selenium:</u> Allocations were divided in proportion to land use areas of the different allocation categories for nonpoint sources and in proportion to discharge flow rates for point source categories. Consideration of flow rates in freshwater bodies, directly linked to precipitation events, is included.
- <u>Metals:</u> Load allocations and the stormwater wasteload allocation for San Diego Creek were generally divided in proportion to land areas associated with each source category. In defining the wasteload allocations for San Diego Creek, we considered the relative discharge flows associated with the different dischargers. We also included an undefined sources load allocation as a gross allotment to account for apparent loadings that could not be associated with other source categories.
- <u>Organochlorine Compounds:</u> Allocations to terrestrial watershed sources were generally divided in proportion to land use areas of different allocation categories, with some consideration of the feasibility of reducing loads for DDT. Newport Bay allocations are expressed as net available loads, taking into account as background loads loadings already allocated for "upstream" segments. For this reason, the allowable loads as expressed in the allocation tables in the TMDL document do not increase cumulatively in a downstream direction. The division of available loading capacity between terrestrial and in-Bay sediment sources was done in proportion to the percentage of total loads associated with watershed versus in-Bay sediment sources.
- <u>Mercury and Chromium:</u> Allocations to watershed sources were generally divided in proportion to land use areas of different allocation categories. Allocations between

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watershed sources and in-Bay sediment sources were divided in proportion to the percentage of estimated contributions from new sources and resuspended sediments.

TMDLs (and thus, load allocations and wasteload allocations) can be expressed as *"mass per time, toxicity, or other appropriate measure"*, depending on the type of waterbody and the sources that contribute to impairment. The TMDLs for all pollutants except diazinon and chlorpyrifos are expressed in terms of mass loads per time, and the TMDLs for the pesticides diazinon and chlorpyrifos are expressed in terms of water column concentrations. It is appropriate to express these pesticide TMDLs in terms of water column concentrations because these pollutants cause adverse effects on aquatic life through relatively short term exposures. These pollutants are relatively short-lived in the environment before they break down into less toxic forms, and they do not bioaccumulate through the food chain in the same way several of the other pollutants addressed in these TMDLs do. Therefore, the water column concentrations of these pesticides are of greatest concern in preventing adverse ecosystem effects.

Margin of Safety

A margin of safety is incorporated in each TMDL analysis in order to account for uncertainty in the relationship between pollutant loads and water quality effects.

The margin of safety can be implicit (i.e., incorporated into the TMDL analysis through conservative assumptions) or explicit (i.e., expressed in the TMDL as a portion of the loadings) or a combination of both. The TMDLs described in this document include a margin of safety discussion for each pollutant that describes the basis for the provided margin of safety and shows why it is adequate to account for uncertainty in the TMDL. The document discusses sources of uncertainty in the analysis and how individual analytical assumptions or other provisions adequately account for these specific sources of uncertainty.

For all pollutants except metals, a 10% explicit margin of safety was applied to account for uncertainties in the analysis. An explicit margin of safety is appropriate for each TMDL because there is significant uncertainty in the analysis of pollutant effects, loads, fate (i.e. chemical transformations and degradation following discharge), and transport in the watershed. The data supporting the TMDLs were somewhat limited. For metals, a 20% explicit margin of safety was applied to account for (1) these analytical uncertainties and (2) the consideration that the metals TMDLs are expressed in terms of dissolved metals although it is likely that total metals loading levels are somewhat higher than dissolved metals loads, and that total metals loads may be of concern as a cause of sediment toxicity.

For all pollutants, the TMDLs also incorporate an implicit margin of safety because numerous conservative assumptions were made to ensure that the analytical methods applied are environmentally protective. Each TMDL section describes sources of uncertainty in the analysis and the assumptions made which provide an implicit margin of safety.

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Seasonal Variations and Critical Conditions

TMDL must describe the methods used to account for seasonal variations and critical conditions (e.g., stream flows, pollutant loadings, and other water quality parameters) in the TMDL(s) [40 CFR 130.7 (c)]. In the semi-arid climate of Southern California there are two seasons—dry weather during most of the year and intermittent wet weather events typically between November and March. This two-season climate creates significant differences in flow through the creeks and streams. In general, 90% of the water flow occurs during less than 10% of the time; that is, most significant storm events and associated high flows usually occur during the months of December, January and February.

EPA has utilized two different approaches to seasonal variations and critical conditions in developing these TMDLs. One approach varies TMDLs on a seasonal basis. For example, the OP pesticide TMDLs (chlorpyrifos and diazinon) show there is considerable increase in pesticides applied during the dry season (when pests grow and create problems); however, aquatic impairment occurs during wet weather events as surface runoff pollutes the freshwater tributaries. OP pesticide critical conditions are explained more in section III below.

The other approach to addressing seasonal variations and critical conditions is to define critical conditions solely based on freshwater flow rates due to precipitation regardless of season. This flow based approach is applied to freshwater loading to metals, Se, and organochlorine (OC) compounds. Unlike the OP pesticides, the water quality effects associated with these pollutants are not expected to vary on a seasonal basis. In this flow-based approach, the continuous range of stream flows (measured as daily flow rates) that occur in San Diego Creek is broken down into several flow tiers. The loading capacity for each breakpoint in the flow tiers is established, and the sum of allowable loads under all tiers equals the total annual loading capacity for freshwater bodies. Thus the applicable allocation for a given source does not depend on the time of year, but on the actual stream flow (or associated sediment deposition rate for OC compounds) at the time of discharge. This flow approach is partially used for chromium and mercury TMDLs for Rhine Channel, where freshwater has little influence (6%) on deposition within that dead-end reach of Newport Bay.

To estimate the loading capacity of freshwater systems, EPA has utilized daily flow records at San Diego Creek at Campus Drive which were collected by USGS from 1977 - 79 and 1983 – 85 and Orange County Public Facilities and Resource Division (OCPFRD) from 1985 to present. EPA and Regional Board staff reviewed the entire daily mean flow record set from USGS and OCPFRD. The analysis was performed on a water year basis (e.g., July 1977 to June 1978). Incomplete USGS data for the period 1979/80 to 1982/83 were not used because only partial records were available for each year. Thus, the USGS and OCPFRD records yielded 19 water years of daily mean flow records for San Diego Creek. This time span covered water years: 1977-78, 1984/85 – 2000/01. EPA used these records for calculating the flow based approach to Se, dissolved metals, organochlorine, mercury and chromium TMDLs. EPA used annual flow records for water year 1996, 1997, 1998, 1999, 2000, 2001 to determine flow inputs from Santa Ana Delhi Channel. This time span covers a reasonable diversity of rainfall conditions based on precipitation measurements from 1958 to 2001. It includes the exceptionally wet El Nino year, 1998, as well as relatively drier years, 1999 and 2000. Table 2-2 shows

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rainfall recorded at Tustin/Irvine Ranch gage station for each year within the time span utilized by EPA, as well as historical high and low rainfall records. These data illustrate that the data years used by EPA for this approach are reasonably representative of the entire time period. Technical Support Document—Part B gives more explanation of freshwater flows and seasonal variations.

Table 2-2. Annual Precipitation Records at Tustin-Irvine Ranch Station

Water Year *	Rainfall (inches)	Water Year	Rainfall (inches)	Water Year	Rainfall (inches)	Water Year	Rainfall (inches)
1958-59	5.03	1971-72	5.02	1983-84	10.47	1995-96	11.17
1959-60	9.6	1972-73	14.9	1984-85	10.25	1996-97	16.19
1960-61	4.13	1973-74	9.81	1985-86	14.42	1997-98	34.72
1961-62	13.07	1974-75	12.36	1986-87	8.79	1998-99	8.6
1962-63	5.76	1975-76	5.11	1987-88	11.14	1999-00	8.8
1963-64	9.38	1976-77	10.2	1988-89	8.17	2000-01	14.6
1964-65	10.28	1977-78	27.96	1989-90	5.93	Summary	
1965-66	12.68	1978-79	18.59	1990-91	11.23	Min:	4.13
1966-67	14.22	1979-80	20.75	1991-92	17.18	Max:	34.7
1967-68	8.58	1980-81	8.47	1992-93	27.09	Mean:	13.03
1968-69	19.91	1981-82	13.22	1993-94	10.23	Median:	10.8
1969-70	8.48	1982-83	25.92	1994-95	24.65	Count:	42

*Source: OCPFRD; *Water years run from July 1 to June 30 of the following year.*
Rainfall data for water year 1970-71 not available

Available Data

Monitoring data used in these TMDLs came from numerous sources. Much of the analysis has been summarized in a Regional Board staff report describing the monitoring results in relation to water quality objectives, sediment guidelines and fish tissue screening values (SARWQCB 2000). EPA has included data from a few more recent studies and focused on monitoring results compiled over the past five years to assess present day water quality conditions. EPA has also reviewed ten years of sediment data and nearly twenty years of fish tissue results to determine long-term trends. Finally, the Regional Board has several projects currently in progress with the Southern California Coastal Research Water Project (SCCWRP). The studies relevant to these toxics pollutant TMDLs address sediment toxicity in Newport Bay (2001a), fish bioaccumulation in Newport Bay (2001b) and freshwater toxicity in San Diego Creek at Campus Dr. (2001c). Preliminary results for two studies (2001a, 2001b) were available as of Dec 1, 2001 and (where feasible) some data were included in these TMDLs. A summary of all monitoring data, the waterbodies sampled, measured parameters and citation/abbreviation is provided in Table 2-3.

Table 2-3 Overview of monitoring data

Organization	Period of record	Geographic Scope	Measured Features	Measured Parameters and comments
Lee & Taylor (2001a) 319(h) report (for SA RWQCB)	Winters 1999; 2000	San Diego Creek Watershed	stormwater runoff	Se; metals and OP pesticides in watershed, Draft report provided May 2001

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Hibbs & Lee Se Study	1999	San Diego Creek; Groundwater	Surface and groundwater	Se in groundwater and SDCreek
Lee & Taylor (2001b) 205(j) report (for SA RWQCB)	1997-'99	San Diego Creek Watershed	Surface water toxicity	Toxicity and pesticides in watershed
CDPR Red Imported Fire Ant (RIFA) study	1999-present	San Diego Creek Watershed	Surface water	Toxicity and pesticides Insecticides and OP pesticides in watershed; toxicity and chemical concentrations
IRWD (1999) Database	Fall 1997 --March 1999	San Diego Creek; Upper and Lower Bay (10 sites)	Surface water; sediments	metals and organics using appropriate sampling and analytical techniques, one day composites, year round, no storm events
OCPFRD (2000) (NPDES annual report)	1996-2000	All freshwater tributaries, San Diego Creek; Upper and Lower Bay, Rhine Channel	Surface water; sediments	7 metals, some organics, dry and wet weather events; some four consecutive day sampling; semi-annual sediment data
Orange County Coastkeeper (1999)	Oct. 1999	Rhine Channel (2 sites); Lower Bay (1 site)	Sediments	Metals, sediment core in Rhine
Ogden Env. (1999, for City of Newport Beach)	June 1999	Lower Bay (12 sites)	Sediment	Metals; few priority organics in dredge studies
BPTCP (1997) (for SWRCB/ NOAA/EPA)	1994; '96	Upper and Lower Bay (18 sites total)	Sediment triad study	Metals; many organics; toxicity; benthic comm. Index
Bight '98 (coordinated by SCCWRP)	1998	Lower Bay (11 sites; not Rhine).	Sediment triad study	chemistry; toxicity; benthic comm. index; interstitial porewater data for AVS & SEM
Cal. Dept. Fish & Game	1999-2000	San Diego Creek watershed	Sediment; Fish tissue	OP Pesticides; insecticides in sediment and fish tissue as part of Red Imported Fire Ant project
Calif. Fish Contamin. Study (CFCS) (for SWRCB/ OEHHA)	1999–2000	Upper and Lower Bay	(sport) Fish tissue	Preliminary results for three metals; many organics in fish fillets with skin off
State Mussel Watch (SMW) (for SWCRB)	1980-2000	mostly Upper and Lower Bay	Shellfish tissue	Metals; organics in resident or transplanted mussels, no recent data in SDC
Toxic Substance Monitoring (TSM) (for SWRCB)	1983–1998	all Newport Bay waterbodies	Fish tissue	Total metals; organics in whole fish with skin on
SCCWRP (2001a) Sediment Toxicity Study (for SA RWQCB)	On-going	Upper and Lower Bay; including Rhine Channel (10 sites)	Sediment; Water Toxicity	chemistry; toxicity; benthic comm. index, some preliminary results available
SCCWRP (2001b) Fish Study (for SA RWQCB)	On-going	Upper and Lower Newport Bay	Fish tissue	Four metals; priority organics, sportfish samples in 2001; ecological risk samples in 2002
SCCWRP (2001c) Freshwater Study (for SA RWQCB)	On-going	San Diego Creek (1 site)	Freshwater Toxicity	TIEs for metals in Winter 2002; Se bioaccumulation study

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III. Organophosphate (OP) Pesticide TMDLs

TMDLs are required for chlorpyrifos and diazinon for San Diego Creek. To address impairment specified in the 1998 Section 303(d) list, the TMDLs for San Diego Creek address both Reach 1 and Reach 2, unless otherwise explicitly indicated. A TMDL is also required for chlorpyrifos in the Upper Newport Bay. TMDLs are required despite recent re-registration agreements to phase out certain uses of these two OP pesticides by 2006 (EPA 2001b, 2000b). A large portion of information presented here and in the Technical Support Document – Part C is based on the OP Pesticide draft TMDLs written by Regional Board staff (SARWQCB 2001a).

Problem Statement

San Diego Creek

Water column acute and chronic toxicity to aquatic life in San Diego Creek and its tributaries has been identified and attributed largely to diazinon and chlorpyrifos through toxicity identification evaluation (TIE) studies. Over 300 toxicity tests have been performed on 123 water samples collected from the Newport Bay watershed. Toxicity occurred during virtually all monitored storm events and is viewed primarily as a wet weather problem. Dry weather toxicity was generally confined to upper reaches of the watershed (near the foothills) and diluted or otherwise remediated in downstream locations (Lee and Taylor 2001a, b). These TMDLs are structured to prevent toxicity under all flow conditions.

Average diazinon concentrations in San Diego Creek during baseflow (200 ng/L) and stormflow (445 ng/L) have exceeded the chronic numeric target of 50 ng/L. Ninety-five percent of the observed concentrations were also above the acute numeric target of 80 ng/L. Average chlorpyrifos concentrations in San Diego Creek during baseflow (111 ng/L) and stormflow (87 ng/L) have exceeded the chronic numeric target (14 ng/L). At least 59% of the observed concentrations also exceeded the acute numeric target of 20 ng/L.

Upper Newport Bay

Evidence exists indicating water column toxicity due to chlorpyrifos in Upper Newport Bay. This is restricted to storm events when freshwater inputs from San Diego Creek and Santa Ana Delhi linger in the Upper Bay (Lee and Taylor 2001a, b). Average chlorpyrifos concentrations observed in Upper Newport Bay (43.3 ng/L) have exceeded the saltwater chronic numeric target of 9 ng/L during stormflow conditions, and 80% of the concentrations exceeded the acute numeric target (20 ng/L). Toxicity attributed to chlorpyrifos does not extend into Lower Bay. Diazinon does not appear to cause toxicity in saltwater bodies such as Upper or Lower Newport Bay.

Bioaccumulation

In San Diego Creek watershed, fish tissue concentrations of chlorpyrifos have consistently remained orders-of-magnitude below the OEHHA screening value (10,000 ppb) for fish consumption. Diazinon fish tissue concentrations have exceeded the OEHHA screening value of 300 ug/kg only once (440 ug/kg), according to Toxic Substances Monitoring data.

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Mussel tissue concentrations of both OP pesticides have never exceeded the OEHHA screening values. Therefore, there is no compelling evidence of bioaccumulation of these substances to levels of concern, an observation consistent with monitoring from other studies (CDFG 2000, EXTOXNET).

In short, there is conclusive evidence that diazinon and chlorpyrifos are causing acute and chronic toxicity in San Diego Creek and that chlorpyrifos causes toxicity in Upper Bay. Toxicity predominantly occurs during storm events and certainly affects lower level aquatic organisms such as *Ceriodaphnia* (Lee and Taylor 2001a, b).

Numeric Targets

At present, there are no promulgated water quality criteria for chlorpyrifos and diazinon. For these TMDLs, EPA has selected the numeric targets from recommended acute and chronic criteria derived by the California Dept. of Fish and Game for chlorpyrifos and diazinon in freshwater and saltwater (CDFG 2000a). These numeric targets serve as the quantitative interpretation of the narrative water-column quality objective as specified in the Basin Plan (1995). These numeric targets will be protective of aquatic life in San Diego Creek and Upper Newport Bay and sufficient to remove impairment caused by OP pesticide toxicity. Target concentrations are shown in Table 3-1; saltwater chronic and acute targets for diazinon are not applicable since TMDLs are not required for this pollutant in any of the saltwater bodies covered by these TMDLs.

Table 3-1 Selected Numeric Targets

		Concentration (ng/L)	
Pesticide	**Criterion**	**Freshwater**	**Saltwater**
Diazinon	Chronic	50	N/a
Diazinon	Acute	80	N/a
Chlorpyrifos	Chronic	14	9
Chlorpyrifos	Acute	20	20

from Calif. Fish & Game (2000a)
chronic means 4-consecutive day average

Source Analysis

This section of the TMDL presents a synopsis of the major sources of diazinon and chlorpyrifos to San Diego Creek and chlorpyrifos to Upper Newport Bay. This synopsis focuses on water column concentrations from several studies conducted in the watershed targeting aquatic life toxicity associated with pesticides (Lee and Taylor 2001a; 2001b; DPR studies). These studies were not detailed enough to identify discrete sources, but it appears that diazinon and chlorpyrifos are problems attributed to agricultural and residential use. Investigations of DPR pesticide use reports provide some estimates of pesticide applications by land use within the watershed; however this does not comprehensively depict all sources in San Diego Creek. Additional analysis via land use information indicates that residential contributions are also

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significant. The synopsis is presented below, whereas the reader will find a more complete source analysis in the Technical Support Document – Part C.

Diazinon

Within freshwater bodies of San Diego Creek, monitoring results show extremely high detection frequency (>98%) of diazinon during storm events. This detection frequency decreases slightly (89%) during dry weather or base flow conditions. Maximum concentrations were observed in Hines Channel (which drains into Peters Canyon Channel, and is tributary to San Diego Creek Reach 1).

At virtually all the locations, the median stormflow concentration is significantly higher than the median baseflow concentration. Since stormwater runoff constitutes about 80% of the volume of water discharged to Newport Bay on an annual basis, this would indicate that the overwhelming majority of the pesticide load would derive from stormflow rather than baseflow. The average concentration is actually higher for baseflow, but this is biased by a few very high detections from 1998 near nurseries. These results have not been observed in later sampling and the nurseries have subsequently instituted measures targeted at reducing pesticide runoff.

Chlorpyrifos

Chlorpyrifos was detected less frequently (in 45% of samples) than diazinon. This is due in part, to the lower solubility of chlorpyrifos, and its greater affinity for sediment. The lower mobility of chlorpyrifos results in lower concentrations in the drainage channels. According to DPR Pesticide use database, over twice as much chlorpyrifos is applied as compared to diazinon (per pound of active ingredient).

Sample locations monitoring residential areas tended to have lower chlorpyrifos concentrations. Chlorpyrifos was not detected at three of the residential locations under both baseflow and stormflow conditions. The detection frequency, and maximum concentrations detected at another partly residential location (Santa Ana Delhi Channel) were low. The only residential site with relatively high chlorpyrifos concentrations was Westcliff Park (stormflow), but the baseflow concentrations were relatively low.

California DPR Pesticide Use Database

The California Department of Pesticide Regulation (DPR) Pesticide Use database provides information by county about application of pesticides by various licensed pesticide users. For the Newport Bay watershed, diazinon and chlorpyrifos applications have been estimated to comprise one-fifth the total reported for Orange County (because the watershed acreage is one-fifth that of Orange County). In addition, land use analyses indicate that commercial nurseries and residential areas are associated with high pesticide application rates, and much higher detection in water during wet weather. Urban uses account for over 90% of total diazinon and chlorpyrifos use in the Newport Bay Watershed, with residential use by homeowners accounting for roughly half the estimated total of 10,700 lbs of diazinon and 24,000 lbs of chlorpyrifos used in the watershed in 1999. Similar studies reported in literature of pesticide use and water monitoring results have indicated that residential hotspots (individual homes) can account for most of the diazinon runoff from a neighborhood (Scanlin and Feng 1997; Cooper 1996).

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Based on data from investigations carried out from 1996-20001, about 36 pounds of diazinon is discharged annually to San Diego Creek, mostly during storm events. This is less than 0.4% of the estimated diazinon mass applied in the watershed. About 8 pounds of chlorpyrifos is discharged annually to San Diego Creek and Upper Newport Bay, with most of the load delivered during storm events. This amounts to about 0.03% of the applied chlorpyrifos mass. Available data and studies indicate that in normal use, OP pesticides break down quickly and therefore only a small percentage of the total amount applied is available to runoff to waterbodies. However, even small amounts of these pesticides are enough to cause acute and chronic toxicity in receiving water bodies.

In summary, surface runoff is the source of virtually all loadings. Contributions from sediment remobilization and groundwater are negligible, however, loading from atmospheric deposition to Upper Newport Bay is potentially significant, though not well quantified. The chemical properties of diazinon and chlorpyrifos ensure that they do not accumulate in the environment. Runoff derived from urban land uses accounts for about 88% of the diazinon baseflow load, and 96% of the stormflow load. Agricultural sources (including nurseries) account for the remainder of the load. For chlorpyrifos, runoff derived from urban land uses accounts for about 85% to 88% of the baseflow and stormflow loads, while agriculture (including nurseries) accounts for about 12% to 15% of the load. On a per acre basis, different land uses contribute diazinon and chlorpyrifos runoff at fairly equal rates within the watershed and distinct source areas are not readily identifiable. Median concentrations from 14 sampled drainage channels across the watershed did not exhibit large differences.

Although it appears that some of the nursery/agricultural locations yield higher chlorpyrifos concentrations than the residential areas, it should be noted that the nursery monitoring locations are selected to monitor undiluted nursery discharge, very close to where the chlorpyrifos is used. In contrast, runoff from individual homes where chlorpyrifos is applied is not monitored; rather the monitoring location is further away within a channel thereby collecting mixed/diluted runoff from many homes. In addition, because of the inherent immobility of chlorpyrifos, and its tendency to adsorb to sediment, higher chlorpyrifos concentrations are most likely to be encountered in areas nearby to where it is applied, before it partitions out of the aqueous phase and settles out along with the sediment.

Loading Capacity/Linkage Analysis

These OP pesticide TMDLs use a concentration-based loading capacity and allocations for diazinon and chlorpyrifos. The concentration-based loading capacity will address the problems of aquatic toxicity within the watershed and Upper Newport Bay. Because diazinon and chlorpyrifos are generally not known to bioaccumulate, there is no need to establish the loading capacity via mass based units. These concentration-based TMDLs will protect aquatic life from short-term exposure via acute targets and long-term exposure via chronic targets.

The concentration-based loading capacity values are exactly the same as those selected as the numeric targets (see Table 3-1). For San Diego Creek, the loading capacity for diazinon has two components: the chronic or 4-day average concentration (50 ng/L), and a maximum 1-hour average (acute) concentration of 80 ng/L. The loading capacity for chlorpyrifos in San Diego

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Creek also has two components: the chronic or 4-day average concentration (14 ng/L), with a maximum 1-hour average (acute) concentration of 20 ng/L. For Upper Newport Bay, the loading capacity for chlorpyrifos has two components: the chronic or 4-day average concentration (9 ng/L), and a maximum 1-hour average (acute) concentration of 20 ng/L acute.

As discussed above regarding the numeric targets, this loading capacity (including the margin of safety discussed below) will result in achievement of the narrative water quality objective for aquatic toxicity because these numeric targets arise from aquatic toxicity tests completed during the development of these recommended water quality levels.

TMDL and Allocations

The TMDLs for diazinon and chlorpyrifos are being established at levels equivalent to the loading capacities identified above. We have also utilized concentration-based allocations for both wasteload allocations (WLA) and load allocations (LA). The WLA applies to point sources in the watershed, and includes the NPDES permittees. The LA applies to non-point sources such as agriculture, open space and atmospheric deposition.

For these OP pesticide TMDLs, EPA has established an explicit (10%) margin of safety (discussed below); therefore the concentration-based allocations are calculated as 90% of the numeric target level for each pesticide under acute and chronic exposure conditions. For example, the numeric target for diazinon under short term, acute conditions is 80 ng/L. The wasteload and load allocations are set at 72 ng/L, after subtraction of 8 ng/L to provide the 10% margin of safety.

Allocations for Freshwater Water Bodies

Table 3-2 presents the concentration-based freshwater allocations for chlorpyrifos and diazinon; these apply to all point sources (wasteload allocations) and to all non-point sources (load allocations). The diazinon allocations apply to freshwater discharges into San Diego Creek Reach 1 and Reach 2. The chlorpyrifos allocations apply to freshwater discharges into San Diego Creek (Reach 1 and Reach 2) and discharges into other freshwater tributaries into Upper Newport Bay including Santa Ana Delhi Channel, Big Canyon Channel and other drainages to Upper Bay. This includes discharges from agricultural and residential lands, including flows from the storm water systems. These limits apply regardless of season and flow; i.e., at all times of the year.

Table 3-2: Diazinon and Chlorpyrifos Allocations for San Diego Creek

Category	**Diazinon (ng/L)**		**Chlorpyrifos (ng/L)**	
	Acute	Chronic	Acute	Chronic
Wasteload Allocation	72	45	18	12.6
Load allocation	72	45	18	12.6
MOS	8	5	2	1.4
TMDL	**80**	**50**	**20**	**14**

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Allocations for Upper Newport Bay

Table 3-3 presents the saltwater allocations for chlorpyrifos; these apply to all point sources (wasteload allocations) and to all non-point sources (load allocations). It applies to saltwater allocations in Upper Newport Bay, defined from San Diego Creek at Jamboree Rd. down to Pacific Coast Highway Bridge. These limits apply regardless of season and flow; i.e., at all times of the year.

Table 3-3. Chlorpyrifos Allocations for Upper Newport Bay

Category	**Acute (ng/L)**	**Chronic (ng/L)**
Wasteload allocation	18	8.1
Load allocation	18	8.1
MOS	2.0	0.9
TMDL	**20**	**9**

Chronic means 4-consecutive day average

Needed Reductions

Table 3-4 summarizes the estimated needed concentration based (load) reductions for diazinon and chlorpyrifos in order to achieve the TMDL numeric targets in San Diego Creek. Multiple samples are available from five separate storm events in the watershed from 1997-2000. The storm average concentrations in Table 3-4 are the maximum single storm averages at the San Diego Creek-Campus station. The difference between the current load and the allocation is the needed reduction. Chlorpyrifos concentrations may have begun to decline in 2000 and 2001, based on indications of a reduction in usage from the DPR database as well as from the Sales and Use Survey (Wilen 2001) conducted in late 2000. To date, there are no clear indications of declining trends in diazinon usage in the watershed. This table indicates the estimated needed reduction during average storm flows. As discussed above, the majority of the pesticide load derives from stormflow.

Table 3-4. Needed Load (concentration based) Reductions for San Diego Creek.

Constituent	**San Diego Creek Campus Station**		**Allocation**		**Needed Reduction**	
	Storm Average (ng/L)	Max (ng/L)	Chronic (ng/L)	Acute (ng/L)	Chronic (ng/L)	Acute (ng/L)
Chlorpyrifos	120	580	12.6	18	90%	97%
Diazinon	848	960	45	72	95%	93%

Phase out agreements

Diazinon – In January 2001, USEPA released a revised risk assessment and an agreement with registrants to phase out most diazinon uses (USEPA 2001b). Under the agreement, all indoor uses will be terminated, and all outdoor non-agricultural uses will be phased out over the next few years. In addition, on a national basis, about one-third of the agricultural crop uses will be removed. Within the Newport Bay watershed, non-agricultural and non-nursery uses account for over 90% of the diazinon use in Orange County. It is thus likely

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that the EPA agreement will result in the cessation of most diazinon use in the Newport Bay watershed soon after the outdoor non-agricultural use registration expires on December 31, 2004.

Chlorpyrifos – In June 2000, the EPA published its revised risk assessment and agreement with registrants for chlorpyrifos (USEPA 2000b). The agreement imposes new restrictions on chlorpyrifos use in agriculture, cancels or phases out nearly all indoor and outdoor residential uses, and also cancels non-residential uses where children may be exposed. Application rates for non-residential areas where children will not be exposed will be reduced, and public health use for fire ant eradication and mosquito control will be restricted to professionals. In Orange County, residential use likely accounts for over 90% of total chlorpyrifos use. Thus, it appears that over 90% of the current chlorpyrifos use in the Newport Bay watershed will be eliminated by the EPA agreement. Retail sales are scheduled to stop by December 31, 2001, and structural uses will be phased out by December 31, 2005.

While these agreements should result in significant decreases in OP pesticide use and the resulting discharge concentrations to the waterbodies, additional measures may be necessary to achieve the reductions set forth above.

Seasonal variation/Critical conditions

Pesticide usage correlates roughly with the season, with increasing usage in the warmer months due to increased pest activity. However, runoff into the drainage channels is greatest during the wet season, and higher pesticide concentrations are observed during storm events. The higher pesticide concentrations primarily account for the toxicity observed in stormwater samples collected in the watershed. The chronic criteria used as the basis for the numeric targets are designed to ensure protection of aquatic life during all stages of life, including the most sensitive stages. Because the TMDL is being expressed as a concentration, a detailed analysis of critical conditions is unnecessary. The concentration-based allocations (Table 3-2 and 3-3) will apply and be protective during all flow conditions and seasons.

Margin of Safety

An explicit 10% margin of safety was applied to the recommended criteria derived by the CDFG (2000a) and EPA (1986) for diazinon and chlorpyrifos. This explicit margin of safety is intended to account for uncertainties in TMDL calculation methods and concerning pesticide effects (e.g., potential additive and synergistic impacts from exposure to multiple OP pesticides) that may aggravate water quality impacts due to diazinon and chlorpyrifos usage in the watershed.

In addition to the explicit margin of safety, conservative assumptions were used in applying the numeric targets within the watershed. These conservative assumptions serve as implicit margins of safety to provide additional protection for aquatic life and minimize aquatic toxicity.

1. No adjustment was made to reflect the possibility of pesticide breakdown from point of discharge to San Diego Creek. Scientists have measured that half-lives of diazinon and chlorpyrifos in water range from a few days up to six months, therefore some degradation is likely to be occurring after application and within flowing waters. Assuming discharges are

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within the specified concentration-based allocations, and that such degradation (via biotic and abiotic processes) occurs, there will be sufficient protection for aquatic life.

2. No adjustment was made to reflect the possibility of mixing and dilution within the drainage channels. In particular, the dilution capacity provided by groundwater seepage has not been factored into the TMDLs.

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IV. Selenium TMDLs

TMDLs are required for selenium (Se) for San Diego Creek, Upper Bay, Lower Bay, and Rhine Channel. Much of the work presented below and in the Technical Support Document—Part D for Selenium is based on the Se draft TMDLs written by Regional Board staff (2001b).

Problem Statement

Selenium is a naturally occurring element that persists in soils and aquatic sediments and readily bioaccumulates through the food chain at levels that can cause adverse effects on higher level aquatic life and wildlife including fish and birds that prey on fish and invertebrates. Selenium can become mobilized and concentrated by weathering and evaporation in the process of soil formation and alluvial fan deposition in arid and semiarid climates (Presser, 1994). Moreover, selenium may be leached from sediments as a result of irrigation practices, elevation of the groundwater table, or other modifications in the natural hydrologic regime.

Dissolved selenium concentrations in San Diego Creek at Campus, and in tributaries to San Diego Creek, consistently exceed the chronic (4-day average) CTR criterion for freshwaters (5 µg/L). This has been observed in numerous studies, which also cite occasional exceedances of the acute (1 hour max.) criterion (Hibbs and Lee 1999, IRWD 1999, Lee and Taylor 2001a). Dissolved selenium concentrations in Newport Bay do not exceed the CTR saltwater criterion (71 µg/L); nonetheless, fish tissue data indicate that selenium loadings *may* be causing toxicity or contributing to conditions threatening wildlife in Upper and Lower Bay (see next paragraph). Freshwater and saltwater toxicity tests (designed for metals and trace elements such as selenium) are currently in progress (SCCWRP 2001a, b).

In the majority of aquatic sediment samples analyzed from Newport Bay watershed, selenium concentrations are below levels of concern (2—4 mg/kg dry) as defined by Enberg et al. (1998). Mussel and fish tissue concentrations from all waterbodies are below the screening value (20 mg/kg wet) for protection of human health as established by OEHHA (1999). However, these same tissue results are within the range of levels of concern (4 – 12 mg/kg dry) for toxicological and reproductive effects to wildlife (Enberg et al. 1998 and Henderson et al. 1995). In San Diego Creek, tissue concentrations of selenium in small whole fish show an increasing trend from 1983 to 2000 (TSM 2000). Fish fillet results in Newport Bay do not appear to have the same trend and maximum levels barely approach 4 mg/kg dry (TSM database), which is below reported levels of concern. Studies of avian reproductive success, specifically including selenium concentrations in eggs, have not been completed.

Numeric Targets

As discussed in Section II, the California Toxics Rule (CTR) includes numeric water quality standards (objectives) for selenium which are designed to protect aquatic life (USEPA 2000a). EPA and Regional Board staff have re-evaluated freshwater flow histories for nearly 20 water year records (see TSD part B). These records have been divided into four flow tiers as shown in Table 4-3 for San Diego Creek. Our re-evaluation indicates that mean water residence time of 4 consecutive days occurs in flow rates below 814 cfs. Thus the CTR chronic target (5

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μg/L) applies to base, small and medium storms. During the large flows, shorter residence time (<4 days) exists and so an acute value is applied, 20 μg/L. EPA has incorporated this high flow (or "large storm") value into selenium targets, flow tiers and loading capacity.

Mean water residence time in the Bay also exceeds 4 days on average. Because the more stringent chronic standards are applied based on a 4 day averaging period, EPA has determined that it is appropriate to apply the chronic selenium standards at three of four flow tiers in San Diego Creek and in Newport Bay. These are equivalent to the chronic freshwater and saltwater objectives included in the CTR. The acute freshwater objective is from National Toxics Rule (NTR, USEPA 1997) and is applied for the highest flow tier for San Diego Creek because the frequency of flows in this tier exceeds 4 days fewer than once in three years on average.

EPA is currently engaged in a process of revising its national criteria recommendations for selenium based, in part, on the USFWS opinion concerning the CTR. However, the numeric objectives for selenium water column concentrations have not yet been changed, and it is not clear whether the freshwater criteria will need to increase or decrease in order to protect aquatic life and aquatic dependent species. On one hand, several commenters supported the option of basing the TMDLs on more stringent targets based on the analysis provided by USFWS. On the other hand, several commenters identified site specific characteristics of Newport Bay watershed which could support a conclusion that objectives less stringent than the CTR would be protective. In light of these uncertainties concerning the need to either lower or raise the selenium standard, we concluded that it would be appropriate to set the TMDLs based on the existing numeric standard. The evidence that the CTR objectives are not be protective of San Diego Creek was not definitive enough to warrant selection of more stringent target values.

Freshwater targets

EPA is applying two numeric targets for different freshwater flow conditions in San Diego Creek. Based on re-evaluation analysis of daily flow records for water years 1977/78 and 1985 to 2001, EPA divided all observed flows into 4 flow categories or tiers: baseflow (≤ 20 cubic feet/second (cfs)), small flows (between 20 and 181 cfs), medium flow (between 181 and 814 cfs), and large flow (>814 cfs). EPA is basing these TMDLs on a different period of flow record than proposed in the draft TMDLs because we have concluded that the flow record for 1978/79 and 1983/84-2000/01 reflects more recently available data and is more reflective of long term flow patterns. The percentage of flows in the base, small and medium flow categories that exceeded 4 days in duration during this period far exceeded the once in 3 year recurrence interval that is assumed in calculation of selenium criteria. Therefore, it was appropriate to apply the more protective chronic standard under these flow conditions. During the high flows associated with large storms, the duration does not extend to four days more than once in 3 years on average, so it is appropriate to apply an acute target concentration for the high flow tier (20 μg/L, based on National Toxics Rule [USEPA 1999]). The Technical Support Document—Part B provides a complete explanation of these flow tiers and the associated mean annual flow volumes for calculating loads.

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Saltwater target

The numeric target for dissolved selenium in saltwater is 71 µg/L from CTR (USEPA 2000a). The USFWS concurred with this saltwater value in its review of the CTR. Therefore, this target is expected to result in protection of all designated uses in Newport Bay. Additionally, since San Diego Creek is the major contributor of freshwater flows to Newport Bay (>95%), reductions of selenium in the creek should also result in reductions in the Bay.

Table 4-1. Numeric targets for Selenium in San Diego Creek and Newport Bay (µg/L).

Waterbody/type	Total Se*		Dissolved Se#
	Acute	Chronic	
San Diego Creek/freshwater	20	5	N/a
Newport Bay & Rhine Channel/saltwater	N/a	N/a	71

*Total recoverable = unfiltered sample
#dissolved = <0.45 µm filter

Source Analysis

Several monitoring studies, completed with a specific focus on selenium during short time periods, provide most of our current understanding of selenium sources (IRWD 1999, Hibbs and Lee 2000, Lee and Taylor 2001a). The synopsis is presented below; the Technical Support Document—Part D presents a more thorough source analysis and description of these studies.

An investigation of selenium sources shows that shallow groundwater is a significant and constant source of selenium to surface waters in the San Diego Creek watershed (Hibbs and Lee 2000). Groundwater may seep into surface waters via natural processes or it may be pumped as part of groundwater cleanup or dewatering operations which discharge into surface waters. Thus selenium contributions to the watershed include both non-point sources (seepage) and point sources (cleanup and dewatering). Surface channels immediately downstream of nurseries were found to have low selenium concentrations during base flow conditions (Hibbs and Lee 2000, Lee and Taylor 2001a).

San Diego Creek contributes the largest load of selenium among all tributaries to Newport Bay (Lee and Taylor 2001a). Of the load from San Diego Creek, Peters Canyon Wash, which conveys selenium from selenium-laden shallow groundwater, represents the major source in dry weather. These sources may include runoff from hillsides, open spaces, agricultural lands, and commercial nursery sites. High concentrations were found in nursery channels during rain events, although it remains unclear if the selenium sources are from the commercial nurseries or from sources existing upstream of the nurseries. During rain events, the selenium load from the upper reach of San Diego Creek was comparable to that from Peters Canyon Wash, suggesting runoff from open space is a significant source during rain events. Low concentrations were found in nursery channels during baseflow conditions.

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Table 4.2 Reported Selenium conc. in San Diego Creek and Santa Ana-Delhi Channel (µg/L)

Location	**Lee and Taylor* 5/31/00**	**Hibbs and Lee¥ 10/31/99**	**IRWD@ 12/97–3/99**
San Diego Creek (at Campus Dr.)	22.1	19	42.5
Santa Ana-Delhi (at Irvine Ave.)	11.9	---	---

*Lee and Taylor (2001a) results for unfiltered samples
¥Hibbs and Lee (1999) results for dissolved sample
@ IRWD (1999) result is arithmetic average of time period indicated, dissolved sample

Urban runoff is found to contain very low selenium concentrations (< 1.5 µg/L) (Lee and Taylor 2001a). Atmospheric deposition of selenium is not significant compared to loading from San Diego Creek and other freshwater tributaries (Mosher and Duce 1989). The concentration of selenium in ambient seawater (0.080 µg/L) is unlikely to cause ecological impacts (Nriagu, 1989), and seawater is not believed to comprise a significant source of selenium loading to Newport Bay.

Figure 4-1 summarizes the sources of selenium in the watershed. The significance of these sources varies both on discharge location and season of the year. Nursery runoff shows moderate concentrations (~10 µg/L) in dry weather and are potential sources during storms (Lee and Taylor 2001a). There is some evidence that runoff from open space, hillsides, and agricultural lands are significant sources during rain events although this evidence is inconclusive. Groundwater seepage/infiltration, treated groundwater discharges, and groundwater dewatering discharges represent significant and constant sources.

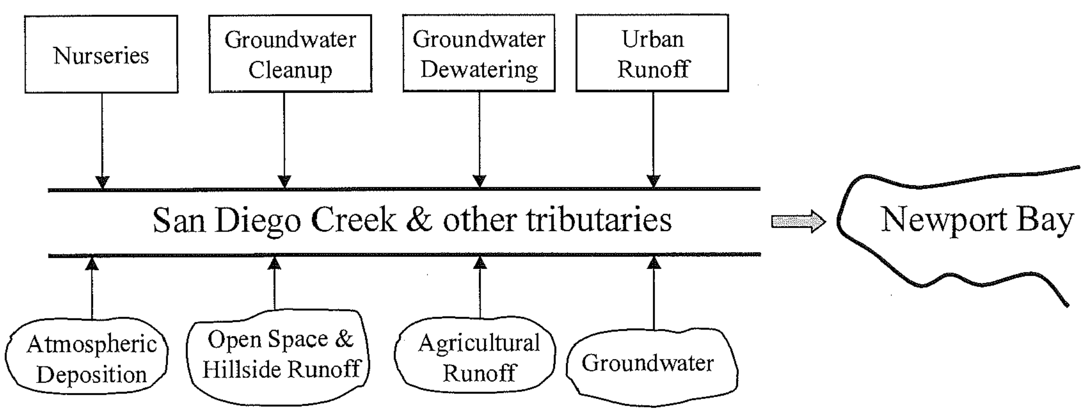

Figure 4.1 Sources of selenium in the Newport Bay/San Diego Creek watershed. (Nurseries have been grouped with agricultural runoff in Table 4-5 for allocations.)

Loading Capacity/Linkage Analysis

The loading capacities and associated TMDLs and allocations for selenium are expressed as mass loads per time. Different approaches were used to calculate loading capacities for the freshwater and saltwater water bodies in the watershed.

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San Diego Creek

This TMDL uses a flow-based approach to determine the loading capacity for selenium in San Diego Creek. This approach addresses contributions of selenium under various flow regimes or tiers. Four flow tiers were chosen based on a statistical analysis of daily flow records for San Diego at Campus Drive. (See Technical Support Document – Part B for more explicit information about freshwater flows.) Specific loading capacities for each flow tier are calculated from the desired selenium concentration (i.e., the numeric target) and the annual mean flow volume associated with each tier (Table 4-3). The sum of loads in these four tiers constitutes the total loading capacity for San Diego Creek per year.

Table 4-3 Flow based tiers and corresponding volumes in San Diego Creek

Flow tier	**Corresponding flow (cfs)**	**Flow Volume* associated with tier (million cubic ft.)**	**Se conc. with tier (ug/L)**	**Loading capacity per tier@ (lbs/yr.)**
Base flow	0—20	275.4	5	86
Small flows	21—181	347.5	5	108.4
Medium flows	182—814	357.6	5	111.6
Large flows	>814	468.8	20	585.4
Total annual amount		**1449.4**		**891.4**

*Annual mean volume based on USGS & OCPFRD records for water years: 1978, 1984 to 2001.
@Se per tier (lbs/yr) = flow volume (ft^3/yr) x desired Se target (ug/L) x conv. factor (6.243×10^{-8} lbs x L/mg x ft^3)

Newport Bay

The loading capacity for Newport Bay is presented in Table 4-4. This loading capacity is calculated using the selenium saltwater numeric target (71 µg/L) and the volume of water in Newport Bay. (Mean volume is 19 million cubic meters based on low and high tide estimates [RMA 1999]).

Table 4-4 Loading capacity of San Diego Creek and all Newport Bay waterbodies

Waterbody	**Loading capacity (lbs/yr.)**
San Diego Creek and tributaries	891.4
Santa Ana Delhi	185.3¥
Upper and Lower Bay and Rhine Channel	232,000*

¥Se value determined via similar method to those used for San Diego Creek but flow records for Santa Ana Delhi Channel were for water years 1995/96 – 00/01
*based on calculation of the CTR saltwater chronic value (71 µg/L) and the volume of Newport Bay water, adjusted to account for daily water movement into and out of the Bay from the Pacific Ocean.

TMDL and Allocations

EPA is setting the TMDL equal to the loading capacity for each waterbody presented above (Table 4-4). For this TMDL, EPA has defined wasteload allocations (WLAs) for point sources and load allocations (LA s) for non-point sources. Allocations for San Diego Creek are inclusive and have been sub-divided into categories presented below and allocations outlined in

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Table 4-5. The loading capacity for Santa Ana Delhi has been defined to set an upper limit on selenium contributions from that waterbody into Newport Bay.

TMDL = Σ (wasteload allocations) + Σ (load allocations) + Margin of Safety

Sub-categories of allocations for Se in San Diego Creek.

Wasteload allocations	Load allocations
Groundwater cleanup Groundwater dewatering Urban runoff	Groundwater (background) Nurseries & Agricultural runoff Open space and hillside runoff Atmospheric deposition

EPA adopted the selenium allocation scheme developed by Regional Board staff for their draft selenium TMDL. Wasteload and load allocations are assigned based on the following general guidelines:

- Allocations among source categories are assigned in proportion to the relative significance of the sources, and indicated by available data concerning reported monitoring concentrations, discharge flow rates, and Se loading (see Source Analysis section), and/or acreage of land uses. In general, significant sources require larger reductions in loading than minor sources to attain the numeric target.
- Within the same source category, allocations for individual dischargers are prorated based on land area.
- For each flow tier, allocations are assigned based on the nature of each source. For example, runoff from hillside, open space, and agricultural lands is minimal in dry season but loads dramatically increase during high stream flows associated with wet weather. Loading from shallow groundwater is likely to change because creeks may change from gaining streams (water input from groundwater during dry weather) to losing streams (surface runoff percolates into shallow groundwater areas) as a result of high water level in the creeks during and/or immediately after rain events.
- Atmospheric deposition is not given a specific allocation due to the very low loading from this source (see TSD, pg. D-12). Any loading from atmospheric deposition is less than the explicit margin of safety discussed below and can be considered accounted for in the explicit MOS.
- Discharges from groundwater cleanup and groundwater dewatering are significant sources and loading from those operations depends on their location. However, the quantification of loading from individual discharges is not feasible at this time due to lack of Se data in effluent from those operations. In this TMDL, allocations are assigned as group allocations groundwater cleanup discharges and groundwater dewatering discharges. In addition, a separate wasteload allocation is provided to account for future new groundwater dewatering discharges.

Table 4-5 shows the wasteload and load allocations for San Diego Creek. The estimated current annual load is considered as the current load of selenium at Campus Drive based on IRWD monitoring data (4/98-3/99). The selenium TMDLs and allocations are expressed in mass-based annual loads. Daily loads could be calculated by dividing the annual TMDLs and allocations by 365. However, annual loading-based TMDLs and allocations are more appropriate because prospective adverse effects associated with selenium are associated more with long term

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mass loadings and bioaccumulation effects than with short term or acute effects. An explicit margin of safety (MOS) of 10% was included to account for uncertainty in the analysis and ensure compliance with water quality objectives.

Table 4-5 Se allocations for San Diego Creek watershed

Source	Loading capacity (lbs/year)					Current load #	Estimated reductions
	Tier 1	Tier 2	Tier 3	Tier 4	Annual total*		
WLA							
MCAS Tustin	1.6	2.0	1.8	7.9	**13.2**		
GW clean up	6.2	7.8	7.5	36.9	**58.4**		
Silverado GW	3.1	3.9	4.0	21.1	**32.1**		
GW dewatering	3.9	4.9	4.5	21.1	**34.3**		
Future GW facilities	0.4	0.5	0.5	2.6	**4.0**		
Stormwater Permit	0.4	1.0	1.0	5.3	**7.6**		
WLA subtotal	15.5	20.0	19.3	94.8	**149.7**		
LA							
All nurseries	3.1	3.9	4.0	21.1	**32.1**		
Ag runoff	5.4	7.3	8.0	44.8	**65.6**		
Undefined sources @	53.4	66.4	69.1	366.2	**555.0**		
LA subtotal	61.9	77.6	81.1	432.0	**652.6**		
Total allocations	77.4	97.6	100.5	526.8	**802.3**	2443	67%
MOS					**89.1**		
Total TMDL					**891.4**		

* sum of loading capacity for San Diego Creek only (based on 5 ug/L applied to all flow tiers)
# undefined sources includes: open space and hillside runoff, shallow GW and saltwater Se
¥ current load based on IRWD Se data (1998-99) and corresponding OCPFRD flow records
§ other GW facilities refers to future permits

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Seasonal variation/Critical conditions

As previously described, EPA is calculating these selenium TMDLs based on freshwater flow rates instead of seasons. The flow rates correspond to flow tiers which address the continuous range of San Diego Creek flow rates throughout the year. In this flow-based approach, allocations are based on in-stream flow rates which are influenced by precipitation and runoff. Given that storm events may occur at any time of the year, the corresponding elevated stream flows are addressed by this flow-based approach.

Margin of Safety

In this TMDL, an explicit margin of safety is used to account for other technical uncertainties. The margin of safety is set at 10% of the annual loading capacity (ca. 89 lbs/year). Some of the uncertainty associated with calculation of the TMDL for selenium relates to freshwater flow rates. Given the revised time period (nearly 20 years of daily flow records for San Diego Creek), this uncertainty has been reduced. That is, the draft TMDLs were based on five years of OCPFRD flow data, whereas these final TMDLs are based on flow records for 19 years that better represent the range of flows during wet and dry water years.

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V. Metals TMDLs

TMDLs are required for dissolved copper, lead and zinc in San Diego Creek, Upper Bay, Lower Bay and Rhine Channel. TMDLs are required for cadmium in San Diego Creek and Upper Bay only. Information related to these metal TMDLs can be found in two Technical Support Documents, Part B which describes freshwater flows and Part E which describes metals source analysis and methods used to determine loading capacity and existing loads.

Problem Statement

Cadmium, Copper, Lead and Zinc—Dissolved heavy metal concentrations in San Diego Creek and other freshwater tributaries exceeded CTR standards during wet weather only. More specifically, cadmium, copper and lead results exceeded chronic CTR values; copper and zinc data exceeded acute CTR values (OCPFRD 2000). Water column concentrations measured in Newport Bay are highly variable. In general OCPFRD results exceed water quality standards and these data are much higher than data reported by IRWD (1999) which rarely exceed saltwater CTR values. While direct comparison of these results is not feasible, EPA has identified some quality control problems with metals analyses in saltwater by OCPFRD's contract lab and has concluded that they should be considered with caution in TMDL development.

Sediment metal concentrations generally increase along the gradient from freshwater to saltwater with maximum levels found in Rhine Channel. Sediment toxicity has been repeatedly observed in sediment and porewaters of Upper and Lower Bay, including Rhine Channel (BPTCP 1997; Bay et al. 2000, SCCWRP 2001a). Porewater is water found within the bottom sediments. Evidence of degraded benthic organisms also exists in these saltwater bodies. The cause of toxicity and benthic degradation is unknown, however a statistical correlation was found between sediment and porewater toxicity to amphipods and sea urchin larvae and elevated copper, lead and zinc sediment concentrations (BPTCP 1997). Toxicity identification evaluation (TIE) studies of saltwater bodies are currently in progress (SCCWRP 2001a).

Bioconcentration of copper and zinc has been observed in mussels within Lower Bay and Rhine Channel (SMW 2000). However, fish tissue concentrations of these metals are not elevated relative to respective metal screening values defined by OEHHA (1999). Cadmium, Copper, Lead and Zinc may bioconcentrate in lower organisms but these metals generally do not bioaccumulate and therefore are not likely to threaten organisms higher in the food chain such as fish-eating birds.

Numeric targets

In freshwater systems, the dissolved cadmium, copper, lead and zinc water quality criteria are hardness dependent as defined in CTR (USEPA 2000a). Like many flowing freshwater bodies in southern California, San Diego Creek waters exhibit a wide range of flow rates and hardness levels. Monitoring data show that low flow rates have high hardness values (e.g., 20 cfs corresponds to ≥400 mg/L hardness) whereas high flow rates have lower hardness (e.g., 814 cfs corresponds to 236 mg/L hardness). This inverse relationship between flow rate and hardness influences both acute and chronic metals numeric targets.

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Based on re-evaluation of freshwater daily flow records measured at San Diego Creek at Campus (see TSD part B), EPA has identified four flow tiers for fresh water segments for use in TMDL calculation. A hardness value is defined for each flow tier which is used to calculate the associated acute and chronic targets for dissolved metal. (Table 5-2). For the baseflow tier, EPA used the maximum hardness value (400 mg/L) as allowed in CTR (USEPA 2000). A review of available data indicated that actual hardness associated with flows in these tiers often exceeds 400 mg/L; however, the CTR caps the allowable hardness value that can be used to calculate the resulting hardness. For the small and medium flow tiers EPA selected the highest flow value within this tier to determine the corresponding hardness value. For large flows, EPA used the median flow rate value to determine the corresponding hardness value.

EPA is identifying numeric targets and TMDLs for both chronic and acute conditions. It is appropriate to set TMDLs for chronic conditions in the lower three flow tiers based on an analysis of flow durations. The chronic standards for metals were calculated based on the assumption that flows of 4 days or longer in duration would reoccur no more than once in three years on average. Our analysis of the flow records showed that in each of the lower three tiers, the recurrence frequency of flows lasting 4 days or longer was greater than once in three years. For the highest flow tier, the recurrence frequency of flows lasting 4 days or longer was less than once in three years. Therefore, TMDLs are set for the high flow tier based solely on acute standards, which apply regardless of flow duration.

It was appropriate to calculate TMDLs for Newport Bay based on chronic targets because average water residence time in the Bay was estimated to exceed 4 days under all likely flow conditions. The investigation of precipitation, flow rates and the relationship to hardness is explained more thoroughly in the Technical Support Document—Part B.

Table 5-1. Flow based tiers and corresponding hardness values in San Diego Creek.

Flow tier	Corresponding flow rate (cfs)	Flow volume associated with tier # (million cubic ft.)	Flow rate used to determine hardness	Corresponding Hardness (mg/L)
Base flow	0 - 20	275.4	N/a*	400
Small flows	21 - 181	347.5	181	322
Medium flows	182 - 814	357.6	814	236
Large flow	>814	468.8	1595	197

mean volume for each tier based on daily flow records for 19 water years: 1977/78, 83/84 to 00/01. (combination of USGS and OCPFRD data)

* flow rate not used for these tiers; hardness determined by CTR (max = 400 mg/L)

Freshwater bodies

For freshwater bodies in San Diego Creek, EPA calculated the hardness-based dissolved metals numeric targets (Table 5-2) using equations provided in CTR. EPA is identifying targets representing concentrations of the metals in the water column for each flow tier. As discussed above, we are identifying targets for both acute and chronic conditions for base, small and medium flows and for acute conditions only in large flows (>814 cfs). Given that water residence time is longer than four days during most of the year, we anticipate the chronic targets

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will be most important for compliance, however, the acute targets also set an upper limit for input concentrations. The Technical Support Document - Part E presents a step-by-step discussion of how numeric targets were calculated based on CTR equations for each pollutant, fresh water flow rates, and corresponding hardness values.

Table 5-2. Metals Numeric Targets (ug/L) based on flow tiers for San Diego Creek.

Dissolved Metal	Base Flows (<20 cfs) hardness @ 400 mg/L		Small Flows (21 - 181 cfs) hardness @ 322 mg/L		Medium Flows (182 -815 cfs) hardness @ 236 mg/L		Large Flows (>815 cfs) @ 197 mg/L
	Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute
Cd	19.1	6.2	15.1	5.3	10.8	4.2	8.9
Cu	50	29.3	40	24.3	30.2	18.7	25.5
Pb	281	10.9	224	8.8	162	6.3	134
Zn	379	382	316	318	243	244	208

Note: actual ambient hardness must be determined for each monitoring sample regardless of which flow condition exists

Saltwater bodies

In saltwater systems, EPA uses the chronic dissolved metals numeric targets to develop mass based TMDLs. Saltwater targets are straightforward since hardness is not involved. The dissolved saltwater targets are outlined in Table 5-3. Additional numeric targets have also been selected to address toxicity in saltwater sediments. These sediment targets are the threshold effect levels for saltwaters as defined by NOAA SQuiRTs (Buchman 1999). Sediment metal concentrations below these target values are likely to alleviate toxicity to benthic organisms. Both dissolved water column and sediment targets apply for Cu, Pb and Zn within Upper Bay, Lower Bay and Rhine Channel, and for Cd only in Upper Bay.

Table 5-3. Numeric targets for metals in Newport Bay

Metal	Dissolved saltwater acute target (ug/L)	Dissolved saltwater chronic target (ug/L)	Alternate target in saltwater sediments (mg/kg dry)
Cd*	42	9.3	0.67
Cu	4.8	3.1	18.7
Pb	210	8.1	30.2
Zn	90	81	124

(Source: CTR values for dissolved metals in saltwaters; NOAA TEL values for sediments)
*Cd value applies to Upper Newport Bay only

EPA also considered setting targets for both fresh water and salt water in terms of total metals instead of dissolved metals due to the potential concern that particulate metals could become bioavailable. There are several reasons for selecting dissolved metal targets. The existing numeric standards are expressed in the CTR in terms of dissolved metals (EPA 2000a). The CTR rationale is that dissolved forms are the most bioavailable to aquatic organisms. Particulate/dissolved metal ratios were estimated from OCPFRD stormwater data and could be used to translate these dissolved metal mass loads into total loads. However, these translator values developed from paired metals data are close to unity. For example, we calculated a site-specific translator ratio for copper of 1.16 total Cu to dissolved Cu; this is reasonably close to the generic EPA value that dissolved is roughly 80% of total concentration. Therefore, dissolved

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metals measures are probably fairly good predictors of total metals concentrations. Moreover, we have incorporated an extra explicit margin of safety to account for the possibility that a focus on dissolved metals does not fully account for total metals concentrations. EPA recognizes the Sediment TMDLs already established for these waterbodies will augment efforts to reduce total metal loadings into the saltwater bodies and help to achieve the sediment targets to protect benthic organisms by reducing discharges of metal-contaminated sediments.

Source Analysis

This section summarizes our analysis of the major sources of dissolved cadmium (Cd) for San Diego Creek and Upper Newport Bay and for dissolved copper (Cu), dissolved lead (Pb) and dissolved zinc (Zn) within all water bodies of Newport Bay. This synopsis draws conclusions from several different studies which report concentrations of metals in the water column and sediments of all water bodies. Where applicable this synopsis also presents information about inputs of copper from sediments and from recreational boats moored in Newport Bay. The Technical Support Document—Part E presents a more thorough presentation of all monitoring results and source analysis pertaining to metals.

Within San Diego Creek and its tributaries, metal inputs are heavily influenced by rainfall and stream flow rates. Base flow conditions yield approximately 25% of total loadings, storm events yield approximately 55% of total loadings, the remainder is associated with low and medium flows. Surface runoff is estimated to be the largest source of metals; this includes both natural and man-made contributions. A recent study of pollutant inputs from tributaries within the San Diego Creek watershed concluded that the largest metals inputs come from "urban stations", whereas agricultural and open space exhibit the lowest loadings (Lee and Taylor 2001a). The difference could be as much as five fold higher for urban areas based on estimates of total copper per acre of runoff (see Table E-7 in TSD – Part E). While this study does provide a basis for estimating the relative importance of metals loadings from different land uses within the watershed, insufficient data were available to accurately estimate annual loads from each source.

Currently, the only published annual metal loading estimates from freshwater tributaries are based on total (unfiltered) metal concentrations (OCPFRD 2000). These estimates for Cu, Pb and Zn indicate that San Diego Creek contributes up to ten times more of each metal than Santa Ana-Delhi Channel. Within San Diego Creek, inputs from Peters Canyon Wash and the rest of the San Diego Creek drainage are about the same. Table 5-4 summarizes these estimates for San Diego Creek and Santa Ana-Delhi Channel for the 1998 and 1999 water years. (The 1998 water year is defined from July 1997 to June 1998.) These results show considerable variability due to different rainfall amounts and fluctuating freshwater flows during each water year. The 1998 water year is considered an extremely wet year (38.4 inches of rainfall) due to El Nino conditions; whereas, 1999 water year is considered relatively dry (8.8 inches) relative to average annual rainfall (13.3 inches).

Another study of surface water runoff during storm events has approximated the relative contribution of metals associated with natural sources such as soil minerals versus the metal inputs from anthropogenic activities. The authors used results from unfiltered (i.e., total metal) samples in the Santa Ana River watershed and report the anthropogenic contribution is metal specific: Cd (63% human-caused), Cu(42%), Pb (35%) and Zn (33%) (Schiff and Tiefenthaler

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2000). Total metals loading estimates in Table 5-4 have also been adjusted based on these results to report the approximate load believed to be associated with anthropogenic activities.

Table 5-4 Estimates of Total metal loadings from two freshwater inputs to Upper Bay

Metal	Site	1998 water year (OCPFRD)	Adjusted* 1998 results (Man-made)	1999 water year (OCPFRD)	Adjusted* 1999 results (Man-made)
		Total load (lbs.)	Total load (lbs.)	Total load (lbs.)	Total load (lbs.)
Cu	San Diego Creek	15,087	6261	1643	682
	Santa Ana –Delhi	1643	682	185	77
Pb	San Diego Creek	10,385	3977	449	172
	Santa Ana –Delhi	1297	497	124	47
Zn	San Diego Creek	63,021	20,985	3784	1260
	Santa Ana –Delhi	7031	2341	805	286

Source: 1998 and 1999 water year results from OCPFRD 2000
*Adjustments made from man-made approximations reported by Schiff and Tiefenthaler 2000

Several other sources of metals exist in the watershed: runoff from open spaces, nursery and agricultural applications, groundwater dewatering and cleanup, and atmospheric deposition. Monitoring data exist for background dissolved metals concentrations in surface runoff from hillsides and open spaces. EPA has selected wet weather results from the San Joaquin Channel site (Lee and Taylor 2001a) to serve as proxy for these open spaces because the area upstream from this site is essentially undeveloped. Much of the metals loading associated with open spaces is probably naturally occurring; however, it is likely than some portion of loads from these areas is human caused (e.g., from atmospheric deposition or historic land use activities). Based on State pesticide use reports (CDPR 1999) for some nurseries, applications of copper sulfate appears as the most prominent metal containing substance used in nurseries; nonetheless annual metal applications are small (e.g., 72 lbs/yr) relative to watershed wide surface runoff estimates (ranging from 1643 to 15,087 lbs/yr, Table 5-4). To date, reliable dissolved metal concentrations in shallow ground waters have not been reported. Atmospheric deposition—onto the watershed land surface and into San Diego Creek and other freshwater tributaries—has already been included within surface runoff estimates. It is considered minimal in comparison to other contributions to surface runoff because there are no likely local airborne sources of these metals.

For the salt waters of Upper and Lower Newport Bay, including the Rhine Channel, the largest ongoing sources of most dissolved metals (except for copper) are estimated to be the freshwater-borne loads from San Diego Creek (95% of freshwater-related loads), Santa Ana-Delhi Channel (<5%) and other drainages (<1%). Ambient surface seawater may be the next most significant source. Concentrations of dissolved metals in seawater collected off the Southern California coast range from 0.06 ug/L for Pb, 0.1 ug/L for Cd, 0.2 ug/L for Cu, to 2.4 ug/L for Zn (pers. commun., R. Gossett). The influence of ambient seawater on metal levels within Newport Bay depends on marine tides and freshwater flows from the watershed. During high tides and low freshwater flows, surface seawater contributions could be relatively higher, yet low tides concurrent with dramatically higher freshwater inputs during storm events would yield much lower ambient seawater contributions.

The phenomenon of dissolved copper inputs to marine waters from recreational boats has been repeatedly monitored in San Diego Bay as reported in the draft TMDL for dissolved Cu for Shelter Island yacht harbor (San Diego RWQCB 2001). Using mass loading calculations

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presented in that TMDL and local data concerning boats in Newport Bay, passive leaching from recreational boats and underwater hull cleaning are estimated to comprise the most significant sources (>80%) for dissolved Cu into Lower Bay, Rhine Channel and, to some extent, Upper Bay.

To date, no study within Upper Bay has examined whether sediment resuspension or porewater fluxes contribute significant metals loads to the water column. Porewater concentrations measured in Lower Bay (not including Rhine Channel) suggest that Cu levels are elevated enough to create potentially negative impacts (Bight '98). Levels for the other metals are within the range of concentrations observed in ambient seawater and well below the dissolved saltwater numeric targets.

Air deposition of metals is traditionally assessed in two parts—indirect and direct. Indirect deposition, where metals are deposited onto dry land areas and then washed into streams via surface runoff, has already been included as part of the freshwater inputs from San Diego Creek, Santa Ana Delhi Channel and other drainages to Newport Bay. Direct deposition, where metals directly enter the water surface, comprises less than 1% of metal contributions to Upper and Lower Bay and can be considered accounted for in the explicit margin of safety.

Loading Capacity/Linkage Analysis

In the draft TMDLs, EPA outlined two options for defining dissolved metals loading capacity and associated TMDLs. These two options were to apply a concentration based or a mass based approach for to each water body. Based on our review of public comments and further analysis, we are establishing TMDLs based on concentration for San Diego Creek and both concentration and mass loads for Newport Bay as discussed below.

San Diego Creek and tributaries

The metals loading capacities and TMDLs for San Diego Creek are set on a concentration basis for dissolved metals. The rationale for addressing dissolved metals is that dissolved metal forms are the most bioavailable to aquatic organisms. These metals are generally not know to bioaccumulate from one organism to the next, nor has sediment toxicity attributed to metals in the Creek been reported; therefore, long term mass loading which could contribute to bioaccumulation or sediment toxicity concerns is less of an issue in San Diego Creek. For these reasons, a concentration-based approach is more appropriate for these pollutants. These concentration-based loading capacity will protect aquatic life from short term exposure via acute targets (for all flow conditions) and longer term exposure via chronic targets (for flows <814 cfs).

These concentration based loading capacity values are hardness dependent. Freshwater systems experience a wide range of flows and individual hardness conditions. In the future, it will be necessary to measure actual ambient hardness concurrent with each metals monitoring sample (grab or composite) in order to help determine compliance with the TMDLs. The CTR sets an upper limit for hardness is 400 mg/l; the lower recommended limit is 25 mg/l.

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The acute and chronic targets and associated loading capacities and TMDLs apply to base, small and medium flows. However, targets, loading capacities, and TMDLs for the highest flow tier (>814 cfs) are based on acute standards only. As discussed above, this approach is based on our review of flow records for San Diego Creek to examine the duration of elevated flows and the frequency of chronic conditions (See TSD Part B for freshwater flow).

Newport Bay

For Upper and Lower Bay, including Rhine Channel, the loading capacities were calculated by multiplying the chronic numeric target by the volume of water in the Bay, accounting for water exchange rates between Newport Bay and the Pacific Ocean. The loading capacities are based on the saltwater dissolved metals targets (Table 5-3). The mass-based loading capacity for all of Newport Bay is shown in Table 5-5a. (A complete description of this calculation is presented in TSD – Part E.)

The rationale for setting mass-based metals TMDLs and allocations is to address observed sediment toxicity in all areas of Newport Bay. Over longer time frames, cumulative metals discharges are of concern in embayments and possibly fresh water waterbodies because metals may associate with sediment and accumulate in bottom sediments, where they may contribute to sediment toxicity and associated ecosystem impacts. The alternate metals sediment targets (Table 5-3) will help to evaluate acceptable conditions for benthic organisms.

Mass based allocations set a definitive upper limit on the amount of each metal allowed to be discharged from San Diego Creek into Newport Bay, which would probably be most effective in addressing long term sediment toxicity concerns. Loading contributions from San Diego Creek and Santa Ana Delhi Channel were calculated by multiplying the chronic numeric target for base, small and medium flow tiers and acute target for large flow tier (see Table 5-1) by the mean annual water flow volume associated with each tier to yield an allowable mass load for each flow tier. This approach is similar to that presented in the Se TMDLs. (An example of this calculation for dissolved copper is provided in the TSD – Part E.) The sum of all four tiers yields the upper limit to the mass-based loading capacity for San Diego Creek (Table 5-5a).

Table 5-5a. Mass-based dissolved metal loading capacity for Newport Bay

Dissolved Metal	Upper and Lower Bay including Rhine Channel Dissolved load (lbs/yr)
Cd	14,753*
Cu	11,646
Pb	27,136
Zn	285,340

*Cd load applies to Upper Bay only, where volume of Upper Bay is approximately 40% of the total volume of Newport Bay

To ensure that Newport Bay is protected from potential adverse effects of short term metals loading "spikes", the loading capacities and associated TMDLs for Newport Bay are also defined in terms of the concentration-based water quality standards for the Bay. In the absence of this complementary approach, it would be possible for the Bay to meet the annual loading-

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based TMDL and still exceed water quality standards on a short term basis. The concentration based TMDLs are listed in Table 5.5b

Table 5.5b Concentration-based dissolved metal loading capacity for Newport Bay

Metal	Dissolved saltwater acute loading capcity (ug/L)	Dissolved saltwater chronic loading capacity (ug/L)
Cd*	42	9.3
Cu	4.8	3.1
Pb	210	8.1
Zn	90	81

TMDLs and Allocations

The freshwater dissolved metals TMDLs are concentration–based; whereas the saltwater TMDLs are both mass-based and concentration-based. The TMDLs and allocations may be expressed in terms of the following general equation:

TMDL = Σ (wasteload allocations for point sources) + Σ (load allocations from non-point sources and background) + Margin of Safety

San Diego Creek

As discussed in the loading capacity section, EPA is expressing the San Diego Creek metals TMDLs on a concentration basis. The freshwater allocations are equivalent to the concentration-based targets, reduced by 20% to provide the margin of safety discussed below (see Table 5-6 for freshwater TMDLs and allocations). These allocations apply to all freshwater discharges to San Diego Creek, Santa Ana-Delhi Channel, Big Canyon Channel, East Costa Mesa Channel and other drainages. This includes discharges from agricultural, urban and residential lands, including flows from the storm water systems. These allocations would apply at all times of the year. Because flow tiers for the freshwater channels other than San Diego Creek were not specifically calculated, it is assumed that the same TMDLs applicable to San Diego Creek during different flow conditions apply to the other channels at the same times. For example, when flow is 50 cfs in San Diego Creek, the "small flows" TMDLs and allocations listed in Table 5-6 apply in all the other freshwater channels in addition to San Diego Creek.

Table 5-6. Metals WLAs, and LAs in (ug/L) (based on flow tiers for San Diego Creek)

Dissolved Metal	Base Flows (<20 cfs) hardness @ 400 mg/L		Small Flows (21 - 181 cfs) hardness @ 322 mg/L		Medium Flows (182 -815 cfs) hardness @ 236 mg/L		Large Flows (>815 cfs) @ 197 mg/L
	Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute
Cd	19.1	6.2	15.1	5.3	10.8	4.2	8.9
Cu	50	29.3	40	24.3	30.2	18.7	25.5
Pb	281	10.9	224	8.8	162	6.3	134
Zn	379	382	316	318	243	244	208

Values are 80% of freshwater numeric targets in Table 5-2
Note: actual ambient hardness must be determined for each monitoring sample regardless of which flow condition exists

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The wasteload allocations apply to the following NPDES discharges:

- Orange County Stormwater
- CalTrans
- Other NPDES Discharges (see Section II, p. 19 for description of this allocation category)

The load allocations apply to the following source categories:

- Agricultural runoff (including nurseries)
- Air deposition
- Other sources (includes open space runoff, background, and undefined sources).

Newport Bay

Table 5-7a presents the mass based TMDLs and allocations for dissolved metals in Newport Bay. These allocations apply to the water column in Upper Newport Bay (defined from San Diego Creek at Jamboree Rd. down to Pacific Coast Highway Bridge), Lower Newport Bay (defined from PCH Bridge to the Newport Jetty) and to Rhine Channel (confined by line drawn from 20th St. across to Lido Beach St. to channel end). These allocations apply to the receiving waters of Newport Bay at all times of the year, regardless of freshwater flow from San Diego Creek, Santa Ana-Delhi, Costa Mesa Channel and other tributaries into Newport Bay.

Several methods were used to determine allocations. First, because NPDES boatyard permittees are not authorized to discharge into salt waters of Newport Bay, the wasteload allocation for boatyards is zero. Second, air deposition and undefined sources (background from medium and large storm runoff and ambient seawater contributions) were assigned mass loadings based on existing loading since reductions were not expected. Third, agriculture runoff was also assigned an explicit mass loading of one-half the total annual estimated loads based on the assumption that erosion control planned under the sediment TMDL implementation plan would result in approximately a 50% reduction in erosion-related metals loading, and that the small amount of metals load associated with agricultural chemical use could be reduced through use of best management practices (EPA, 1993). The allocations for the remaining sources (urban stormwater, CalTrans, other NPDES, and boats (for copper and zinc)) were based on best professional judgement, as discussed below, because insufficient data were available to accurately estimate their relative contributions to existing loads. The allocation for runoff from the watershed from urban stormwater and CalTrans facilities and discharges from the other NPDES permittee category is based on the assumption that approximately half the metals loading can be reduced through use of available management practices (EPA, 1993). The runoff allocation is divided between the Orange County stormwater permit, CalTrans permit, and other NPDES facility category based on the relative proportions of watershed land area under the jurisdiction of these three permits. The remaining allocation for boats represents a reduction in metals loadings from boats of greater than 80%, based on the assumption that changes in boat paint usage and maintenance practices could substantially reduce the direct loading of copper (and potentially zinc) into Bay waters (EPA 1993). Table 5-7b presents the concentration-based allocations for Newport Bay.

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Table 5-7a. Mass-based Allocation Scheme for Metals in Newport Bay

Category	Type	Copper	Zinc	Lead	Cadmium*
WLA	Urban runoff	3,043	174,057	17,638	9,589
	CalTrans	423	22,866	2,171	1,185
	Boatyards	0	0	0	0
	Other NPDES permittees	190	17,160	1,154	596
	Sub-total	**3,656 lbs/yr**	**214,083 lbs/yr**	**20,963 lbs/yr**	**11,370 lbs/yr**
LA	Ag runoff	215	114	0	0
	Boats	4,542	1,056	0	0
	Air deposition	101	606	68	4
	Undefined (open space, existing sed.)	803	11,414	678	428
	Sub-total	**5,661 lbs/yr**	**13,189 lbs/yr**	**746 lbs/yr**	**431 lbs/yr**
MOS		**2,329 lbs/yr**	**57,068 lbs/yr**	**5,427 lbs/yr**	**2,951 lbs/yr**
Total TMDL		**11,646 lbs/yr**	**285,340 lbs/yr**	**27,136 lbs/yr**	**14,753 lbs/yr**

*values apply to Upper Bay only (estimated as 40% of Newport Bay volume)

Table 5.7b Concentration-based dissolved metal TMDLs, WLAs, and LAs for Newport Bay

Metal	Dissolved saltwater acute TMDLs and allocations (ug/L)	Dissolved saltwater chronic TMDLs and allocations (ug/L)
Cd*	42	9.3
Cu	4.8	3.1
Pb	210	8.1
Zn	90	81

The concentration based WLAs and LAs apply only to the sources which discharge directly to the Bay, including stormwater discharges from stormdrains directly to Bay segments (such as Costa Mesa Channel and Santa Ana Delhi Channel) and metals loading associated with boats. The concentration-based WLAs and LAs for San Diego Creek and the other fresh water tributaries will address short term metals concentrations associated with discharges to the fresh water system.

Seasonal Variations/Critical Conditions

These TMDLs rely on careful analysis of the full range of potential flow conditions to address seasonal variations and critical conditions in loads and flows. In general, base and low flows do not present conditions within San Diego Creek that result in either exceedances of numeric targets. This is due to higher hardness levels during low flows that mitigate metals toxicity through competitive binding by calcium and magnesium ions present in freshwater.

Wet weather conditions, which may occur at any time of the year, yield medium and large flows and a range of hardness values. High flows are more likely to produce both low

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hardness and higher metal levels; these conditions are the biggest threat to aquatic organisms in San Diego Creek and its tributaries. For Newport Bay, the TMDLs address long term metals accumulations which are associated with metals-caused sediment toxicity measured in the Bay. Therefore, there is no single season or critical season of greatest concern for metals loadings and effects in Newport Bay. The saltwater allocations apply during all seasons, regardless of flow.

For both San Diego Creek and Newport Bay, the approach of setting concentration based TMDLs and allocations based on chronic and acute targets helps address and mitigate any short term effect associated with brief periods of high metals loading.

Margin of Safety

EPA has applied a 20% explicit margin of safety to the dissolved metals TMDLs for both freshwater and saltwater bodies of Newport Bay watershed. This explicit margin of safety is intended to account for uncertainty concerning total (particulate and dissolved) metal loads into San Diego Creek which are transported downstream and deposit in the sediments of Upper and Lower Bay, including Rhine Channel. These metals TMDLs address aquatic life toxicity due to concentrations in the dissolved fraction; this is consistent with current regulatory status for metals as defined by CTR (USEPA 2000a). In recognition of sediment toxicity in Newport Bay correlated to elevated metals, we have selected the 20% margin of safety based on the default total/dissolved metal translator provided in CTR. Our estimates of site-specific total/dissolved translator values are fairly close to the CTR value. It is reasonable to assume that reductions in the particulate metal load will achieve the concentration-based dissolved metal targets.

In addition to the explicit margin of safety, conservative assumptions were used in applying the numeric targets within the watershed. These conservative assumptions provide an implicit margin of safety to ensure that TMDLs are set at levels that will attain applicable standards and protect aquatic life.

1. No adjustment or lowering has been made to address mixing and dilution within the drainage channels contributing to San Diego Creek. Also, there has been no consideration of precipitation (forming particulate metals forms) of dissolved metals as freshwater mixes with saltwater.

2. Chemical speciation has not been included within calculations of loading capacity nor allocations. Aquatic chemists believe the truly bioavailable metal fraction (free metal ion concentration) is much lower (at least 10 times) than dissolved metal concentration. This has been reported for Cd, Pb, Cu and Zn within freshwater and saltwater systems (Buffle 1988, Bruland 1991, Sunda et al. 1987).

3. Setting both acute and chronic-based TMDLs and allocations for San Diego Creek and Newport Bay helps ensue that short-term toxic effects are not allow to occur even if longer term mass loading-based TMDLs and allocations are met. This approach helps ensure that water quality standards will be met throughout the year.

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VI. Organochlorine TMDLs

TMDLs are being established for chlordane, total DDT and total PCBs in all waterbodies: San Diego Creek, Upper Bay, Lower Bay and Rhine Channel. Dieldrin TMDLs are being established for San Diego Creek, Lower Bay and Rhine Channel. A TMDL for toxaphene is being established for San Diego Creek only. The term "organochlorine compounds" includes all of these pollutants and the phrase "organochlorine (OC) pesticides" refers to DDT, chlordane, dieldrin and toxaphene.

Additional information on the source analysis, modeling approach and relevant monitoring results for these TMDLs is provided in Technical Support Document – Part F.

Problem Statement

Use of these pollutants has been banned because of potential harm to human health and/or wildlife. However, many of the environmental concerns associated with their use and ultimate transport to the environment are directly related to their ability to persist in water, soil, and biological tissue for long periods of time after their introduction to the environment.

Monitoring results show exceedances of EPA and State fish tissue screening values, which indicate the applicable narrative water quality standards are not being met. Specifically, toxaphene exceedances (87%, n=15) of the OEHHA tissue screening value occur only in San Diego Creek (TSM). Tissue exceedances have also occurred for Chlordane (40%), Dieldrin (93%), total DDT (93%), and total PCBs (67%) in San Diego Creek (n= 15 for all, TSM). Similar elevated fish tissue concentrations indicate bioaccumulation for Chlordane, Dieldrin, total DDT and total PCBs in all saltwater bodies of Newport Bay (except for dieldrin in Upper Bay). Conclusions for Newport Bay are based on finfish and shellfish tissue results from several monitoring efforts (SMW, TSM, CFCS and SCCWRP databases, see Table 2-2). A review of tissue data for a 20 year period indicates that fish tissue concentrations are declining for the OC compounds, yet exceedances of OEHHA tissue screening values are still occurring. Freshwater and saltwater tissue concentrations show declining trends, with higher levels generally occurring in San Diego Creek than in Newport Bay. The sediment data did not exhibit clear trends, rather erratic spikes, which is common for this heterogeneous media.

Numeric Targets

As discussed in Section II, EPA evaluated the applicable water quality criteria and sediment and tissue screening levels to determine the appropriate numeric targets for these organochlorine TMDLs. We have prioritized sediment quality guidelines over tissue screening values and water column criteria. This decision is based on the following factors:

1) these pollutants are directly associated with sediments (i.e., fine particulate matter);
2) sediments are the transport mechanism for these organochlorine compounds from freshwaters to salt waters;
3) limited water column data are available to adequately describe the past or current conditions
4) attainment of the sediment targets will be protective of the water column criteria and tissue screening values.

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The use of sediment criteria in this analysis yields an environmentally conservative interpretation of water quality criteria, including the narrative water quality objectives in the Regional Board Basin Plan (1995).

The numeric targets for freshwater and saltwater systems for chlordane, dieldrin, DDT, PCBs and toxaphene, are shown in Table 6-1a and 6-1b. The primary target value is based on sediment levels, and the alternate targets are provided for fish and shellfish tissues and for water column concentrations in freshwater. The specific numeric values for sediment targets were selected from NOAA Sediment Screening Quick Reference Tables (SQuiRTs) (Buchman 1999). By selecting sediment targets, EPA will address protection of benthic organisms as well as bioaccumulation of these organochlorine compounds into tissues of higher organisms such as fish, wildlife predators and humans. Sediment targets are used for TMDL development except where sediment data were not available; e.g., toxaphene in San Diego Creek. The alternate targets – fish tissue screening values from OEHHA and water column objectives from the CTR– are included in this TMDL report as means of gauging improvement in the water quality and progress towards achievement of the TMDL, and to assist in assessing the accuracy of the analysis supporting the TMDLs.

Table 6-1a. Numeric targets for organochlorine compounds for all waterbodies.

Waterbody	Pollutant	Sediment target ¥ (ug/dry kg or ppm)	Fish tissue target# (ug/kg wet or ppb)
San Diego Creek and tributaries	Chlordane	4.5	30
	Dieldrin	2.85	2.0
	Total DDT	6.98	100
	Total PCBs	34.1	20
	Toxaphene	0.1*	30
Upper and Lower Newport Bay, and Rhine Channel	Chlordane	2.26	30
	Dieldrin	0.72	2.0
	Total DDT	3.89	100
	Total PCBs	21.5	30

*this value assumes 1% total organic carbon in sediment sample
¥sediment targets equivalent to threshold effect levels (TEL) from Buchman 1999, except toxaphene from NY Dept. Environmental Conservation
#all tissue targets from OEHHA

Numeric targets for water column concentrations are provided in Table 6-1b based on CTR criteria. These concentrations apply to freshwater bodies (USEPA 2001a); numeric objectives are not available for several of the pollutants in saltwater. We used these targets when modeling the maximum allowable concentrations for water-associated loads from particulate pollutants. (See modeling and analysis section).

Table 6-1b. Freshwater column target values for organochlorine compounds.

Pollutant	CMC (acute) (µg/L)	CCC (chronic) (µg/L)
PCBs	--	0.014
DDT *	1.1	0.001
Chlordane	2.4	0.0043
Dieldrin	0.24	0.056
Toxaphene	0.73	0.0002

* DDT value cited for 4,4' DDT, but value will apply to one one isomer or sum of all isomers detected

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Source Analysis

Except for PCBs and possibly small amounts of DDT, the pollutants addressed in this TMDL are no longer believed to be discharged in the watershed except in association with erosion of sediments to which these pollutants may have adhered in the past. The source analysis is therefore primarily a qualitative assessment. The assessment is based on reviews of available information on the physical and chemical properties of each chemical, the expected uses of each, the likely locations of use, and available monitoring data that characterizes current conditions in the environment. A wide range of information was evaluated to identify potential sources and to characterize contributions, including monitoring data, data from national, state and county program databases, and scientific literature. More details on the efforts to identify and characterize potential sources of organochlorine compounds are provided in the Technical Support Document – Part F.

Available data and analyses indicate that there is an existing "reservoir" of historically-deposited organochlorine pollutants in Newport Bay sediment, to which continuing relatively low levels of ongoing pollutant loads are contributing from the watershed. The main source of continuing loadings of organochlorine compounds in the Newport Bay watershed is estimated to be erosion of surface soils or in-stream sediments to which these pollutants have adsorbed (binded). Sediment-adsorbed pollutants enter Newport Bay from San Diego Creek (88%) and various smaller tributaries and local drainages (12%). The sediment load is then distributed throughout Newport Bay via internal circulation patterns under a variety of flow conditions. In preliminary results from one sampling event of sub-surface waters in Lower Bay, SCCWRP (2001a) reported detections of total PCBs and DDT. At the Turning Basin, these compounds were associated with particulate matter (PCBs = 8.86 ug/kg dry; DDT = 15.3 ug/kg dry) and in the dissolved phase (PCBs = 0.15 ng/L; DDT 0.43 ng/L). Dieldrin and Chlordane were not reported.

These organochlorine compounds may also exist in groundwater (due to percolation), may transport via volatilization (from surface soils or water surface) and as implied above they may become resuspended into the water column via physical processes in water bodies. Insufficient data were available to estimate the loads from these sources. Ground water-related loading is expected to be minor because only a small proportion of organochlorine pollutant loads generally occurs in dissolved form. On the other hand, resuspension of sediments to which organochlorine pollutants have adhered is likely to be a more important "loading" source.

Organochlorine (OC) pesticides

Because of the legacy nature of the sources of the OC pesticides, assessment of possible nonpoint sources of these types of pollutants has been based on a review of available monitoring data, historical land use practices, literature reviews, and anecdotal information. One of the major routes for the OC compounds to enter Newport Bay and its tributaries is believed to be runoff and erosion processes. Masters and Inman (2000) have examined fluvial transport of DDT and other legacy pesticides in Upper Newport Bay; they hypothesize that historic agricultural and urban applications of these compounds are the primary upstream sources. In general, these runoff and erosion processes have the ability to pick up and transport these OC

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pesticides and deposit them in a different location in the watershed, to stream systems, or to the Bay. The amount of transport and the locations of deposition depend on many factors, including the presence of the pollutant and the intensity and duration of the precipitation event, which drives stream flow velocity and possibly direction. Because organochlorine residuals from past applications still remain in soils, the potential still exists for these chemicals (and their degraded metabolites) to be transported into water bodies during runoff-producing rainfall events. Insufficient information exists on the specific location and actual magnitude of these sources to support precise loading estimates; therefore, we inferred existing loadings based on limited data and we estimated the pollutant distributions amongst many diffuse sources. No local "hot spots"-specific locations with highly elevated levels of OC pesticides-- were identified.

The only potentially active application of any of the OC pesticides identified is the application of Dicofol, a registered pesticide that may contains small amounts of DDT (i.e., up to .015% based on its registered formulation). The actual DDT content of Dicofol, if any, is unknown. The DPR pesticide use database indicates that Dicofol (trade name "Kelthane") was recently applied to agricultural fields within the Newport Bay watershed (502 lbs. in 1998 and 470 lbs. in 1999). Relative to other sources of DDT (i.e., residuals in soils and aquatic sediments), Dicofol is not estimated to be a significant source of DDT to Newport Bay. However, because DDT in low concentrations may pose an continuing ecological concern, it may be appropriate to further investigate and reduce possible runoff of DDT associated with Dicofol.

Polychlorinated biphenyls (PCBs)

Electrical transformers are the most common use of PCBs. Existing PCB projects such as the Hudson River project in New York and the Housatonic River project in Massachusetts have found that historical discharges caused sediment contamination and that the contaminated soils tend to collect in slow river stretches or reservoirs (GE 1999). The contaminated soils remain there until they are dredged or dislodged by storms. Based on our review of limited information about PCB spills and waste sites containing PCBs, we hypothesize that accidental PCB spills, which were most likely to have occurred at the El Toro and Tustin Air Stations as well as other hazardous waste sites, are the most likely historical loading source of PCBs. Insufficient information exists on the specific location and actual magnitude of these sources, thus we inferred existing loadings based on limited data and we estimated the pollutant distributions amongst many diffuse sources.

Modeling and Analysis

This section describes the methods used to determine the loading capacity and to estimate the existing loads for each organochlorine contaminant with respect to each waterbody. The modeling approach and various resources utilized to complete these tasks are outlined here, although more details, such as equations and specific values, are provided in the Technical Support Document – Part F. To the extent possible, we used hydrologic and modeling information previously compiled by Resource Management Associates (RMA 1997, 1998, 1999) for the U.S. Army Corp of Engineers (ACOE). This model provides sediment deposition information used to determine both loading capacities and estimate existing loads for (for the Upper and Lower Bay, including Rhine Channel. RMA model calibration results were utilized because these results incorporate circulation patterns, spatial distribution and net settling rates for

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each area of Newport Bay. These RMA results were generated using a wide spectrum of flow rates from San Diego Creek addressing a 12 year time span (1985 to 1997). Thus the RMA model has implicitly addressed sediment transport and resuspension in Newport Bay as well as dry and wet weather conditions and flow rates in San Diego Creek.

Within San Diego Creek, the RMA model does not provide more specific data such as spatial distribution of sediments, so sediment deposition and the corresponding pollutant load must be estimated via stream flow rates. EPA used nearly 20 water years of flow records for San Diego Creek. The time span of daily flow rates covers water years 1977/78 and 1984/85 - 00/01. This is discussed more in TSD Part B – Flow and consistent with flow records used in Se and dissolved metals TMDLs. For the OC TMDLS, three flow tiers were used -- low flow (0 to 181 cfs), medium (between 181 and 814 cfs) and high flow (>814 cfs). This was designed to represent conditions during dry weather and very light rains (low flow events), intermediate storms (medium flows) and those large storms (high flows) when extensive sediment transport occurs. Pollutants associated with fine particles (especially clay) and dissolved phase are assumed present in all three flow tiers.

Loading capacity

San Diego Creek

For the listed OC pollutants in San Diego Creek the loading capacities were calculated based on pollutant contributions from water column and sediments. The sediment associated loading capacity was determined from target sediment concentrations and sediment load estimates, which were based on regression results presented in RMA model (1997) to link flow rates with sediment loads. We estimated the associated water column loading capacity by backcalculating, from sediment loads to particulate concentrations and dissolved concentrations, using partition coefficients. Where appropriate, these water column derived loads were constrained by chronic water targets for low and medium flows and acute targets for large flows. The sum of the allowable loads in particulate form and dissolved form represents the loading capacity in San Diego Creek. The loading capacities are presented as long term annual loading estimates consistent with the patterns of sediment deposition in the system. Loading capacities for San Diego Creek are presented in Table 6-2.

Newport Bay

The loading capacity for Newport Bay relied on RMA (1998) sediment deposition budget and bottom sediment conditions with target concentrations. The Bay was sub-divided into discrete areas for which individual loading capacities were calculated and summed to provide loading capacities for each water body of the Bay (Upper, Lower and Rhine). To determine the particulate associated load, several factors were used and included: saltwater sediment target, net sediment deposition (volume), porosity, and sediment density. Sediment volume is converted to dry weight by an estimated porosity (0.65). The net loading capacities are presented as average mass per year for each water body to reflect the long-term accumulation patterns associated with sediment and pollutant accumulation in Newport Bay. Loading capacities for Newport Bay are presented in Table 6-3.

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Existing Loads

San Diego Creek

A slightly different approach was required to estimate the existing loading to San Diego Creek. Due to incomplete sediment monitoring data for all organochlorine pollutants in San Diego Creek, we used recent fish tissue results (TSM data from 1998) to help estimate water and (indirectly) sediment loads. Water column associated loads were back calculated by using pollutant- and fish species- specific bioconcentration factors (BCFs). The particulate load was estimated from these water column derived values using partition coefficients. The sum of the particulate and water column associated loads yields the estimated existing loads for San Diego Creek based on the most reliable and current data for these hydrophobic compounds. Existing loading estimates for San Diego Creek are presented in Tables 6-5.

Newport Bay

The methods used to estimate existing loads in Newport Bay were similar to those described earlier for loading capacity in Newport Bay. Fortunately, more monitoring data exists for Newport Bay and, in particular recent sediment data (OCPFRD 1999/00 and SCCWRP 2001a) was maximized to give more representative or current conditions in each portion of the bay. These monitoring results were used with the RMA sediment deposition budget to yield the existing pollutant loads. Resuspension and recirculation of sediments, along with the water associated load was implicitly included since these conditions were included in the RMA approach for Newport Bay. (Upper and Lower Bay existing loads represent the sum of several individual areas, as defined in Appendix Table 3 in TSD – Part F.) The net pollutant existing loading estimates for Newport Bay segments are presented in Tables 6-6 to 6-8.

Loading Capacity/Linkage Analysis

The loading capacity for each pollutant was calculated for San Diego Creek, Upper and Lower Bay, and Rhine Channel. The loading capacity for each water body was derived as described above and in the Technical Support Document – Part F. The loading capacity was determined to define the maximum amount of loading which could occur and still result in attainment of the sediment targets, and at the same time, not exceed water quality targets. The model takes into consideration such factors as the particulate and dissolved contributions and flow rates in San Diego Creek. In Newport Bay, the loading capacities were determined via the RMA model and target sediment concentrations. The OC compound loading capacities for San Diego Creek and Newport Bay are listed in Tables 6-2 and 6-3, respectively.

The loading capacity was determined to define the maximum amount of loading which could occur and still result in attainment of the sediment targets. The model links estimates of ongoing pollutant contributions from the watershed with existing pollutant concentrations in the bottom sediments and predicts the cumulative effects in terms of future pollutant concentrations in the bottom sediments and associated trends. The model takes into consideration such factors as the existing water column concentrations (either observed or calculated based on fish or mussel tissue concentrations), data and modeling of sediment deposition into the water bodies, decay rate for a pollutant in the water column, thickness of the water column and active sediment layer, sediment resuspension rates, and sediment burial rates.

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Table 6-2. Loading Capacity for San Diego Creek

Pollutant Name	Sediment Target Concentration (ug/kg dry)	Loading capacity (g/year)
Chlordane	4.5	314.7
Dieldrin	2.85	261.5
DDT	6.98	432.6
PCBs	34.1	2226
Toxaphene	0.1	8.9

Table 6-3. Estimated Loading Capacity for Newport Bay

	Sediment Target Concentration (ug/kg dry)				Loading Capacity (g/year)			
Waterbody	Chlordane	Dieldrin	DDT	PCBs	Chlordane	Dieldrin	DDT	PCBs
Upper Bay	2.26	0.71	3.89	21.5	160.4	N/A	276.5	1528.2
Lower Bay*	2.26	0.71	3.89	21.5	59.2	18.6	101.85	562.9
Rhine Channel	2.26	0.71	3.89	21.5	1.7	0.53	2.92	16.2

(This table is summary of information presented in Table F-4 in TSD—Part F.)

TMDLs and Allocations

For these organochlorine TMDLs, we have expressed the TMDLs and allocations in mass-based units (grams per year) for each waterbody. For each organochlorine compound, the loading capacity in each waterbody is equal to the sum of allocations and an explicit margin of safety. Identification of the TMDL is based on a comparison of the existing loading with the loading capacity. In situations where existing loadings are less than the loading capacity, the TMDLs and allocations are set at the existing loading levels in order to ensure that the TMDL targets are eventually met, and to ensure that pollutant levels in the sediments do not increase in the future (defined as Condition 1 in Table 6-4 below). In situations where existing loads are greater than the loading capacity, the TMDLs and allocations are set equal to the loading capacity (after subtracting the explicit margin of safety). This situation is defined as Condition 2 in Table 6-4 below. Table 6-4 identifies the decision rules applied for each water segment and OC pollutant to define the individual TMDLs.

Table 6-4. Decision rules applied to define TMDLs based on condition applicable to each waterbody/pollutant combination.

Pollutant	San Diego Creek	Upper Newport Bay	Lower Newport Bay	Rhine Channel
Chlordane	Condition 2	Condition 2	Condition 1	Condition 1
Dieldrin	Condition 2	NL	Condition 1	Condition 2
DDT	Condition 2	Condition 2	Condition 2	Condition 2
PCBs	Condition 1	Condition 1	Condition 1	Condition 2
Toxaphene	Condition 2	NL	NL	NL

NL: Not listed for this pollutant

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Tables 6-5 through 6-8 summarize the existing loads, the estimated loading capacity, and the total allocation for each pollutant with respect to each waterbody. For most pollutant/waterbody combinations, the loading capacity value is less than the existing load and thus the loading capacity determines the TMDL, as seen in Table 6-4. A 10% margin of safety was subtracted from the loading capacity or existing load, whichever is smaller value.

Table 6-5. Summary of San Diego Creek Loadings and TMDL

Pollutant	Existing Load[1] (g/year)	Loading Capacity[2] (g/year)	TMDL (g/year)	Margin of Safety (g/year)
Chlordane	615.7	314.7	314.7	31.5
Dieldrin	381.8	261.5	261.5	26.2
DDT	3733.8	432.6	432.6	43.3
PCBs	282.1	2226	282.1	28.2
Toxaphene	582.1	8.9	8.9	0.9

[1] existing load based on observed data (OCPFRD 1999/00 and SCCWRP 2001a)
[2] loading capacity based on sediment targets
TMDL is lesser value of existing load or loading capacity; TMDL = Total allocation + MOS

Table 6-6. Summary of Upper Newport Bay Loadings and TMDL

Pollutant	Existing Load[1] (g/year)	Loading Capacity[2] (g/year)	TMDL (g/year)	Margin of Safety (g/year)
Chlordane	290.7	160.6	160.6	16.1
DDT	1080.2	276.5	276.5	27.7
PCBs	858.7	1528.2	858.7	85.9

[1] existing load based on observed data (OCPFRD 1999/00 and SCCWRP 2001a)
[2] loading capacity based on sediment targets
TMDL is lesser value of existing load or loading capacity; TMDL = Total allocation + MOS

Table 6-7. Summary of Lower Newport Bay Loadings and TMDL

Pollutant	Existing Load[1] (g/year)	Loading Capacity[2] (g/year)	TMDL (g/year)	Margin of Safety (g/year)
Chlordane	50.2	59.2	50.2	5.0
Dieldrin	5.9	18.6	5.93	0.59
DDT	438.4	101.85	101.8	10.2
PCBs	409.8	562.95	409.8	41.0

[1] existing load based on observed data (OCPFRD 1999/00 and SCCWRP 2001a)
[2] loading capacity based on sediment targets
TMDL is lesser value of existing load or loading capacity; TMDL = Total allocation + MOS

Table 6-8. Summary of Rhine Channel Loadings and TMDL

Pollutant	Existing Load[1] (g/year)	Loading Capacity[2] (g/year)	TMDL Allocation (g/year)	Margin of Safety (g/year)
Chlordane	0.33	1.70	0.33	0.3
Dieldrin	3.76	0.53	0.53	0.05
DDT	5.60	2.92	2.92	0.23
PCBs	70.0	16.2	16.2	1.6

[1] existing load based on observed data (SCCWRP 2001a)
[2] loading capacity based on sediment targets
TMDL is lesser value of existing load or loading capacity; TMDL = Total allocation + MOS

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Tables 6-9, 6-10, 6-11, and 6-12 present the allocations for each OC pollutant-waterbody combination. The explicit margin of safety (10%) has been included for clarification. Allocations were assigned for sources to San Diego Creek primarily in proportion to land use area. The allocations to nurseries and other agriculture factor in two considerations. First, it was assumed that erosion control activities pursuant to the sediment TMDL implementation plan would result in approximately a 50% reduction in OC pollutant runoff from agriculture. In addition, these load allocations factor in a small amount of possible DDT loading associated with possible DDT content in the pesticide Dicofol. The allocations are based on the assumption that only a small fraction of Dicofol reaches water ways, and that DDT loading to waterways associated with Dicofol is a minor source. Undefined sources (existing sediments, air deposition, possible groundwater contributions) were assigned 3% based on existing loading estimates. The remaining portion (approximately 72%) was allotted to urban runoff. We estimate that erosion control practices will result in substantial reduction in OC pollutant loadings associated with eroded sediments (EPA, 1993).

PCBs are particularly stable in aquatic sediment, so we assigned a slightly higher percentage of available allocations to undefined sources (10%) and 4% to other NPDES permits because PCBs chemicals are more likely to be present in groundwater and therefore they may be contained in discharges of groundwater clean up and treatment facilities. This quantity may be modified in subsequent TMDL revisions after subsequent monitoring with adequate sampling and analytical methods to verify PCB loads.

Table 6-9. Allocations for San Diego Creek watershed

Category	Type	DDT (including Dicofol)	Chlordane	Dieldrin	PCBs	Toxaphene
WLA	Urban runoff	302.8	220.3	183.4	177.7	6.2
	Caltrans	8.7	6.3	5.2	42.3	0.2
	Other NPDES permittees	34.6	25.2	21.0	5.6	0.7
	Sub-total	**346.1 g/yr**	**251.8 g/yr**	**209.6 g/yr**	**225.6 g/yr**	**7.1 g/yr**
LA	Ag runoff	8.6	6.2	5.2	5.6	0.2
	Undefined *	34.6	25.2	21.0	22.6	0.7
	Sub-total	43.2 g/yr	31.4 g/yr	26.2 g/yr	28.2 g/yr	**0.9 g/yr**
MOS		43.3 g/yr	31.5 g/yr	26.2 g/yr	28.2 g/yr	**0.9 g/yr**
Total TMDL		432.6 g/yr	**314.7 g/yr**	262.0 g/yr	282.0 g/yr	**8.9 g/yr**

*undefined = existing sediments + air deposition
Total TMDL = WLA + LA + MOS

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Table 6-10. Allocations for Upper Newport Bay

Category	Type	DDT (including dicofol)	Chlordane	PCBs
WLA	Urban runoff	207.4	120.5	609.7
	CalTrans	2.8	1.6	8.6
	Other NPDES permittees	2.8	1.6	8.6
	Sub-total	**212.9 g/yr**	**123.7 g/yr**	**626.9 g/yr**
LA	Ag runoff	2.8	1.6	8.6
	Undefined*	33.2	19.3	137.4
	Sub-total	**35.9 g/yr**	**20.9 g/yr**	**146.0 g/yr**
MOS		**27.7 g/yr**	**16.1 g/yr**	**85.9 g/yr**
Total TMDL		**276.5 g/yr**	**160.6 g/yr**	**858.7 g/yr**

*undefined = existing sediments + air deposition
Total TMDL = WLA + LA + MOS

Table 6-11. Allocations for Lower Newport Bay

Category	Type	DDT (including dicofol)	Chlordane	Dieldrin	PCBs
WLA	Urban runoff	76.3	12.6	4.45	303.3
	CalTrans	0	0	0	4.10
	Other NPDES permittees	0	0	0	0
	Sub-total	**76.3 g/yr**	**12.6 g/yr**	**4.45 g/yr**	**304.7 g/yr**
LA	Ag runoff	0	0	0	0
	Undefined*	15.3	32.6	0.89	61.5
	Sub-total	**15.3 g/yr**	**32.6 g/yr**	**0.89 g/yr**	**73.8 g/yr**
MOS		**10.2 g/yr**	**5.0 g/yr**	**0.59 g/yr**	**41.0 g/yr**
Total TMDL		**101.8 g/yr**	**50.2 g/yr**	**5.93 g/yr**	**409.8 g/yr**

*undefined = existing sediments + air deposition
Total TMDL = WLA + LA + MOS

Table 6-12. Allocations for Rhine Channel

Category	Type	DDT	Chlordane	Dieldrin	PCBs
WLA	Urban runoff	0.7	0.1	0.13	4.1
	Other NPDES permittees	0	0	0	0
	Sub-total	**0.7 g/yr**	**0.1 g/yr**	**0.13 g/yr**	**4.1 g/yr**
LA	Undefined*	1.9	0.21	0.34	10.5
	Sub-total	**1.9 g/yr**	**0.21 g/yr**	**0.34 g/yr**	**10.5 g/yr**
MOS		**0.3 g/yr**	**0.03 g/yr**	**0.05 g/yr**	**1.6 g/yr**
Total TMDL		**2.9 g/yr**	**0.33 g/yr**	**0.53 g/yr**	**16.2 g/yr**

*undefined = existing sediments + air deposition
Total TMDL = WLA + LA + MOS

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Margin of Safety

EPA has applied an explicit 10% margin of safety to the loading capacity for these OC TMDLs. The specific mass-based margin of safety for each pollutant with respect to each waterbody is included in Tables 6-5, 6-6, 6-7 and 6-8. This margin of safety will provide additional protection for aquatic life, wildlife predators and human health. The explicit margin of safety is intended to address uncertainties in the relationship between OC pollutant loadings and environmental responses in different areas of the watershed.

In addition, EPA is providing an implicit margin of safety through the selection of several conservative analysis approaches and assumptions used to calculate the TMDLs. Insufficient information is available to specifically quantify the potential uncertainty associated with each of the assumptions used in the analysis. The parameters used in analysis were based on best available information and were selected to be conservative (i.e., most protective) where possible. The use of an explicit margin of safety and recommendation of subsequent follow-up monitoring is intended to ensure that numeric targets are successfully achieved and that the adequacy of the load allocation is evaluated over time. Key areas of uncertainty recognized in the margin of safety include the following:

- The loading capacity is calculated as a long-term annual average that results in meeting water quality standards (expressed as sediment, water column, and/or tissue targets). Because the analysis is focused on long-term predictions, periodic fluctuations are not represented, and actual loading may differ in the short-term.

- Long-term sediment deposition patterns were used to calculate the total amount of sediment deposited in each region. This long-term average value does not represent short-term or localized fluctuations in deposition rates. Periodic accumulation or scouring could be significant during large storm events. This could result in higher or lower deposition rates than the predicted sediment deposition and pollutant concentrations.

- A constant sediment porosity value was used to calculate loads associated with deposited sediment. Sediment porosity values used in the model to estimate loading capacity for San Diego Creek and Newport Bay (0.65) were slightly lower than those used to estimate historical loads (0.80) by RMA. No sediment consolidation was assumed. This resulted in a conservative assumption, since consolidation would result in a lower porosity, which would increase the load associated with deposited sediment.

Seasonal variation/Critical conditions

OC pollutants are of potential concern in the Newport Bay watershed due to possible long term loading and food chain bioaccumulation effects. There is no evidence of short term potential effects. However, pollutant loads and transport within the watershed may vary under different flow and runoff conditions. Therefore the TMDLs consider seasonal variations in loads and flows but are established in a manner which accounts for the longer time horizon in which ecological effects may occur.

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These TMDLs rely on careful analysis of the full range of potential flow conditions to address seasonal variation and critical conditions in loads and flows. The sediment transport and deposition within each waterbody is driven by the velocity and sheer conditions of flow. The annual deposition is accounted for by using the sediment budget developed by RMA (1998) which incorporates various flow regimes throughout each year. The sediment budget (generated via model) represents various weather patterns and flow conditions for 12 years.

Obviously the wet weather events, which may occur at any time of the year, produce extensive sediment redistribution and transport downstream. This would be considered the critical condition for loading. However, the effects of organochlorine compounds are manifested over long time periods in response to bioaccumulation in the food chain. Therefore, short term loading variations (within the time scale of wet and dry seasons each year) are not likely to cause significant variations in beneficial use effects.

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VII. Chromium and Mercury TMDLs

TMDLs are being established for chromium (Cr) and mercury (Hg) only for the Rhine Channel area of Lower Newport Bay. Additional information on the source analysis, modeling approach and relevant monitoring results for these TMDLs is provided in Technical Support Document—Part G.

Problem Statement

Chromium—Chromium levels are elevated in Rhine Channel mussel tissue samples over the tissue screening value (1.0 mg/kg wet), providing some evidence of chromium bioaccumulation (31%, n= 13). Chromium in Rhine Channel sediments are occasionally (8%, n= 13) above the sediment quality guideline (52 mg/kg dry).

Mercury—Mercury sediment concentrations in Rhine Channel are above sediment quality guidelines levels associated with negative impacts on benthic organisms in all samples tested (100%, n=6). The mercury levels in the limited number of available samples were very high (e.g., recent data shows 5.3 ppm versus PEL level 0.7 ppm). Sediment toxicity has been consistently reported for Rhine Channel (BPTCP 1997, SCCWRP 2001a) although specific contaminants causing this toxicity have yet to be identified. Mussel tissue concentrations were not above the EPA tissue screening value (0.3 mg/kg wet methylmercury), and there is no current evidence that mercury has bioaccumulated to levels of concern.

Numeric Targets

The numeric targets for chromium and mercury in Rhine Channel are presented in Table 7-1. Two targets are provided for each chemical, one for sediment and one for tissue levels. The primary target value (sediment) is for TMDL development, whereas the alternate target (tissue) is designed to provide another means of assessing desired water quality conditions of Rhine Channel.

There are several available screening values for mercury concentrations in sediment and fish tissue. For mercury in Rhine Channel, EPA applied the sediment numeric target, 0.13 mg/dry kg, as the most appropriate indicator of desired water quality. This threshold effect level (TEL) is associated with no observed effect on benthic organisms as part of a study by MacDonald et al. 1996 and cited in NOAA SQuiRTs (Buchman 1999). For comparison, the TEL value is much lower than the probable effects level (PEL = 0.696 mg/kg dry). The NOAA Effects Range-Low (ERL) value for mercury (ERL = 0.15 mg/kg dry) is close to the TEL target value. The alternate mercury numeric target is fish tissue (0.3 mg/kg wet methylmercury), from EPA proposed criteria and analysis provided in the USFWS Biological Opinion on the CTR (2000). This methylmercury target is designed to protect human health, yet it will also be effective at reducing impacts to wildlife predators due to bioaccumulation.

EPA has also evaluated the available water quality criteria and levels for sediments and fish tissue to determine the appropriate numeric target for chromium TMDL in Rhine Channel. EPA selected the sediment target (52 mg/kg dry, Buchman 1999) as the best available target to

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protect both wildlife predators and benthic organisms. The alternate chromium numeric target is fish tissue, 0.2 mg/kg wet (USFWS 2001). This fish tissue target is more stringent than the screening value used to evaluate State mussel watch data in order to ensure protection of wildlife predators.

Table 7-1. Numeric targets for Chromium and Mercury in Rhine Channel.

Waterbody	Analyte	Sediment target (mg/kg dry)	Alternate Fish tissue target (mg/kg wet)
Rhine Channel	Chromium (Cr)	52	0.2
Rhine Channel	Mercury (Hg)	0.13	0.3*

*mercury tissue target is interpreted as 0.3 mg/kg wet methylmercury (EPA proposed criteria and USFWS 2000)

Source Analysis

Chromium (Cr)

Probable sources of chromium include the heavily contaminated sediments existing in Rhine Channel, previous discharges by metal plating facilities near Rhine Channel, historic deposits in the San Diego Creek watershed and atmospheric deposition. The Regional Board has documented two previous investigations of metals contamination at Newport Plating Company. These investigations found extremely high levels of chromium in sediment boring samples. Furthermore, a storm drain which drains runoff from the Newport Plating facility area discharges into Rhine Channel. This facility should be considered a potential source and should receive further investigation. More complete information on this source is presented in TSD part G – Chromium and Mercury.

Chromium may also be leaching from treated wood pylons in marine areas (Weis et al. 1991). Chromium is a naturally occurring element in many area, which can be found in volcanic dust and gases. However, chromium emissions can also come from commercial and industrial facilities, resulting in chromium discharges into the atmosphere. Currently, there is not sufficient information to estimate chromium atmospheric deposition rates in the Newport Bay watershed. The heavily contaminated sediments in Rhine Channel are most likely associated with historic discharges from industrial facilities around Rhine Channel, and these legacy sources are likely to be the largest current sources of chromium.

Mercury (Hg)

No investigation has been completed to explain elevated (total) mercury sediment concentrations within Rhine Channel. Orange County Coastkeeper (1999) measured mercury concentrations in one sediment core and the results provide historical perspective. Total mercury results show lowest concentrations at the core top (3.4 mg/kg dry) and highest concentrations (11 mg/kg dry) at the bottom of the one foot long core. Other researchers have found similar sediment concentrations in Rhine Channel; SCCWRP (2001a) reports 5.3 mg/kg dry and BPTCP (1997) reports (8.7 mg/kg dry) for surface (top six inches) sediment samples. Perhaps historical uses of ship anti-fouling paints which contained mercury are responsible for elevated sediment

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levels based on previous activities in Rhine Channel (Regional Board 1998). Most likely the existing sediments are the largest sources of mercury in Rhine Channel.

Another potential source of mercury is the historical mining operations at the old Red Hill mine in the western part of San Diego Creek watershed (in Tustin). Historic records show mercury mining and processing occurred at Red Hill mine between 1880 and 1939 (CA Division of Mines 1976). The total amount of mercury produced is not known. Mine shafts were sealed off in 1976, though some shafts are still open and can receive storm runoff. The Red Hill mine is upgradient of the Swamp of Frogs and mine drainage may have flowed to Peters Canyon Wash. Other minor sources of Hg deposits have been mapped in the area. At this time, no additional information is available to accurately assess whether mercury from this mining location reached the Rhine Channel area. However, available evidence for all of Newport Bay suggests that mercury levels in the rest of Newport Bay are not elevated. It is unlikely that mercury loads from the upper watershed would have contributed to mercury contamination of Newport Bay sediments solely in the Rhine Channel area. Therefore, it is unlikely that discharges from the Red Hill mine area are a principal cause of mercury contamination in Newport Bay.

Based on water column measurements (IRWD 1999) of dissolved mercury (Hg) and chromium (Cr), the loads from San Diego Creek can be estimated. Analysis of previous hydrologic modeling studies for Newport Bay (RMA 1997), yields estimates of sediment transported from San Diego Creek to be deposited in the Rhine Channel annually (approx 6%). Assuming that most of the chromium and mercury is adsorbed by suspended sediment, the estimated annual loads for chromium and mercury from San Diego Creek that are delivered to Rhine Channel are about 46.9 kg/year and 0.054 kg/year, respectively (Table 7-2).

Table 7-2. Estimated Mercury and Chromium Loads from San Diego Creek.

Pollutant Name	Year	Water Column Conc. (ug/L)	Estimated Load to Rhine Channel (kg/yr)
Cr	'97-99	16	46.9
Hg	'97-99	0.0186	0.054

(source: water (IRWD 1999); sediment budget (RMA 1997, 1998)

Atmospheric deposition probably is contributing small amounts of mercury to the watershed; however, there are no likely nearby sources upwind of the watershed. In any event, atmospheric deposition is estimated to contribute very small amounts of mercury to Rhine Channel relative to the amounts of mercury in existing Rhine sediments as well as freshwater sediment deposition. Ambient seawater concentrations of mercury are extremely low, typically less than 1 ng/L.

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Modeling

The approach to determining the loading capacities for mercury and chromium is similar to the approach used for the organochlorine compounds (TSD – Part F) and was based on an understanding of the sources of these compounds (past, present, and future) and the transport and ultimate fate of these compounds in various environmental media. Based on a review of literature sources, it was observed that mercury and chromium environmental persistence and affinity for adsorbing to sediment and accumulating in biota generally limits their presence in the water column, at least relative to sediment and biota.

Previous modeling studies, completed by RMA for the U.S. Army Corps of Engineers (USACE) have examined the circulation patterns, and transport and deposition of sediments in Newport Bay (RMA 1997, 1998). By examining model calibration results (RMA 1997) for Newport Bay from 1985-1997, the sediment deposition in Rhine Channel was estimated. The approach relies on the following key information: sediment deposition rates, deposition patterns (from the RMA (1997) model), pollutant targets (used for loading capacity) (see TSD Table G-2) and sediment moritoring data for mercury and chromium concentrations (used for existing loads) (see TSD, Table G-1 and Appendix 1) Historic pollutant loads to the bottom sediment were estimated by using observed pollutant concentrations in bottom sediments and net sedimentation rates. Sediment volume was converted to dry weight using an estimated porosity of 0.65. The loading capacities were determined by "back-calculating" the allowable load from the selected sediment target (Table 7-3) and the associated estimates of sediment loads.

Loading Capacity/Linkage Analysis

Determination of loading capacity has been described above and uses similar methods to those outlined for organochlorine TMDLs (see Section VI of this document and TSD Part G for more comprehensive explanation. These TMDLs express the loading capacities, TMDLs, and allocations in mass loading terms for Rhine Channel. Because most of the mercury and chromium loads are associated with contaminated sediments already in Rhine Channel, it will be necessary to remediate contaminated sediments in order to meet water quality standards and prevent adverse ecological effects.

TMDL and Allocations

For these TMDLs, EPA has calculated both wasteload allocations (WLA) and load allocations (LA). Inputs from historically deposited sediments and atmospheric deposition are included in load allocations. Ongoing sediment deposition (containing mercury and chromium) from San Diego Creek is addressed as a wasteload allocation because this source is generally subject to coverage under the existing NPDES stormwater permit.

For mercury, the on-going load, which is associated principally with local contaminated sediments, is higher than the estimated loading capacity. Therefore, the mercury TMDL (0.10 kg/yr)and associated allocations are set based on this loading capacity. The opposite is true for chromium, where the existing load is slightly lower than the loading capacity, therefore the

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chromium TMDL is based on 33.1 kg/yr. The loading capacities for chromium and mercury are expressed as annual averages (Table 7-3).

Table 7-3. Historical Loading and Estimated Loading Capacity for Rhine Channel

Pollutant	existing conc. * (mg/kg dry)	Estimated Load (kg/yr)	Sediment Target (mg/kg dry)	Loading Capacity (kg/yr)
Chromium	44	33.1	52	39.1
Mercury	5.8	4.36	0.13	0.10

* (SCCWRP 2001a)

The wasteload and load allocations (Table 7-4) were calculated based principally on best professional judgement . Most of the available loads were assigned to sediments already in Rhine Channel, which are by the far the largest source. These allocations to existing sediments reflect substantial reductions in sediment loads from in-Channel sources based on the expected effectiveness of remedial actions identified in the 1997 remedial action plan. The remaining available load was allocated roughly in proportion to the land areas associated with the remaining source categories after allocating 5% of available loads for undefined sources. Further investigation of Newport Plating facility may warrant revision of such a high allocation to sediments in Rhine Channel for Chromium.

Table 7-4. Rhine Channel Wasteload and Load Allocations (kg/yr) and % of total loads

	Mercury (Hg)	**Chromium (Cr)**
Wasteload allocations		
Stormwater	0.0171 (19%)	5.66 (19%)
Caltrans	0.0027 (3%)	0.89 (3%)
Boat yards	0	0
Other NPDES permittees	0.0027 (3%)	0.89 (3%)
Load allocations:		
Existing sediment	0.063 (70%)	20.85 (70%)
Undefined sources: air deposition, ambient seawater	0.0045 (5%)	1.49 (5%)
Margin of safety	0.01	3.30
TMDL	**0.1 kg/yr**	**33.1 kg/yr**

TMDL = WLA + LA + MOS

Margin of Safety

EPA has applied an explicit 10% margin of safety to the loading capacity for these TMDLs. The specific mass-based quantity for each pollutant with respect to each waterbody is included in Table 7-5. This margin of safety will provide additional protection for aquatic life, wildlife predators and human health.

A number of assumptions were used in the derivation of each TMDL. Insufficient information is available to quantify the potential uncertainty associated with each of the assumptions used in the analysis. The parameters used in analysis were based on best available information and were selected to be conservative (i.e., most protective) where possible. The use of an explicit margin of safety and subsequent follow-up monitoring is intended to ensure that

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numeric targets are successfully achieved and that the adequacy of the load allocation is evaluated over time. Key areas of uncertainty recognized in the margin of safety include the following:

- The loading capacity is calculated as a long-term annual average that results in meeting water quality standards (expressed as sediment, and tissue targets). Because the analysis is focused on long-term predictions, periodic fluctuations are not represented, and actual loading may differ in the short-term.

- Long-term sediment deposition patterns were used to calculate the total amount of sediment deposited in each region. This long-term average value does not represent short-term or localized fluctuations in deposition rates. Periodic accumulation or scouring could be significant during large storm events. This could result in higher or lower deposition rates than the predicted sediment deposition and pollutant concentrations.

- A constant sediment porosity value was used to calculate loads associated with deposited sediment. Sediment porosity values used in the model to estimate loading capacity for San Diego Creek and Newport Bay (including Rhine Channel) (0.65) were slightly lower than those used (0.80) in RMA model. No consolidation was assumed. This resulted in a conservative assumption, since consolidation would result in a lower porosity, which would increase the load associated with deposited sediment.

Seasonal variation/Critical conditions

These TMDLs rely on careful analysis of the full range of potential flow conditions to address seasonal variation and critical conditions in loads and flows. The sediment transport and deposition within each waterbody is driven by the velocity and sheer conditions of flow. The annual deposition is accounted for by using the sediment model developed by RMA (1997) which incorporates various flow regimes throughout each year. The model represents various weather patterns and flow conditions for 12 years.

As previously stated, freshwater flows from San Diego Creek and Santa Ana-Delhi Channel do not significantly transport sediments into Rhine Channel. The most important scenario may be the large flows associated with wet weather events, which may occur at any time of the year and produce extensive sediment redistribution and transportations downstream. This has yet to be verified in hydrologic modeling of chromium and mercury in Rhine Channel.

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VIII. Arsenic Analysis

EPA has concluded that an arsenic TMDL is not required because available data indicate that applicable numeric water quality standards, and the best available screening guidelines used to interpret narrative standards, are not being exceeded. Although the State and EPA initially concluded that arsenic TMDLs were needed based on comparisons with older recommended screening values, we have revised our conclusions based on an updated data set and new information concerning arsenic toxicity and consumption risk. This section explains the basis for EPA's revised assessment of the need for arsenic TMDLs.

EPA's initial assessment of fish tissue monitoring results was based on comparisons with two screening values. Total arsenic concentrations in fish tissue were compared to the California OEHHA screening value (1.0 mg/kg wet for total arsenic). This screening value was developed from a human health study for chemical contaminants in sportfish from two California freshwater lakes (OEHHA 1999). OEHHA recognized that inorganic arsenic is the preferred contaminant to evaluate for potential human health risk; however, analytical methods to measure inorganic arsenic were not available during that study. OEHHA developed a plan to a) evaluate total arsenic fish tissue results against the screening value for freshwater species and b) delay further decisions about water quality impairment or potential health risk until they had actually measured inorganic arsenic in popular sportfish (pers. commun. B. Brodberg). Furthermore, OEHHA recognizes its total arsenic screening value is ill-suited for saltwater systems. EPA Region 9 has reconsidered using this *freshwater* total arsenic tissue screening value and has determined that it would be inappropriate to make final decisions based only on comparison of total arsenic in tissues with this screening value.

EPA's initial assessment also considered another fish tissue screening value, (0.026 mg/kg wet for inorganic arsenic); however no monitoring data exists for measurements of inorganic arsenic in Newport Bay fish. To enable a comparison of available data to the inorganic arsenic screening value, EPA estimated levels of inorganic arsenic present in Newport Bay fish as a percentage of total arsenic for finfish (4% of total) and for shellfish (60% of total). These percentages were based on information obtained from a literature search (for finfish, Donohue and Abernathy 1999) or discussion with analytical chemists (for shellfish, pers. commun. J. Creed). Upon further review of the screening values cited in recent EPA guidance for assessing fish advisories (USEPA 2000d), EPA has determined the 0.026 mg/kg wet inorganic screening value is incorrect and that 1.2 mg/kg wet inorganic arsenic is a more reliable risk-based screening value. Preferably this screening value should be compared to measurements of inorganic arsenic in local fish, although calculation of inorganic arsenic as a percentage of total arsenic is still acceptable.

In the process of developing these TMDLs, EPA reevaluated local fish tissue data in comparison with the new EPA screening value of 1.2 mg/kg wet inorganic arsenic based on EPA's fish advisory guidance. The most recently available set of fish tissue monitoring results was compiled from Toxics Substances Monitoring program (1995-1998), California Fish Contamination Study (1999-2000) Southern California Coastal Water Research Project (2001b) and State Mussel Watch program (1995-2000). We evaluated results from both San Diego Creek and saltwater bodies of Newport Bay but focused more on saltwater results since those results showed some exceedances with respect to the OEHHA screening value applied in EPA's earlier assessment. To be conservative and consistent with other agencies (e.g., FDA), EPA assumed

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that inorganic arsenic comprised 10% of total arsenic for finfish and 60% of total for shellfish.. We used only one screening value, 1.2 mg/kg wet for inorganic arsenic, which is consistent with both State and Federal agencies' determination that human health risk from arsenic exposure is attributed to inorganic arsenic exposures.

The final assessment of saltwater tissue results (using calculated values of inorganic arsenic) shows no exceedances of the EPA inorganic screening value (1.2 mg/kg wet). This is true for both finfish (0%, n = 80) and shellfish (0%, n = 24). There are also no exceedances of freshwater tissue results. Table 8-1 summarizes arsenic tissue concentrations for Newport Bay. Table 8-2 provides a perspective of arsenic tissue concentrations for Newport Bay and other saltwater bodies. The raw data and calculated results for this reassessment are provided in Appendix B at the end of this summary document. Therefore, based on this revised assessment, EPA concludes that San Diego Creek and Newport Bay are not exceeding water quality standards for arsenic and that no TMDLs are needed. This result is consistent with local ambient water column data for arsenic, which indicate that Bay arsenic levels are about the same as average sea water arsenic levels.

Table 8-1. Total Arsenic results in fish tissue in Newport Bay waterbodies (mg/kg wet)

Waterbody	Collection dates	Org.	n	Min	Max	Mean	Median
San Diego Creek	1995 -- 98	TSMP	15	0.06	0.88	0.18	0.13
Newport Bay (finfish)	1995 -- 98	TSMP*	4	0.4	8.6	2.93	1.3
	1999 -- 00	CFCS	26	0.2	4.0	1.29	0.79
	2000 - 01	SCCWRP	50	0.22	8.6	1.64	0.68
(shellfish)	1995 - 00	SMW	24	0.8	2.5	1.28	1.25

*these TSMP results for individual samples, all other results are tissue composites

Table 8-2. Total Arsenic results in marine waterbodies (mg/kg wet)

Tissue	Study	n	Range	Mean	Median
Finfish	Newport Bay	80	0.2 – 8.6	1.5	0.7
	Wash State	12	0.15 – 10.7	3.5	0.9
	Donohue	77	0.2 – 65	5.1	2.1
	Great Britain	720	0.9 – 30.1	5.6	4.3
Shellfish	Newport Bay	24	0.8 – 2.5	1.3	1.3
	Wash State	10	1.0 – 6.9	2.4	2.2
	Donohue	57	0.2 – 126	15.9	4.2

Newport Bay results compiled from Table 8-1
Washington State results from Yilmazer et al. 2000
Donohue results from various North American waterbodies (1996)
Great Britain results from Collins et al. 1996

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IX. Implementation Recommendations

This section provides general recommendations of implementation actions and monitoring work to assist in implementing the TMDLs and allocations identified in this decision. Several commenters, including the Regional Board, dischargers, and environmental groups specifically requested that EPA discuss TMDL implementation recommendations when we made the final TMDL decisions. The implementation and monitoring actions are not required and are not part of the TMDL decisions being made by EPA at this time; rather, they are included with the TMDLs to assist followup planning and implementation work by the State and local stakeholders. As discussed in Section I above, the State—not EPA—is responsible for developing implementation plans necessary to attain TMDLs. In its comments concerning the EPA TMDLs, the Regional Board signaled its commitment to adopt TMDLs and implementation plans for these toxic pollutants in a timely manner.

General Recommendations

The toxic pollutant TMDLs address several pollutant types which come from a variety of sources. Therefore a range of pollutant management options will be available to the State to address them. Based on information we gathered in developing the TMDLs as well as feedback obtained from the State and local stakeholders during the development of the TMDLs, we have identified several appropriate implementation approaches for different pollutants.

Consistent with the State's approach to developing and implementing other TMDLs in the Newport Bay watershed for sediments, nutrients, and pathogens, EPA believes a phased, iterative approach to implementation and monitoring is appropriate to address the toxic pollutants of concern. Substantial uncertainty remains concerning pollutant sources and the relationship between pollutant loads and environmental effects in the watershed. EPA believes some specific implementation actions should be carried out to address pollutant sources which are most clearly of concern. Several of these actions are already underway or in the planning stages. It is also appropriate to collect and analyze additional monitoring data to improve the understanding of pollutant sources and effects, periodically review the TMDLs and implementation actions in light of new monitoring results, and revise the TMDLs and implementation actions if necessary. Depending upon the State's priorities, additional monitoring data could also assist in reviewing and, if necessary revising the applicable water quality standards to provide the appropriate level of beneficial use protection. This combination of early actions to address clear pollutant sources and an ongoing commitment to iterative monitoring and adjustments provides an appropriate balance in followup implementation work.

When the Regional Board considers adoption of TMDLs for toxic pollutants along with associated implementation plans, the State may adopt the TMDLs identified in this decision or further assess these pollutants and adopt different TMDLs if warranted. EPA recommends that the State consider the specific areas of analytical uncertainty identified in the analysis supporting our TMDL decisions as a starting point in targeting any additional analytical work (including monitoring) planned in support of TMDL adoption.

It is expected to take several years for toxic pollutant levels in the watershed to decline to the point where all applicable water quality standards are fully attained. For some pollutants

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such as the diazinon and chlorpyrifos, the pollutant levels will probably decline quickly in response to actions to reduce their use. For some other pollutants with long residence times in the environment, or which are associated with historical discharge, there will probably be some lag time between the initiation of controls to reduce loading or remediate contaminated sites and the observation of decreased pollutant levels throughout the watershed. For these reasons, EPA supports the past State practice of identifying interim targets or benchmarks in terms of pollutant control actions, pollutant loadings and/or receiving water responses to help ensure that control actions are taken and progress is being made toward attaining water quality standards. Specification of clear interim targets also assists in the evaluation of whether the TMDLs or implementation actions need to be adjusted in the future.

EPA's TMDLs do not contain compliance timeframes or interim implementation targets because these elements are addressed by the State in the implementation planning process. EPA urges the State to work with local dischargers and stakeholders to design and carry out effective implementation actions sufficient to implement the TMDL in a timely manner.

As discussed in Section 1, the Clean Water Act creates federal regulatory jurisdiction only over point sources. Therefore, the direct implementation effect of EPA's TMDLs is that when NPDES permits for point source discharges are issued or revised for discharges to waters in the watershed, the State is required to ensure that the permits contain effluent limitations necessary to be consistent with the wasteload allocations (WLAs) contained in theTMDLs (40 CFR 122.44(d)). Permit modification may occur when existing permits are reopened or reissued, or when a new discharge source seeks a permit. NPDES permit holders should contact the Regional Board to discuss how and when action will be taken to implement applicable WLAs. The State has discretion to determine how the point source permit provisions will be made consistent with applicable WLAs. Depending upon the situation and the level of precision in the WLA, it may be appropriate to:

- incorporate numeric effluent limitations for the pollutant(s) of concern in the permit,
- identify best management practices and associated pollutant control effectiveness which demonstrate that the WLAs will be attained, and/or
- require the discharger to submit a WLA compliance plan and schedule which demonstrates how the WLA will be implemented.

In addition to addressing WLA implementation through the NPDES permitting process, the State should work with local stakeholders to identify specific actions necessary to carry out load allocations identified in the TMDLs. These actions may be based on voluntary or regulatory approaches. We note that CWA Section 319(h) nonpoint source implementation grant funds may be available to assist in implementing controls necessary to implement load allocations. Section 319(h) projects designed to implement TMDLs currently receive priority for funding. Landowners or land managers interested in seeking Section 319(h) funding assistance should contact the Regional Board staff for more information concerning the State's grant funding process.

OP Pesticide TMDL Implementation Recommendations

EPA's pesticide program has intiated a phase-out of household uses of diazinon and chlorpyrifos (EPA 2000b, EPA 2001b). It is expected that the phase-out will greatly assist in

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reducing the levels of these pesticides found in the waters of Newport Bay watershed. Because approximately 90% of diazinon and chlorpyrifos use in the watershed is estimated to be associated with urban and household uses, the phase-out program may be sufficient to result in attainment of the TMDLs and associated allocations. We recommend that the Regional Board continue its work with nurseries in the watershed to minimize use of these pesticides. We recommend continued monitoring in San Diego Creek and its tributaries to assess reductions in OP pesticide runoff in the next several years. If monitoring demonstrates that the urban use phase-outs are inadequate to implement the TMDLs, it may be necessary in the future to implement additional controls on agricultural uses of these pesticides in coordination with the California Department of Pesticide Regulation

We are concerned by potential conflicts between programs to reduce use of these pesticides and mandates to use these pesticides for fire ant control. EPA urges that Regional Board to work with the State Water Resources Control Board, California Department of Pesticide Regulation, California Department of Food and Agriculture, and EPA's pesticide program to assess and, if necessary, reconcile these potentially conflicting mandates concerning OP pesticide use.

Selenium TMDL Implementation Recommendations

EPA is in the process of reviewing and potentially revising the numeric criteria for Se in freshwater. In addition, other local studies are underway to assess the potential effects of Se on aquatic organisms. EPA expects to complete this review within approximately 2 years. EPA recommends that the State review and, if necessary, revise the Se TMDLs following adoption or promulgation of the revised water quality standards. Several commenters raised concerns about whether the CTR criteria are appropriate for conditions in the San Diego Creek watershed, and identified several local factors (e.g. local water chemistry) which could support consideration of alternative site specific criteria. In consultation with EPA and the State Water Board, the Regional Board should consider whether it is feasible and appropriate to assess the applicable Se water quality standards in light of these concerns, and potentially adopt site specific water quality standards.

The TMDL analysis found that the most significant sources of Se loading appear to be associated with groundwater entering surface waters (sometimes directly and sometimes through discharge from dewatering operations). Control of these sources will be difficult. However, EPA recommends that the State begin working with permitted dischargers to assess options for reducing Se discharges through discharge management practices and/or treatment technologies. The State may wish to sequence its planning activities to settle issues concerning applicable standards before carrying out actions to further tighten discharge controls.

EPA recommends that the Regional Board monitor flow and Se concentrations in discharges from cleanup and ground water dewatering operations in order to provide the basis for establishing effluent limits in the permits consistent with the TMDLs. When NPDES permits for groundwater cleanup or dewatering operations are considered, the Regional Board will need to ensure that the total allowable Se loadings do not exceed the group WLA established in the TMDL.

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Metals TMDL Implementation Recommendations

Metals loading in the watershed is associated primarily with ongoing runoff from urban and undeveloped areas, and aquatic sediments containing previously discharged metals. Our recommendations address all the metals for which TMDLs are established, including mercury and chromium. EPA recommends five areas of action to address metals loading in the watershed.

First, metals levels in the Rhine Channel area are estimated to be substantially higher than in other areas of the watershed. No significant ongoing loading sources were identified, and the aquatic sediments in Rhine Channel have been identified as a significant toxic hot spot. EPA recommends aggressive action to complete and implement the contaminated sediment remediation plan initiated by the State and Regional Boards in 1997. One potential ongoing source of concern with respect to chromium loading is the Newport Plating facility. EPA recommends that the State further assess this facility and, if necessary, carry out discharge controls or remedial actions necessary to address any ongoing loadings.

Second, the source analysis indicated that copper leaching from boat paints is probably a significant source of copper loading to the Bay. In coordination with marina and boatyard operators, other Regional Boards, the State Board, and EPA, the Santa Ana Regional Board should develop specific actions to reduce the use of copper-containing boat paints or their leaching to water bodies through use of additional boat storage and maintenance practices.

Third, the Regional Board should work with the stormwater discharge permittees to further assess the potential effectiveness of available management practices to reduce metals loading in discharges of urban runoff under high and low flows. In future iterations of the stormwater permits, provision should be made to implement effective metals reduction practices, with particular emphasis on implementation of the more cost-effective methods identified. Additional work will be needed in the immediate future to more thoroughly assess and document the prospective effectiveness of available practices.

Fourth, he State adopted a sediment TMDL and implementation plan in 1999 which called for an overall 50% reduction in sediment loading from San Diego Creek through implementation of a locally developed sediment reduction plan. Reductions in sediment loading should assist in reducing loadings of total metals. EPA recommends that the State continue implementation of this sediment reduction plan and monitor to determine whether both total and dissolved metals loading levels decline over time.

Fifth, the State may wish to consider reevaluation of the metals criteria and associated TMDLs in the future based on application of criteria calculation methods which are currently under development. Metals criteria calculation protocols are nearing completion which may enable States to calculate metals standards that more accurately represent the bioavailable portion of total metals loading through consideration of water effects ratios (WERs). It may be relatively straightforward recalculate metals criteria based on local hardness and organic carbon data and revised WER equations. In light of the potential cost of extensive actions to further control metals loading from urban runoff in the watershed, EPA believes it may be reasonable to consider whether newly emerging criteria calculation methods would result in protective but easier-to-implement standards.

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Organochlorine Compound TMDL Implementation Recommendations

This TMDL decision addresses two types of organochlorine compounds whose use is no longer authorized: several chlorinated pesticides (DDT, chlordane, dieldrin and toxaphene) and PCBs, which were used in electrical equipment. Because these compounds are very stable in the environment and often adhere to sediments, they may continue to reach and remain in water bodies at levels of concern for many years following their discharge to the environment. Two potential routes of environmental exposure of these compounds are of greatest potential concern—ongoing loadings from the watershed of historically deposited pollutants and exposures to organochlorine compounds already present in aquatic sediments (principally in Newport Bay). There is substantial evidence indicating that levels of these compounds in Bay sediments and aquatic organisms has declined over the past 20 years or more.

No terrestrial "hot spots" (locations with significantly elevated levels of these pollutants were located during the TMDL development process; however, limited historical information indicates that there may have been some spills (e.g., PCB spills at El Toro and Tustin Air Stations). We recommend that the State conduct more thorough investigations of potential spill sites based on the preliminary information compiled for this TMDL effort in order to determine whether there are any significant hot spot sites in the watershed warranting further remedial action.

The most likely source of ongoing loading of organochlorine pollutants is erosion of sediments to which these compounds have adhered. The State adopted a sediment TMDL and implementation plan in 1999 which called for an overall 50% reduction in sediment loading from San Diego Creek through implementation of a locally developed sediment reduction plan. EPA recommends that the State continue implementation of this sediment reduction plan and monitor to determine whether levels of organochlorine compounds continue to decline. Monitoring should examine not only the levels of organochlorine pollutants in the water column, but also sediment running into tributary streams, sediment moving down San Diego Creek, and sediments in Newport Bay.

If future monitoring indicates that declines in levels of the pollutants in the watershed are continuing or accelerating, it may be unnecessary to implement additional erosion and sediment controls. If the levels of these pollutants in sediments and tissue do not decline or actually begin to rise, the State will need to revisit and potentially revise terrestrial sediment control strategies in the watershed as a whole and aquatic sediment management strategies in the Bay.

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Newport Bay sediment and tissue monitoring programs should continue to test for organochlorine pollutants. Although no obvious aquatic sediment "hot spots" were found for these pollutants (with the possible exception of Rhine Channel for some pollutants), the available data appear to indicate that the reservoir of these pollutants still found in Bay sediments far outweighs the additional loads to the Bay from the watershed. Therefore, in coordination with monitoring and assessment programs to evaluate the full suite of toxic pollutants of concern, the State should continue to consider whether any specific locations warrant remedial action to remove, cap, or otherwise immobilize Bay sediments. It is always important to consider whether the long term benefit of aquatic sediment remedial action is outweighed by the potential short term adverse effects associated with disturbing contaminated sediments. The remedial action plan adopted by the State for Rhine Channel should help reduce any ongoing availability of these pollutants at that location, and we repeat our recommendation that this remedial action plan be carried out in a timely manner.

The U.S. Army Corps of Engineers and Orange County have been examining the feasibility of removing sediment from containment basins in Upper Newport Bay (ACOE 2000). This study has refined various alternatives, obtained necessary funding and is presently entering the preconstruction, engineering and design phase. Restoration is *scheduled* to begin in 2003/2004. We recommend that the State work with the project sponsors to ensure that potential disturbance of sediments containing the pollutants addressed in this TMDL report is considered in the design process and minimized during project implementation.

Monitoring Recommendations

This action establishes TMDLs for numerous toxic pollutants, in a watershed for which several other TMDLs have previously been established. We recommend that the State work with the other State and federal agencies, the County, permitted cities, local industries, and perhaps local academic institutions to develop a coordinated monitoring program for Newport Bay and its tributary streams. While much of this work could be carried out pursuant to the NPDES stormwater permit, the scope of the monitoring needed to more fully characterize toxic pollutant trends in the watershed and the effectiveness of pollutant control strategies goes beyond the scope of traditional monitoring required under these permits. Substantial monitoring has conducted in the past but it was (with the exception of the County's monitoring) usually relatively narrow in scope in terms of pollutant coverage, geographical extent, and temporal scope. Newport Bay watershed is a good candidate for development of a more integrated and comprehensive monitoring approach which could result in a more cost-effective overall approach to monitoring than currently created by independent monitoring approaches.

We recommend that the State consider the areas of uncertainty in each TMDL analysis as discussed in the margin of safety sections and TSDs in order to identify the types of monitoring data which are most important to reduce analytical uncertainty and improve our ability to target meaningful control actions.

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State Mandates

X. References

The list below may include some references cited only in the Technical Support Documents.

Bay Protection Toxic Cleanup Program (BPTCP) 1997 *Chemistry, Toxicity and Benthic Community Conditions in Sediments of Selected Southern California Bays and Estuaries* SWRCB, EPA, NOAA, Calif. F&G, UC-Santa Cruz, Moss Landing Labs, Columbia Analytical Services, data collected in 1994 &1996.

Bay, SM and D Lapota, J Anderson, J Armstrong, T Mikel, AW Jirik, S Asato. 2000 *Southern California Bight 1998 Monitoring Program: IV Sediment Toxicity*. Southern California Coastal Water Research Project. Westminster, CA.

Bruland, KW, JR Donat, and DA Hutchins 1991 Interactive influences of bioactive trace metals on biological production in oceanic waters. *Limnol. Oceanogr*. 36: 1555—1577.

Buchman, MF 1999 NOAA Screening Quick Reference Tables, NOAA HAZMAT Report 99-1, Seattle, WA Coastal Protection and Restoration Division, National Oceanic and Atmospheric Admininstration, 12 pp.

Buffle, J 1988 *Complexation reactions in aquatic systems: an analytical approach.* Chichester, Ellis Horwood.

California Department of Food and Agriculture (CDFA) 1999 *Red Imported Fire Ant. California Action Plan.* March.

California Department of Fish and Game (CDFG) 2000a. *Water Quality Criteria for Diazinon and Chlorpyrifos.*

CDFG. 2000b. *Results of Chemical and Toxicological Analyses of Sediment and Chemical Analysis of Fish Tissue in Conjunction with the Red Imported Fire Ant (RIFA) Control Project.* Memorandum to Santa Ana RWQCB. October

California Department of Pesticide Regulation (CDPR) 2000 *RIFA Insecticides and other Organophosphates: Use Pattern, Concentration, and Toxicity in Runoff Water, Source Identification, and Mitigation Measures.* September.

CDPR 1999 *Annual Pesticide Use Data; User Documentation*. July.

California Division of Mines and Geology. 1976 *Environmental Geology of Orange County, CA*. Open-file report 79-8. pp. 244-45.

Camp Dresser & Mckee, Inc. 1985 *Shallow Groundwater Investigation West Central Part of the Irvine Subbasin*, a report submitted to The Irvine Company.

Canadian Council of Ministers of the Environment. 1999 *Canadian Sediment Quality Guidelines for the Protection of Aquatic Life: Summary Tables.* In: Canadian Environmental Quality Guidelines, 1999, Canadian Council of Minister of the Environment, Winnipeg.

Chadwick, DB, I Rivera-Duarte, T Hampton, B Davidson and E Crecelius. 2001 *Contaminant Fluxes From Sediments – Risk Or Recovery?* , International Conference on Remediation of Contaminated Sediments, October 10-12, 2001, Venice, Italy.

City of Newport Beach . 1999 *Final Sampling and Analysis Plan for Newport Harbor Sediment Characterization, Newport Beach, California*, Ogden Environmental and Energy Services, Inc.

Coastal Sport Fish Contamination Study, unpublished data. 2001 State Water Resource Board and OEHHA database. R.K. Brodberg, Office of Environmental Health Hazard Assessment, Calif. EPA, Sacramento, Calif.

Collings, SE; MS Johnson and RT Leah. 1996 Metal contamination of Angler-caught fish from the Mersey Estuary. *Mar. Envir. Res*. **41**: 281-297.

Cooper, A. 1996 *Diazinon in Urban Areas*. Prepared for the Palo Alto Regional Water Quality Control Plant. August.

Creed, J. 2001 pers. comm., EPA Cincinnati Office of Water research labs

Cutter, GA 1991 Trace element in estuarine and coastal waters: United States studies from 1986-1990. *Rev. Geophys*. **29**: 639-644.

Donat, JR; K Lao and KW Bruland 1994 Speciation of copper and nickel in South San Francisco Bay: a multi-method approach. *Anal. Chim. Acta* **284**: 547-572.

Donohue, JM and CO Abernathy 1996 *Exposure to Inorganic Arsenic (As) from Fish and Shellfish.* Proceedings of International Arsenic conf.

Duce RA, Hoffman GL, Ray BJ and PR Walsh 1976 Trace Metal Concentration as a Function of Particle Size in Marine Aerosols from Bermuda". *Geophys. Res. Let.* 3(6): 339-341.

Eisler, R. 1994 A review of arsenic hazards to plants and animals with emphasis on fishery and wildlife resources. In: *Arsenic in the Environment. Part II Human Health and Ecosystem effects.* JO Nriagu, Ed. John Wiley & Sons, Inc. NY. pp185—251.

Received
June 17, 2011
Commission on
State Mandates

Enberg, RA *et al.* 1998 Federal and State Perspectives on Regulation and Remediation of Irrigation-Induced Selenium Problems, in *Selenium in the Environment*, Ed. by W T Frankenberger Jr. and S Benson, Marcel Dekker, Inc. New York, pp. 1-25.

EXTOXNET. 1995-1996 Pesticide Information Profiles. http://ace.orst.edu/info/extoxnet/pips/ghindex.html

Fowler, SW, and G. Benayoun 1976 Influence of Environmental Factors on Selenium Flux in Two Marine Invertebrates, *Mar. Biol.* (**37**): 59.

Francesconi, KA and JS Edmonds 1994 *Biotransformations of Arsenic in the Marine Environment.* in Arsenic in the Environment, Part 1: Cycling and Characterization. J.O. Nriagu, editor. pp. 221-262.

Geiszinger, AE; W Goessler and KA Francesconi. 2002 The marine polychaete *Arenicola marina*: its unusual arsenic compound pattern and its uptake of arsenate from seawater. *Mar. Env. Res.* **53**, 37-50.

Giesy JP, Solomon KR, Coats JR, Dixon K, Giddings J, and EE Kenaga. 1998 *Ecological Risk Assessment of Chlorpyrifos in North American Aquatic Environments: Report of an Expert Panel.* Dow AgroSciences LLC Study ID: GH-C 4660.

Hall. L and R Anderson 2000 *A Site-specific probabilistic Ecological Risk Assessment for Diazinon in California's Newport Bay Watershed.* September.

Henderson, J. D. *et al.* 1995 Assessing Selenium Contamination in two San Joaquin Valley, CA, Sloughs, US Fish and Wildlife Service, Region 1, Division of Environmental Contaminants, Sacramento, CA.

Hibbs, BJ and MM Lee. 2000 Sources of Selenium in the San Diego Creek Watershed.

Kozelka, PB and KW Bruland 1998 Chemical Speciation of dissolved Cu, Zn, Cd and Pb in Narragansett Bay, Rhode Island. *Mar. Chem.* **60**: 267—282.

IRWD 1999 Irvine Ranch Water District Wetland Water Supply Project Monitoring Data Base 1997—99. Irvine Ranch Water District. Irvine, California.

Lee, GF and S Taylor 2001a *Results of Aquatic Toxicity Testing Conducted During 1999-2000 in the Upper Newport Bay Watersheds.* USEPA 319(h) project report. May.

Lee, GF and S Taylor 2001b *Results of Aquatic Life Toxicity Studies Conducted During 1997-1999 in the Upper Newport Bay Watershed and Review of Existing Water Quality Characteristics of Upper Newport Bay and its Watershed.* USEPA 205(j) project report.

Lemly, AD 1993 Guidelines for Evaluating Selenium Data from Aquatic Monitoring and Assessment Studies, *Environmental Monitoring and Assessment*, **28**, pp. 83-100.

Lemly, AD 1995 A Position Paper on Selenium in Ecotoxicology: A Procedure for Deriving Site-Specific Water Quality Criteria, *Ecotoxicology and Environmental Safety*, **39**, pp. 1-9.

Long, ER, LJ Field and DD MacDonald 1998 *Predicting Toxicity in Marine Sediments with Numerical Sediment Quality Guidelines*, *Environ. Toxicol. Chem.* **17**:4, pp. 714-727.

Long, ER, DD MacDonald, DD; SL Smith and FD Calder 1996 *Incidence of Adverse Biological Effects with Ranges of Chemical Concentrations in Marine and Estuarine Sediments. Environ. Mgmt.* **19**:1 pp. 81-97.

Luoma, S. *et al.* 1992 Determination of Selenium Bioavailability to a Benthic Bivalve from Particulate and Solute Pathways, *Environ. Sci. Technol.* **26**, pp. 485-491.

Luoma, SN and TS Presser. 2000 *Forecasting Selenium Discharges to the San Francisco Bay-Delta Estuary: Ecological Effects of a Proposed San Luis Drain Extension*, USGS report 00-416.

MacDonald, DD; RS Carr, FD Calder; ER Long and CG Ingersoll 1996 Development and evaluation of sediment quality guidelines for Florida coastal waters, *Ecotoxicology*, **5**: 253-278.

Maider, KJ *et al.* 1993 Comparative Toxicity of Selenate, Selenite, Seleno-DL-methionine, and Seleno-DL-cysteine to *Daphia Magna*: *Environ. Toxicol. Chem.* (**12**): 755-763.

Masters, P and D Inman 2000 Tranport and Fate of Organochlorines Discharged to the Salt Marsh at Upper Newport Bay, California, USA. *Environ. Toxicol. Chem.* **19**:8 2076-84.

Mosher BW and RA Duce 1989 The Atmosphere, in *Occurrence and Distribution of Selenium*, Ed. by Milan Ihnat, CRC Press, Inc. Florida, pp. 309.

Mosher BW and RA Duce 1983 Vapor Phase and Particulate Selenium in the Marine Atmosphere. *J. Geophys. Res.* **88**: 6761-6676.

Muller, FLL 1996 Interactions of copper, lead and cadmium with the dissolved, colloidal and particulate components of estuarine and coastal waters. *Mar. Chem* **52:** 245-68.

National Academy of Sciences 1973 *Water Quality Criteria (Blue Book).* EPA-R3-73-033. USEPA Ecological Research Series.

Neff, JM 1997 *Ecotoxicology of arsenic in the marine environment.* Environ. Tox. Chem., **17**(4): pp. 917-927.

New York Department of Environmental Conservation 1994 Niagra River biota contamination project - fish flesh criteria for piscivorous wildlife. NYDEC, Division of Fish and Wildlife, Bureau of Environemtnal Protection Technical Report 87-3, 182p.

Received
June 17, 2011
Commission on
State Mandates

New York Department of Environmental Conservation 1998 Technical guidance for screening contaminated sediments (for wildlife bioaccumulation). Albany, NY, Div. of Fish and Wildlife, Div. of Marine Resources. 36pp.

Novartis Crop Protection Inc. 1997 *An Ecological Risk Assessment of Diazinon in the Sacramento and San Joaquin River Basins. Technical Report 11-97.*

Nriagu, JO. 1989 Global Cycling of Selenium, in *Occurrence and Distribution of Selenium*, ed. M. Ihnat, CRC Press, Inc. Florida, pp. 327-340.

OCPFRD 2000 *Orange County NPDES Stormwater Program, Annual Progress Report.* Data from 1996 to June 2000. Orange County Public Facilities and Resources Department, Santa Ana, California.

OCPFRD 1999 Peters Canyon Wash/San Diego Creek Nutrient Study.

OEHHA 1999 *Prevalence of Selected Target Chemical Contaminants in Sport Fish from Two Californa Lakes*: Public Health Designed Screening Study. June 1999, RK Brodberg and GA Pollack, Pesticide and Environ. Toxic. Sctn, Office of Environmental Health Hazard Assessment, Calif. EPA, Sacramento, Calif.

Ogden Environmental and Energy Services. 2000 Final Sampling and Analysis Plan for Newport Harbor Sediment Characterization.

Orange County Coastkeeper 1999 Rhine Channel Sediment Metal Characterization. Report prepared by MBC Applied Environmental Services, Costa Mesa, Calif.

Presser TS 1994 Geologic Origin and Pathways of Selenium from the California Coast Ranges to the West-Central San Joaquin Valley, in *Selenium in the Environment*, Ed. by WT Frankenberger, Jr. and S. Benson, Marcel Dekker, Inc. New York, pp. 139-155.

Resource Management Associates (RMA) 2001 Newport Bay Water Quality Model Development—3-D Stratified Flow Analysis. prepared for California Regional Water Quality Control Board, Santa Ana Region, February.

RMA 1999 Upper Newport Bay Feasibility Report—Alternative Analysis. prepared for US Army Corps of Engineers.

RMA 1998 Upper Newport Bay Feasibility Report—Numerical model development and baseline conditional analysis. (for US Army Corps of Engineers).

RMA 1997 Upper Newport Bay Feasibility Report—Final model and GUI development and implementation report. (for US Army Corps of Engineers).

San Diego Regional Water Quality Control Board 2001 *Draft Dissolved Copper TMDL for Shelter Island Yacht Basin.* California Regional Water Quality Control Board, San Diego California.

Santa Ana Regional Water Quality Control Board (RWQCB) 2001a *Draft TMDL for OP Pesticides in San Diego Creek and Newport Bay.* Staff report, California Regional Water Quality Control Board, Santa Ana Region, Riverside, California.

Santa Ana RWQCB 2001b *Draft TMDL for Selenium in San Diego Creek and Newport Bay.* Staff report, California Regional Water Quality Control Board, Santa Ana Region, Riverside, California.

Santa Ana RWQCB 2000 *Final Problem Statement for the Total Maximum Daily Load for Toxic Substances in Newport Bay and San Diego Creek.* Staff report, California Regional Water Quality Control Board, Santa Ana Region, Riverside, California.

Santa Ana RWQCB 1998 *Water Quality Assessment and Clean Water Act Section 303(d) List.* California Regional Water Quality Control Board, Santa Ana Region, California Environmental Protection Agency, Riverside, California.

Santa Ana RWQCB 1995 *Water Quality Control Plan for the Santa Ana River Basin* California Regional Water Quality Control Board, Santa Ana Region, California Environmental Protection Agency, Riverside, California.

Scanlin, J and A Cooper 1997 *Outdoor Use Characterization of Diazinon and other Pesticides in Alameda County.* Prepared for the Alameda County Flood Control and Water Conservation District. September.

Scanlin, J and A Feng 1997 *Characterization of the Presence and Sources of Diazinon in the Castro Valley Creek Watershed.* Prepared for the Alameda Countywide Clean Water Program and the Alameda County Flood Control and Water Conservation District. June.

Schiff, K and L Tiefenthaler 2000 *Anthropogenic versus natural mass emission from an urban watershed.* SCCWRP Annual report. pp. 63-70.

Schoof, RA, LJ Yost, J Eickhoff, EA Crecilius, DW Cragin, DM Meacher, and DB Menzel 1999 A Market Basket Survey of Inorganic Arsenic in Food. *Food and Chem. Toxic.* **37**: 839—846.

Seiler, RL *et al.* 1999 Areas Susceptible to Irrigation-Induced Selenium Contamination of Water and Biota in the Western United States: US Geological Survey Circular 1180, pp. 36.

Smith, SL, DD MacDonald, KA Keenleyside, CG Ingersoll and LJ Field 1996 *A Preliminary Evaluation of Sediment Quality Assessment Values for Freshwater Ecosystems. J. Great Lakes Res.* **22**:3 pp. 624-638.

Skorupa, JP 1998 Selenium Poisoning of Fish and Wildlife in Nature: Lessons from Twelve Real-World Examples, in *Environmental Chemistry of Selenium*, WT Frankenberger Jr. and RA Engberg, editors, Marcel Dekker, Inc.

Received
June 17, 2011
Commission on
State Mandates

SMW 2000 *State Mussel Watch Program 1983-00 Data Base and 1995-97 Data Report.* State Water Resources Control Board, California Environmental Protection Agency, Sacramento, California

Southern California Coastal Water Research Project (SCCWRP) 2001a *Newport Bay Sediment Toxicity Study—Progress Report.* (for contract with Santa Ana RWQCB, dated Oct. 23, 2001.) Southern California Coastal Water Research Program.

SCCWRP 2001b *Newport Bay Fish Bioaccumulation Study—Progress Report.* (for contract with Santa Ana RWQCB, dated Oct. 4, 2001.) Southern California Coastal Water Research Program.

SCCWRP, unpublished data 1998 *Sediment Chemistry from Southern California Bight including offshore Harbors and estuaries.* Southern California Coastal Water Research Program.

Stoecker, DK, WG Sunda and LH Davis 1986 Effects of copper and zinc on two planktonic ciliates. *Mar. Biol.* **92**: 21-29.

Stolzenbach, KD; R Lu; C Xiong; S Friedlander; R Turco; K Schiff; and L Tiefenthaler 2001 *Measuring and Modeling of Atmospheric Deposition on Santa Monica Bay and the Santa Monica Bay Watershed.* Final Report to Santa Monica Restoration Project. 41pp.

Sunda, WG; PA Tester and SA Huntsman 1987 Effects of cupric and zinc ion activities on the survival and reproduction of marine copepods. *Mar. Biol.* **94**: 203-210.

TDC Environmental 2001 Diazinon and Chlorpyrifos Products: Screening for Water Quality Implications

Thomann, R and J Mueller 1987 *Principles of Surface Water Quality Modeling and Control.* Harper Collins Pub.

Tokunaga, TK *et al.* 1994 Field Investigations of Selenium Speciation, Transformation, and Transport in Soils from Kesterson Reservoir and Lahontan Valley, in *Selenium in the Environment*, WT Frankenberger and S Benson, editors, Marcel Dekker, Inc. Yew York, pp. 119-138.

TOXSCAN, Inc. 1995 Chemical Analysis and Toxicity Evaluation of Sediment Proposed for Dredging and Ocean Disposal: Unit I Sediment Basin and Access Channel.

Trimble, SW 1987 Field Research Report for San Diego Creek Channel Study, Summer 1987. Univ. of California at Los Angeles, Los Angeles, California

Tsai, P; E Hansen; K Lee; D Yee; D Tucker and R Hoenicke 2001 *Atmospheric Deposition of Trace Metals in the San Francisco Bay area.* abstract for WEFTEC conf. Atlanta, GA

TSMP 1987-99 *Toxic Substance Monitoring Program 1987-99 Data Base.* State Water Resources Control Board, California Environmental Protection Agency, Sacramento, California

US Army Corp of Engineers (ACOE) 2000 Upper Newport Bay Ecosystem Restoration Feasibility Study: Environment Impact Statement/Report. Final Report, September.

US Fish & Wildlife Service 2001 *Environmental Contaminant Encyclopedia.* www.nature.nps.gov/toxic/ National Park Service website. US Department of Interior report.

US Fish & Wildlife Service 2000 Biological Opinion on EPA's "Water Quality Standards: Establishment of Numeric Criteria for Priority Toxic Pollutants or the State of California".

US Fish & Wildlife Service 1998 *Guidelines for Interpretation of the Biological Effect of Selected Constituents in Biota, Water, and Sediment.* US Department of Interior report.

US Geological Survey 2000 *Stormflow Chemistry in the Santa Ana River below Prado Dam and at the Diversion Downstream from Imperial Highway, Southern California, 1995-98.*

USEPA 2001a *Update of Ambient Water Quality Criteria for Cadmium.* EPA-822-R-01-001. U.S. Environmental Protection Agency, Office of Water, Wash. DC. Notice of availability April 12, 2001

USEPA 2001b *Diazinon Revised Risk Assessment and Agreement with Registrants.*

USEPA 2000a *California Toxics Rule* [CTR], Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; Federal Register Rule—40CFR Part 131. U.S. Environmental Protection Agency, Washington, D.C.

USEPA 2000b *Chlorpyrifos Revised Risk Assessment and Agreement with Registrants.*

USEPA 2000c *Ambient Aquatic Life Water Quality Criteria: Diazinon (Draft).*

USEPA 2000d *Guidance for Assessing Chemical Contaminant Data for Use in Fish Consumption Advisories, Vol. 1: Fish Sampling and Analysis*, 3rd ed. EPA-823-B-00-007. U.S. Environmental Protection Agency, Office of Water, Wash. DC.

USEPA 2000e *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health.* EPA-822-B-00-004. U.S. Environmental Protection Agency, Office of Water, Wash. DC.

USEPA 1999a *Environmental Risk Assessment for Diazinon.*

USEPA 1999b *Pesticides Industry Sales and Usage. 1996 and 1997 Market Estimates.* EPA-733-R-99-001. U.S. Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances, Wash. DC.

USEPA 1993. *Guidance Specifying Management Measures For Sources of Nonpoint Pollution In Coastal Waters.* EPA 840-B-92-002. U.S. Environmental Protection Agency, Office of Water, Washington DC.

Received
June 17, 2011
Commission on
State Mandates

USEPA 1991 *Guidance for Water Quality-based Decisions: The TMDL Process.* EPA-440/4-91-001. Office of Water, Washington, DC.

USEPA 1991b *Technical Support Document for Water Quality-based Toxics Control.* EPA-505-2-9-001. Office of Waer, Washington, DC.

USEPA 1997 *National Toxics Rule* [NTR], Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; Federal Register Rule—40CFR Part 131. U.S. Environmental Protection Agency, Washington, D.C.

USEPA 1980 *Ambient Aquatic Life Water Quality Criteria: DDT.* EPA-440/5-80-038. Office of Water, Washington, DC.

USEPA Region 9 2002 Decision Document for Assessment of San Diego Creek and Newport Bay Water Quality

USEPA Region 9 2000 Guidance for Developing TMDLs in California. http://www.epa.gov/region09/water/tmdl/index.html

Waldner, L. 2001 pers. comm. Orange County Public Facilities Resource Division

Wang, WX *et al.* 1996 Kinetic Determinations of Trace Element Bioaccumulation in the Mussel *Mytilus edulis*: *Mar. Ecol. Prog. Ser.* **140**: 91-113.

Weis, P; JS Weis and LM Coohill 1991 Toxicity of estuarine organisms of leachates from chromated copper arsenate treated wood. *Arch. Environ. Contam. Toxicol.* **20**: 118-124.

White AF, Benson SM, Yee AW, Wollenberg HA and S Flexser 1991 Groundwater Contamination at the Kesterson Reservoir, California. 2. Geochemical Parameters Influencing Selenium Mobility *Wat. Resour. Res.* **27**(6): 1085-1098.

Wiemeyer, SN; DR Clark, JW Spann, and AA Belisle 2001 Dicofol Residues in Eggs and Carcasses of Captive American Kestrels. *Environ. Toxicol. Chem.* **20**(12): 2848-2851.

Wilber, CG. 1980 Toxicology of Selenium: A Review, *Clin. Toxicol.* **17**: 171.

Wilen, C. 2001 *Residential Pesticide Use and Attitude Survey, San Diego Creek Watershed of Orange County, California.* Report for California Department of Pesticide Regulation. University of California Statewide Integrated Pest Management Program.

Wisconsin Department of Natural Resources 1997 Polychlorinated Biphenyl (PCB) Contaminated Sediment in the Low Fox River. PUBL-WT-482-97.

Yilmazer, M and S Shawky, RN Sanga, RM Lorenzana 2001 Concurrent Exposure Evaluations Arsenic MCL Options and Arsenic in seafood. Toxicol. Sci. **60**(1): p90.

Received
June 17, 2011
Commission on
State Mandates

XI. Glossary and abbreviations

205(j)	Section 205, part j of Clean Water Act, addresses water monitoring grants
319(h)	Section 319, part h of Clean Water Act, addresses non-point source pollution
ACOE	Army Corps of Engineers
ai	active ingredient
ambient	existing environmental conditions (or concentrations)
BAF	Bioaccumulation factor
BCF	Bioconcentration factor
BSAF	Biota-sediment accumulation factor
bgs	Below ground surface, relates to monitoring wells
Bight '98	Southern California Bight (coastal waters) study
BMP	best management practice
BPTCP	Bay Protection and Toxic Cleanup Program
CCC	criterion continuous concentration = chronic
CDFG	(California) Department of Fish and Game
cfs	Cubic feet per second, pertains to stream flow rates
CFCS	California Fish Contamination Study (OEHHA)
CMC	criterion maximum concentration = acute
CTR	California Toxics Rule
cv	coefficient of variation
CWA	Clean Water Act
DO	dissolved oxygen
DPR	(California) Department of Pesticide Regulation
DTSC	(California) Dept. of Toxic Substances Control
ELISA	Enzyme Linked Immunosorbant Assay
EPA	U.S. Environmental Protection Agency
ERL	Effects Range-Low, sediment quality guideline for low impact
ERM	Effects Range-Median, NOAA sediment quality guideline for median negative impact
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
f_{lip}	Fraction (of organic compound associated) with lipid
f_{oc}	Fraction (of organic compound associated) with octanol
GC	Gas chromatograph
GC/MS	Gas chromatography/mass spectrometry
HPLC/MS	high performance liquid chromatography/mass spectrometry
IPM	Integrated Pest Management, part of UC-Cooperative Extension
IRWD	Irvine Ranch Water District
LA	Load allocation for non-point sources (including background)
MLLW	mean low low water
MOS	Margin of safety
NAWQA	National Water Quality Assessment Program
ng/L	Nanograms per liter (= parts per trillion)
NOAA	National Oceanic Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NY DEC	New York Dept. of Environmental Conservation
OC	Organochlorine compound; e.g., chlordane, dieldrin, DDT, PCB, toxaphene
OCHCA	Orange County Health Care Agency
OCPFRD	Orange County Public Facilities and Resources Department

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OEHHA	Office of Environmental Health Hazard Assessment
OP	Organophosphate, type of pesticide
OPP	Office of Pesticide Programs
PCB	polychlorinated biphenyl
PCH	Pacific Coast Highway
PCW	Peters Canyon Wash, a tributary of San Diego Creek
PEL	Probable Effects Level, sediment quality guideline for Florida Dept. of Env. Protection
PERA	probabilistic ecological risk assessment
POTW	Publicly owned treatment works
ppb	Part per billion = ug/L (for solution concentration) or ng/g (for dry soil conc.)
ppm	Part per million = mg/L (for solution concentration) or ug/g (for dry soil conc.)
PPT	parts per thousand (salinity)
Porewater	(interstitial) water contained in sediments
RIFA	Red Imported Fire Ant
RMA	Resource Management Associates, developed hydrologic models for US Army Corp of Eng.
SA RWQCB	Santa Ana Regional Water Quality Control Board
SD RWQCB	Santa Diego Regional Water Quality Control Board
SAD	Santa Ana-Delhi Channel
SCCWRP	Southern California Coastal Water Research Program
SDC	San Diego Creek
se	standard error [as used in table column headings]
SMW	State Mussel Watch
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
TEL	Threshold Effects Level, sediment quality guideline (for Florida Dept. of Env. Protection)
TIE	toxicity investigation evaluation = study to identify and characterize chemicals causing toxicity
TMDL	total maximum daily load
TOC	total organic carbon
TSMP	Toxic Substances Monitoring Program (State Water Board)
TUa	acute toxic units
UCD	University of California, Davis
ug/L	micrograms per liter (= parts per billion)
US FWS	United States Fish & Wildlife Service
USGS	United States Geological Survey
WDR	Waste discharge report,
WLA	Wasteload allocation for point sources (including general stormwater permit)
WYL	San Diego Creek at Culver sampling site
xe	mean error [as used in table column headings]

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Appendix A

Designated beneficial uses for Newport Bay and San Diego Creek watershed.

Water Body	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	COLD	BIOL	WILD	RARE	SPWN	MAR	SHEL	EST
Lower NB	+					x		x	x	x				x	x	x	x	x	
Upper NB	+							x	x	x			x	x	x	x	x	x	x
San Diego Creek Reach 1	+							x	x		x			x					
San Diego Creek Reach 2	+							I	I		I			I					
Tributaries of San Diego Creek	+							I	I		I			I					

x present or potential beneficial use
I intermittent beneficial use
\+ excepted from MUN

MUN = municipal and domestic supply
AGR = agricultural supply
IND = industrial service supply
PROC = industrial process supply
GWR = groundwater recharge
NAV = navigation
POW = hydropower generation
REC1 = water contact recreation
REC2 = non-contact water recreation
COMM = commercial and sport fishing
WARM = warm freshwater habitat
COLD = cold freshwater habitat
BIOL = preservation of biological habitats
WILD = wildlife habitat
RARE = rare, threatened, or endangered species
SPWN = spawning, reproduction, and/or early development
MAR = marine habitat
SHEL = shellfish harvesting
EST = estuarine habitat

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Appendix B

Arsenic Fish Tissue Monitoring data

	SPECIES NAME	**Date**		**Total Arsenic**		**Inorganic Arsenic**
	Screening Value (mg/kg wet)		OEHHA =	**1.0**	EPA =	**1.2**
			#/samp.		(4% Tot. As)	(10% Tot. As)
OEHHA data ' 00						
Newport Beach	Barred Surfperch	6/00/2000	10	0.601	**0.024**	**0.060**
Newport Beach	Shiner Surfperch	06/00/2000	10	1.130	**0.045**	**0.113**
Newport Beach	White Croaker	06/00/2000	5	0.778	**0.031**	**0.078**
Newport Beach Pier	Barred Surfperch	06/00/2000	10	0.577	**0.023**	**0.058**
Newport Beach Pier	White Croaker	06/00/2000	5	0.668	**0.027**	**0.067**
Balboa Pier	Barred Surfperch	06/00/2000	3	0.911	**0.036**	**0.091**
Balboa Pier	Diamond Turbot	06/00/2000	4	3.094	**0.124**	**0.309**
Newport Jetty	Black Surfperch	06/00/2000	5	0.774	**0.031**	**0.077**
Newport Jetty	Shiner Surfperch	06/00/2000	10	0.906	**0.036**	**0.091**
Newport Jetty	Spotted Turbot	06/00/2000	5	3.673	**0.147**	**0.367**
Newport Bay/above PCH Br	Shiner Surfperch	06/00/2000	10	0.969	**0.039**	**0.097**
Newport Bay/above PCH Br	Spotted Turbot	06/00/2000	5	1.775	**0.071**	**0.177**
Newport Bay/above PCH Br	Yellowfin Croaker	06/00/2000	4	0.585	**0.023**	**0.059**
Newport Beach	Barred Surfperch	8/4/99	5	0.811	**0.032**	**0.081**
Newport Beach	California Corbina	8/4/99	5	0.449	**0.018**	**0.045**
Newport Beach	Walleye Surfperch	6/22/99	3	0.618	**0.025**	**0.062**
Newport Pier	Barred Surfperch	8/4/99	5	1.06	**0.042**	**0.106**
Newport Pier	California Corbina	8/4/99	5	0.411	**0.016**	**0.041**
Newport Pier	Spotted Turbot	6/16/99	3	2.69	**0.108**	**0.269**
Newport Pier	Yellowfin Croaker	8/4/99	3	0.529	**0.021**	**0.053**
Balboa Pier	Diamond Turbot	6/15/99	5	4	**0.160**	**0.400**
Balboa Pier	Walleye Surfperch	6/9/99	5	0.587	**0.023**	**0.059**
Newport Jetty	Spotted Scorpionfish	5/19/99	5	0.202	**0.008**	**0.020**
Newport Jetty	Spotted Turbot	5/19/99	5	3.12	**0.125**	**0.312**
Newport Bay	Diamond Turbot	5/19/99	5	1.88	**0.075**	**0.188**
Newport Bay	Shiner Surfperch	5/27/99	5	0.672	**0.027**	**0.067**
SCCWRP		**Winter '01**				
barred sand bass	Outer Lower	1	1	0.65	**0.026**	**0.065**
black perch	Outer Upper	1	2	0.53	**0.021**	**0.053**
black perch	Outer Lower	1	3	0.96	**0.038**	**0.096**
black perch	Outer Lower	2	4	0.86	**0.034**	**0.086**
black perch	Outer Lower	3	5	0.69	**0.028**	**0.069**
California halibut	Outer Upper	1	6	0.58	**0.023**	**0.058**
California halibut	Outer Upper	2	7	0.85	**0.034**	**0.085**
California halibut	Outer Upper	3	8	0.47	**0.019**	**0.047**
California halibut	Outer Lower	1	9	0.91	**0.036**	**0.091**
California halibut	Outer Lower	2	10	0.41	**0.016**	**0.041**
C-O sole	Outer Lower	1	11	5.74	**0.230**	**0.574**

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C-O sole	Outer Lower	2		12	5.01	**0.200**	**0.501**
diamond turbot	Outer Upper	1		13	1.82	**0.073**	**0.182**
diamond turbot	Outer Upper	2		14	3.89	**0.156**	**0.389**
diamond turbot	Outer Upper	3		15	2.85	**0.114**	**0.285**
diamond turbot	Outer Lower	1		16	4.20	**0.168**	**0.420**
diamond turbot	Outer Lower	2		17	3.45	**0.138**	**0.345**
fantail sole	Outer Lower	1		18	0.97	**0.039**	**0.097**
shiner perch	Outer Upper	1		19	0.67	**0.027**	**0.067**
spotted sand bass	Outer Upper	1		20	0.47	**0.019**	**0.047**
spotted sand bass	Outer Lower	1		21	0.63	**0.025**	**0.063**
spotted turbot	Outer Upper	1		22	3.92	**0.157**	**0.392**
spotted turbot	Outer Lower	1		23	7.28	**0.291**	**0.728**
spotted turbot	Outer Lower	2		24	8.57	**0.343**	**0.857**
spotted turbot	Outer Lower	3		25	5.53	**0.221**	**0.553**
SUMMER 2001							
barred sand bass	Outer Lower	1	13		0.44	**0.018**	**0.044**
black perch	Outer Lower	1	10		0.50	**0.020**	**0.050**
black perch	Outer Lower	2	11		0.40	**0.016**	**0.040**
black perch	Outer Lower	3	12		0.58	**0.023**	**0.058**
California corbina	Outer Lower	1	17		1.24	**0.050**	**0.124**
California corbina	Outer Lower	2	18		1.15	**0.046**	**0.115**
California corbina	Outer Lower	3	19		1.57	**0.063**	**0.157**
California halibut	Outer Lower	1	25		0.52	**0.021**	**0.052**
diamond turbot	Outer Upper	1	20		2.52	**0.101**	**0.252**
diamond turbot	Outer Upper	2	21		2.89	**0.116**	**0.289**
diamond turbot	Outer Lower	1	22		2.12	**0.085**	**0.212**
jacksmelt	Outer Upper	1	1		0.51	**0.020**	**0.051**
jacksmelt	Outer Upper	2	2		0.53	**0.021**	**0.053**
jacksmelt	Outer Upper	3	3		0.58	**0.023**	**0.058**
kelp bass	Outer Lower	1	4		0.49	**0.020**	**0.049**
spotfin croaker	Outer Lower	1	23		0.68	**0.027**	**0.068**
spotfin croaker	Outer Lower	2	24		0.93	**0.037**	**0.093**
spotted sand bass	Outer Lower	1	14		0.22	**0.009**	**0.022**
spotted sand bass	Outer Lower	2	15		0.24	**0.010**	**0.024**
spotted sand bass	Outer Lower	3	16		0.25	**0.010**	**0.025**
yellowfin croaker	Outer Lower	1	5		0.36	**0.014**	**0.036**
yellowfin croaker	Outer Lower	2	6		0.34	**0.014**	**0.034**
yellowfin croaker	Outer Lower	3	7		0.47	**0.019**	**0.047**
yellowfin croaker	Inner Lower	1	8		0.49	**0.020**	**0.049**
yellowfin croaker	Inner Lower	2	9		0.27	**0.011**	**0.027**
TSMP data '95--'98							
Upper NB/Dunes	Brown Sm. Shark (F)	6/10/98	1		8.620	**0.345**	**0.862**
Upper NB/Dunes	Diamond Turbot (F)	6/20/97			1.480	**0.059**	**0.148**
NB/Rhine Channel	Chub Mackerel (F)	7/11/97			0.427	**0.017**	**0.043**
NB/Rhine Channel	Black Croaker (F)	6/18/95			1.200	**0.048**	**0.120**

(Data is for Individual Filet Samples)

saltwater finfish results

count	80		
max	8.62	**0.34**	**0.86**
mean	1.59	**0.06**	**0.08**
median	0.78	**0.03**	**0.08**

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				Tot. As	Inorg. As
State Mussel Watch	mussels				
Upper Newport Bay					(60% of As Total)
UNB/Mariner's Drive	TCM	1/27/97		1.10	**0.018**
UNB/Mariner's Drive	TCM	3/24/98		1.70	**0.028**
UNB/Mariner's Drive	TCM	NA			
UNB/Mariner's Drive	TCM	2/2/00		0.90	**0.015**
UNB/ PCH Bridge	TCM	1/30/95	NA		
UNB/ PCH Bridge	TCM	1/17/96		1.40	**0.023**
UNB/ PCH Bridge		NA	NA		
UNB/ PCH Bridge	TCM	3/24/98		1.40	**0.023**
UNB/ PCH Bridge	TCM	3/29/99		1.40	**0.023**
UNB/ PCH Bridge	TCM	2/2/00		1.00	**0.017**
Lower Newport Bay					
LNB/Turning Basin	TCM	1/30/95	NA		
LNB/Turning Basin	TCM	1/17/96		1.20	**0.020**
LNB/Turning Basin		na	NA		
LNB/Turning Basin	RBM	3/24/98		0.80	**0.013**
LNB/Turning Basin	TCM	3/29/99		1.30	**0.022**
LNB/Turning Basin	TCM	2/2/00		1.00	**0.017**
LNB/Police Docks	RBM	3/24/98		1.10	**0.018**
LNB/Entrance	TCM	3/29/99		2.50	**0.042**
Rhine Channel					
Rhine Ch./Crows Nest	TCM	1/30/95	NA		
Rhine Ch./Crows Nest	TCM	1/17/96		1.20	**0.020**
Rhine Ch./Crows Nest	TCM	1/27/97		1.20	**0.020**
Rhine Ch./Crows Nest	TCM	3/24/98		1.60	**0.027**
Rhine Ch./Crows Nest	TCM	3/29/99		1.50	**0.025**
Rhine Ch./Crows Nest	TCM	2/2/00		1.10	**0.018**
Rhine Ch./End	TCM	1/30/95	NA		
Rhine Ch./End	TCM	1/17/96		1.30	**0.022**
Rhine Ch./End	TCM	1/27/97		1.30	**0.022**
Rhine Ch./End	TCM	3/24/98		1.40	**0.023**
Rhine Ch./End	TCM	3/29/99		1.30	**0.022**
Rhine Ch./End	TCM	2/2/00		0.90	**0.015**
Rhine Ch./Upper	TCM	2/2/00		1.00	**0.017**

(Data is for Composite Mussel Samples)

Saltwater shellfish results

count	24	
max	2.50	**0.04**
mean	1.28	**0.02**
median	1.25	**0.02**

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			Tot. As	Inorg. As	
TSMP data '96--'98				**4%**	**10%**
San Diego Creek					
San Diego Creek/Michelson	Red Shiner	6/9/98	0.344	**0.014**	**0.034**
Peters Canyon Channel	Red Shiner	6/9/98	0.116	**0.005**	**0.012**
San Diego Creek/Barranca	Red Shiner	6/9/98	0.200	**0.008**	**0.020**
Delhi Channel	Striped Mullet	6/9/98	0.882	**0.035**	**0.088**
San Diego Creek/Michelson	Red Shiner	6/19/97	0.134	**0.005**	**0.013**
Peters Canyon Channel	Red Shiner	6/19/97	0.057	**0.002**	**0.006**
Peters Canyon Channel	Red Shiner	6/19/97	0.063	**0.003**	**0.006**
San Diego Creek/Barranca	Red Shiner	6/19/97	0.148	**0.006**	**0.015**
Delhi Channel	Red Shiner	6/18/97	0.085	**0.003**	**0.009**
San Diego Creek/Michelson	Red Shiner	11/6/96	0.06	**0.002**	**0.006**
San Diego Creek/Michelson	Red Shiner	11/6/96	0.07	**0.003**	**0.007**
Peters Canyon Channel	Red Shiner	11/6/96	0.15	**0.006**	**0.015**
San Diego Creek/Michelson	Red Shiner	6/17/95	0.150	**0.006**	**0.015**
San Diego Creek/Michelson	Red Shiner	6/17/95	0.170	**0.007**	**0.017**
Peters Canyon Channel	Red Shiner	6/17/95	0.090	**0.004**	**0.009**

Freshwater finfish results

count	15		
max	0.88	**0.04**	**0.09**
mean	0.18	**0.01**	**0.02**
median	0.13	**0.01**	**0.01**

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EXHIBIT 25

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EXEMPT FROM FILING FEES GOVERNMENT CODE § 6103

SUPERIOR COURT OF THE STATE OF CALIFORNIA

COUNTY OF LOS ANGELES - CENTRAL CIVIL WEST COURTHOUSE

COUNTY OF LOS ANGELES and LOS ANGELES COUNTY FLOOD CONTROL DISTRICT,

Petitioners,

vs.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD FOR THE LOS ANGELES REGION; STATE WATER RESOURCES CONTROL BOARD; and DOES 1 through 50, inclusive,

Respondents.

THE CITIES OF AGOURA HILLS, ALHAMBRA, ARCADIA, ARTESIA, AZUSA, BALDWIN PARK, BELL, BELL GARDENS, BELLFLOWER, BEVERLY HILLS, BRADBURY, BURBANK, CALABASAS, CARSON, CERRITOS, CLAREMONT, COMMERCE, COMPTON, COVINA, CUDAHY,CULVER CITY, DIAMOND BAR, DOWNEY, DUARTE, EL MONTE, EL SEGUNDO, GARDENA, GLENDALE, GLENDORA, HAWAIIAN GARDENS, HAWTHORNE, HERMOSA BEACH, HIDDEN HILLS, HUNTINGTON PARK, INDUSTRY, INGLEWOOD, IRWINDALE, LA HABRA HEIGHTS, LA MIRADA, LA PUENTE, LA VERNE, LAKEWOOD, LAWNDALE, LOMITA, LONG BEACH, LOS ANGELES, LYNWOOD, MALIBU, MANHATTAN BEACH, MAYWOOD, MONROVIA, MONTEBELLO, MONTEREY PARK, NORWALK, PALOS VERDES ESTATES,

Case No. **BS 080758**
Related Cases: BS 080548, BS 080573, BS 080791, BS 080792, BS 080807

Judge: Victoria Gerrard Chaney
Department 324

RESPONDENTS' NOTICE OF HEARING ON DEMURRER; DEMURRER TO COUNTY, ET AL.'s PETITION FOR WRIT OF MANDATE; MEMORANDUM OF POINTS AND AUTHORITIES IN SUPPORT THEREOF

Date:	October 1, 2003
Time:	1:30 p.m.
Department:	324-Central Civil West

Trial Date:	March 16, 2004
Motion Cut-off:	February 15, 2004
Discovery Cut-off:	February 15, 2004

Action filed:	January 17, 2003

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PARAMOUNT, PASADENA, PICO RIVERA, POMONA, RANCHO PALOS VERDES, ROLLING HILLS ESTATES, ROSEMEAD, SAN GABRIEL, SAN DIMAS, SAN FERNANDO, SAN MARINO, SANTA CLARITA, SANTA FE SPRINGS, SANTA MONICA, SIERRA MADRE, SIGNAL HILL, SOUTH EL MONTE, SOUTH GATE, SOUTH PASADENA, TEMPLE CITY, TORRANCE, VERNON, WALNUT, WEST COVINA, WEST HOLLYWOOD, WESTLAKE VILLAGE and WHITTIER,

Real Parties in Interest.

TO ALL PARTIES AND THEIR ATTORNEYS OF RECORD:

PLEASE NOTICE THAT on October 1, 2003, at 1:30 p.m., or as soon thereafter as the matter may be heard in Department 324 of the above entitled Court, located at 600 South Commonwealth Avenue, Los Angeles, California, 90005, Respondents California Regional Water Quality Control Board ("Regional Board") and State Water Resources Control Board ("State Board") (collectively, "Respondents") move the court for an order sustaining its Demurrer to Petition for Writ of Mandate ("Petition") filed by Petitioners County of Los Angeles and the Los Angeles County Flood Control District ("Petitioners"), without leave to amend, and to enter an order of dismissal in their favor on the grounds that Petitioners fail to set forth facts sufficient to constitute a cause of action against Respondents and the Court has no jurisdiction of the subject of the cause of action alleged in the Petition and the Court has no jurisdiction over the subject of the causes of action as alleged against Defendant/Respondent State Water Resources Control Board. (Code of Civ. Proc., § 430.10, subds. (a) and (e).)

This Demurrer is made pursuant to Code of Civil Procedure sections 430.10, 430.30, and will be based upon this Notice, the attached Demurrer and Memorandum of Points and Authorities, those matters of which the Court may take judicial notice pursuant to Evidence Code section 452, subdivision (c), and on all the papers, pleadings, and records on file in this action, and such further oral or documentary evidence and/or argument as may be presented at or before the time of the hearing.

Dated: September 3, 2003

BILL LOCKYER, Attorney General
of the State of California
HELEN G. ARENS
JENNIFER F. NOVAK
Deputy Attorneys General

By: [Original Signature on File with the Court]
HELEN G. ARENS
Attorneys for Respondents/Defendants California State Water Resources Control Board; Regional Water Quality Control Board, Los Angeles Region

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DEMURRER TO PETITION

Respondents California State Water Resources Control Board ("State Board") and Regional Water Quality Control Board, Los Angeles Region ("Regional Board") (collectively, "Respondents"), jointly and severally demur to the "Petition for Writ of Mandate" of Petitioners County of Los Angeles and the Los Angeles County Flood Control District ("Petitioners"), and the whole thereof, and move the Court for an order sustaining the Demurrer to Petitioners' Petition without leave to amend, and to enter an order of dismissal of the Petition upon the following separate and distinct grounds:

1. Respondents demur to the entire Petition as to the State Board because Petitioners cannot state a cause of action against this Respondent/Defendant pursuant to *People ex rel Cal. Regional Wat. Quality Control Bd. v. Barry* (1997) 194 Cal.App.3d 158, 171-172, as the State Board has not issued a reviewable decision and this Court has no jurisdiction over the State Board. (Code Civ. Proc., § 430.10, subds. (a) and (e).)
2. Respondents demur to the Second Cause of Action alleging unfunded mandates in violation of Article XIIIB, Section 6, of the California Constitution on the grounds that it fails to state a cause of action and this Court has no jurisdiction over the claim because Petitioner has failed to properly exhaust its statutorily prescribed administrative remedies as set forth in Government Code section 17500 *et seq*. (Code Civ. Proc., § 430.10, subds. (a) and (e).)
3. Respondents demur to the Third Cause of Action alleging unfunded mandates in violation of Article XIIIB, Section 6, of the California Constitution on the grounds that it fails to state a cause of action and this Court has no jurisdiction over the claim because Petitioner has failed to properly exhaust its statutorily prescribed administrative remedies as set forth in Government Code section 17500 *et seq*. (Code Civ. Proc., § 430.10, subds. (a) and (e).)
4. Respondents demur to the Sixth Cause of Action seeking declaratory relief on the

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grounds that it fails to state a cause of action because there is no actual controversy between the parties, as required by Code of Civil Procedure section1060, and because declaratory relief is not appropriate to review an administrative decision pursuant to *Californians for Native Salmon, etc. Assn v. Department of Forestry* (1990) 221 Cal.App.3d 1419, 1429. (Code Civ. Proc., § 430.10, subd. (e).)

WHEREFORE, these demurring Respondents pray as follows:

1. That the demurrers be sustained without leave to amend;
2. That the demurring Respondents receive their costs of suit incurred herein;
3. For such other and further relief as the Court deems just and proper.

Dated: September 3, 2003

Respectfully submitted,

BILL LOCKYER, Attorney General
of the State of California
HELEN G. ARENS
JENNIFER F. NOVAK
Deputy Attorneys General

By: _[Original Signature on File with the Court]________
HELEN G. ARENS
Attorneys for Respondents/Defendants California State Water Resources Control Board; Regional Water Quality Control Board, Los Angeles Region

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MEMORANDUM OF POINTS AND AUTHORITIES

I. INTRODUCTION.

This litigation is a challenge to a permit issued by Respondent California Regional Water Quality Control Board, Los Angeles, ("Regional Board") which regulates the municipal separate storm sewer systems ("MS4s") for the County of Los Angeles (the "Permit"). The Permit establishes requirements for the discharge of wastewater from municipal storm drain systems, in an effort to limit pollutants from entering downstream rivers, creeks, waters and the Pacific Ocean. Without these limits, trash, bacteria, heavy metals, viruses and other pollutants would otherwise be carried into these waters by urban stormwater runoff. To prevent this, the Permit directs Petitioners and all cities within the County of Los Angeles, except the City of Long Beach, to take certain actions to comply with the Permit's requirements.

Petitioners, the County of Los Angeles (the "County") and the Los Angeles County Flood Control District (the "District"), along with over 80 cities within their jurisdiction, operate sewer systems under a permit issued under authority of the federal Clean Water Act (33 U.S.C. §1251 et seq.) and California's corresponding Porter-Cologne Act. (Wat. Code, § 13000 et seq.) When Petitioners' permit expired in 2001, it reapplied to the Regional Board for another permit. After a lengthy hearing and review process, the Regional Board revised the then-existing permit in December 2001, strengthening waste discharge requirements for municipal storm water and urban runoff discharges in Los Angeles County. This revised permit was Order Number CAS004001 ("Permit"). The County, District, and the incorporated cities within them except the City of Long Beach, are co-permittees under the Permit. (Petition, p. 9, ¶ 22.)

Dissatisfied with the Regional Board's attempt to limit pollution from storm water run-off, the County and many of these cities petitioned for administrative review by Respondent State Board under Water Code section 13320. In all, there were seven petitions for review, although not all interested parties participated in the administrative review process. Ultimately, the State Board dismissed the petitions for review on December 18, 2002 without issuing a decision or order. (Petition, p. 9, ¶ 23.) This Petition for Writ of Mandate followed.

With this challenge, Petitioners balk at the Regional Board's attempt to reach federal

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water quality standards through its Permit, now in its third-generation. The Petition for Writ of Mandate ("Petition") is a confusing pleading. It fails to give title or name to its six causes of action, simply calling them "First Cause of Action," "Second Cause of Action," etc. One is forced to decipher from the allegations what sort of cause of action it is. As discussed in the accompanying Motion to Strike, all six improperly six seek a stay/injunctive relief, which is not available here, and all improperly name the State Water Resources Control Board ("State Board").

Although none of the causes of action have merit, this demurrer addresses only the Second and Third (unfunded mandate) Causes of Action and Sixth (declaratory relief) Cause of Action for failure to state a cause of action, and the entire Petition as to the State Board being improperly named as a party.

II. THE PETITION IS SUBJECT TO DEMURRER.

A demurrer is appropriate to eliminate issues when the complaint does not state facts sufficient to constitute a cause of action against a party. (Code of Civ. Proc., § 430.10, subd. (e).) The Court is authorized to consider, as ground for demurrer, defects appearing on the face of the pleading or any matter which the court must or may judicially notice under Evid. Code §§ 451 or 452. (Code of Civ. Proc., § 430.30, subd. (a); see also, *Frommhagen v. Board of Supervisors of Santa Cruz County* (1987) 197 Cal.App.3d 1292, 1299 [court took judicial notice of complaint in prior action in determining whether to sustain demurrer based on res judicata].) In considering this Demurrer, this Court may accept all properly pleaded material facts in the Petition, but not the Petition's contentions, deductions or conclusions of fact or law. (See, *Serrano v. Priest* (1971) 5 Cal.3d 584, 591.) When the complaint lacks sufficiency, the court must decide whether there is a reasonable possibility that the plaintiff may cure the defect by amendment. The **plaintiff** bears the burden of proving such reasonable possibility. Where the plaintiff fails to meet this burden, the court may properly sustain a demurrer without leave to amend. (*Blank v. Kirwan* (1985) 39 Cal.3d 311, 318.)

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III. PETITIONERS CANNOT STATE A CLAIM UNDER ARTICLE XIII B, SECTION 6 OF THE CALIFORNIA CONSTITUTION.

A. The Permit Does Not Represent An Unfunded State Mandate Under Government Code Sections 17514 and 17516.

In 1978 and 1979, Articles XIII A and B were added to the California Constitution, to restrict California governments' power to levy and spend taxes for public purposes. (*County of Fresno v. State of California* (1991) 53 Cal.3d 482, 486.) The goal was to protect citizens from excessive taxation and government spending. (*County of Los Angeles v. State of California* (1987) 43 Cal.3d 46, 61.)

Petitioners puts section 6 of Article XIII B in issue here, contending in their Second and Third Causes of Action that the Permit violates the California Constitution by imposing unfunded mandates upon local government. (Petition, at pp. 13:8-13 and 14:16-21.) Article XIII B, section 6 states, with some inapplicable exceptions: "Whenever the Legislature or any state agency mandates a new program or higher level or service on any local government, the state shall provide a subvention of funds to reimburse such local government for the costs of such program or increased level of service." This section is implemented by California Government Code sections 17500 through 17630. (*County of Fresno*, *supra*, 53 Cal.3d at p. 484.)

The "costs mandated by the state" provision means any increased costs imposed through either a **statute** or an **executive order** which mandates a new program or increased level of services of an existing program. (Gov. Code, § 17514; *Long Beach Unified Sch. Dist.* v. *State of California* (1990) 225 Cal.App.3d 155, 174.) In *Long Beach Unified Sch. Dist., supra,* 225 Cal.App.3d 155, the court came to that conclusion by analyzing the voters' intent in adopting section 6. (225 Cal.App.3d at p. 174.) It noted that section 6 applies when the Legislature or a state agency "mandates" a new program or higher level of service. (*Ibid.*) Referencing the ballot summary presented to voters, the court found that the purpose of the amendment was to require the state to "reimburse local governments for the costs of complying with 'states mandates.'" (*Id.* at p. 175.) "The term 'state mandates' was defined as 'requirements imposed on local governments by legislation *or executive orders*.' [Citation.]" (*Ibid.* [emphasis in original].) The California Supreme Court has noted this same interpretation of the ballot materials.

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(*Department of Finance v. Commission on State Mandates* (2003) 30 Cal.4th 727, 736.)

In 1984, as part of a legislative "overhaul" of Article XIII B, section 6 (see reference in *Department of Finance, supra,* 30 Cal.4th at p. 741), the Legislature added Government Code section 17516 to its statutes on state-mandated local costs, which states:

> "Executive order" **does not include** any order, plan, requirement, rule or regulation issued by the State Water Resources Control Board or by any regional water quality control board pursuant to Division 7 (commencing with Section 13000) of the Water Code.

(Gov. Code, § 17516, subd. (c) [emphasis added].)

The Permit is neither a statute nor an executive order as defined by law. It does not represent an unfunded mandate by the state. Therefore, the demurrer to the Second and Third Causes of Action should be sustained without leave to amend.

B. Even If The Regional Board's Permit Qualified As An Unfunded State Mandate, Petitioners Cannot Advance This Theory Because It Failed to Exhaust Administrative Remedies.

In order to make a claim under Article XIII B, section 6 of the California Constitution, a complaining local agency must show that it has exhausted its administrative remedies under California Government Code section 17500, *et. seq*. (*County of Contra Costa* v. *State of California* (1986) 177 Cal.App.3d 62, 73-74.) This requires that:

> The local agency must file a test claim with the Commission [on State Mandates], which, after a public hearing, decides whether the statute mandates a new program or increased level of service. If the Commission finds a claim to be reimbursable, it must determine the amount of reimbursement. The local agency must then follow certain statutory procedures to obtain reimbursement. . . . If the Commission finds no reimbursable mandate, the local agency may challenge this finding by administrative mandate proceedings under section 1094.5 of the Code of Civil Procedure.

(*County of San Diego* v. *State of California* (1997) 15 Cal.4th 68, 81-82.)

Government Code section 17552 states "[t]his chapter shall provide the sole and exclusive procedure by which a local agency . . . may claim reimbursement for costs mandated by the state." (Gov. Code, § 17552.) Thus, Petitioners cannot seek a judicial declaration that the Permit constitutes an unfunded mandate until it files an administrative claim with the Commission on State Mandates and have had the claim denied. The Petition states no facts that Petitioners complied with these requirements. Until it does so, this matter is not ripe for judicial

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review.

A party's failure to exhaust administrative remedies **precludes** any judicial attack on the challenged conduct. (*Metcalf* v. *County of Los Angeles* (1994) 24 Cal.2d 267, 269; *Tahoe Vista Concerned Citizens* v. *County of Placer* (2000) 81 Cal.App.4th 577, 589.) Failure to exhaust an administrative remedy is a **jurisdictional defect**, not a matter of judicial discretion. (*Tahoe Vista, supra,* at p. 589; *Pan Pacific Properties, Inc.* v. *County of Santa Cruz* (1978) 81 Cal.App.3d 244, 251.) Not only must the party participate in the administrative review process, but it must raise all claims for which it now seeks judicial review. Litigants may not "narrow, obscure or even omit their arguments before the final administrative authority because they could possibly obtain a more favorable decision from a trial court. Such a result would turn the exhaustion doctrine on its head." (*Tahoe Vista, supra,* at p. 594.) It is clear, therefore, that Petitioner must have sought administrative review and is limited to raising those arguments which it made before the final administrative body.

Here, Petitioners have alleged no facts to support a finding that its administrative remedies have been exhausted. This Court has no jurisdiction over this issue until Petitioners file a test claim with the Commission on State Mandates and have had that claim denied. Thus, even if the Permit represented an unfunded mandate, the matter is currently unripe.

IV. THE ENTIRE PETITION FAILS TO STATE A CAUSE OF ACTION AS TO THE STATE BOARD, WHICH DID NOT ISSUE A REVIEWABLE DECISION AND IS THEREFORE IMPROPERLY NAMED AS A RESPONDENT.

As this Court has determined in ruling on Petitioners' Motion to Strike and Augment the Administrative Record, the State Board is not a proper party to this action. When petitioned for review of a regional board order, the State Board has three options: it may find in favor of the regional board, against the regional board or it may decline to review the order. (See § 13320; Cal. Code Regs., tit. 23, § 2052, subd. (a)(2); *People ex rel Cal. Regional Wat. Quality Control Bd.* v. *Barry* (1997) 194 Cal.App.3d 158, 171-172 (*Barry*).) Here, as acknowledged by Petitioners, the State Board declined to review the Regional Board's order. (Petition, p. 9, ¶ 24.) It issued no decision of its own from which Petitioners may seek judicial review. (*Id.*) Therefore, the entire Petition fails to state a claim against the State Board and should be

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dismissed as to the State Board.

V. PETITIONERS CANNOT DECLARATORY RELIEF.

Declaratory relief actions are governed by Code of Civil Procedure section 1060, which requires the existence of a "case of actual controversy." The Petition fails to allege any controversy. Indeed, Petitioners suggest they are in agreement with what has been publicly stated by Respondents with regard to the interpretation of Part 2.3 of the Permit and inexplicably seek a declaration confirming this statements. (Petition, p. 19:1- 20:7.) Petitioners go on to allege that "Part 2 [of the Permit], as written, appears to render compliance impossible" and seeks a declaration that these provisions are to be read as Petitions contend, "should Respondents dispute" such interpretation. (Petition, p. 20:8-19.) The allegations are nothing more than speculation. There has been no specific application of the Permit which has resulted in adverse consequences to any of the Petitioners.

Since there exists no actual controversy, Petitioners improperly seek an advisory opinion.

> The courts of this state are not empowered to render advisory opinions to satisfy the curiosity of parties motivated by reasons ulterior to resolution of an actual dispute [citations]. Here respondents do not claim to have any dispute with appellant (or with anyone else) over unfair practices in connection with life insurance or annuities. This action is merely a general challenge to a statute, posed in a vacuum; no specific application of the statute is involved. It would serve little purpose to repeat the principles of justiciability set forth in the cases just cited; it is clear enough that this action presents no actual controversy apart from the respondents' intense but abstract desire to see the statute declared violative of the constitutional guarantees of equal protection ... The statute authorizing declaratory judgments is explicitly limited to "cases of actual controversy." (Code Civ. Proc., §1060). It thus does not expand the concept of justiciability sufficiently to encompass this action.

(*Fiske v. Gillespie* (1988) 200 Cal.App.3d 1243, 1245-1246.)

Because there is no actual controversy, the Petition fails to state a cause of action for declaratory relief.

In essence, Petitioners challenge certain provisions of the Regional Board's 2001 modifications to the 1996 MS4 permit. This is not appropriate for declaratory relief, which cannot be used to review an administrative decision. (*State of California* v. *Superior Court* (1974) 12 Cal.3d 237, 249; *County of San Luis Obispo* v. *Superior Court* (2001) 90 Cal.App.4th

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288, 296.) The sole exception is when a petitioner seeks review of an overarching, quasi-legislative policy set by an administrative agency. (*Californians for Native Salmon, etc. Assn.* v. *Department of Forestry* (1990) 221 Cal.App.3d 1419, 1429 (*Native Salmon*).) But where a petitioner seeks review of "specific, discretionary administrative decisions," declaratory relief is not proper. (*Id.* at pp. 1428-1429.)

Here, Petitioners seek review of a "specific, discretionary administrative decision." The Permit represents a quasi-adjudicatory, not a quasi-legislative, action. A quasi-legislative action formulates, without regard to specific facts, a general rule to apply to future situations. An adjudicatory action determines specific rights in regard to specific facts. (*Wulzen* v. *Board of Supervisors* (1894) 101 Cal. 15, 24; *California Administrative Mandamus*, § 1.7, p. 7 [Cont. Ed. Bar 1989].) Quasi-judicial or adjudicatory actions affect only the individual parties and are determined by the facts of the individual case. (*Horn* v. *County of Ventura* (1979) 24 Cal.3d 605, 613.)

Not only does *Native Salmon* prohibit declaratory relief, but Petitioners already have set in motion their sole means for relief: a petition for administrative mandamus.

VI. CONCLUSION.

For the foregoing reasons, Respondents respectfully request that their demurrers to the Second, Third and Sixth Causes of Action be sustained without leave to amend as Petitioners cannot state a cause of action for unfunded mandate nor declaratory relief, and the demurrer should be sustained as to the entire Petition without leave to amend as to the State Board as it is improperly named as a party.

Dated: September 3, 2003

BILL LOCKYER, Attorney General
of the State of California
HELEN G. ARENS
JENNIFER F. NOVAK
Deputy Attorneys General

By:__**[Original Signature on File with the Court]**_________
HELEN G. ARENS
Attorneys for Respondents Regional Water Quality Control Board, Los Angeles Region and State Water Resources Control Board

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PROOF OF SERVICE

Re: IN RE L.A. COUNTY MUNICIPAL S LITIGATION [*Cities Of Arcadia, et al. v. RWQCB*, LASC Case No. BS080548; *Angeles v. RWQCB*, LASC Case No. BS080753; *County of Los Angeles v. RWQCB*; LASC Case No. BS080758; *City of Alhambra v. RWQCB*, LASC Case No. BS080791; *Los Angeles County EDC v. RWQCB*, LASC Case No. BS080792; *City of Monrovia, et al. v. RWQCB*, LASC Case No. BS 080807]

I declare as follows:

I am employed in the County of Los Angeles, California. I am 18 years of age or older and not a party to the within entitled cause. My business address is 300 South Spring Street, 11th Floor-North, Los Angeles, California 90013.

On September 3, 2003, at my place of business, at Los Angeles, California, I served the attached:

RESPONDENTS' NOTICE OF HEARING ON DEMURRER; DEMURRER TO COUNTY, ET AL.'s PETITION FOR WRIT OF MANDATE; MEMORANDUM OF POINTS AND AUTHORITIES IN SUPPORT THEREOF

on the interested parties in this action.

[X] **By Verilaw** - a true and correct copy of the document was electronically served to counsel of record by electronic transfer of the document file via the Internet to Verilaw on September 3, 2003 [Pursuant to "Order Authorizing Electronic Service of Court-filed Documents" entered in this litigation on June 18, 2003].

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on September 3, 2003, at Los Angeles, California.

[Original Signature on File with the Court]

HELEN G. ARENS

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EXHIBIT 26

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June 17, 2011
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ORIGINAL FILED
FEB 19 2004
LOS ANGELES
SUPERIOR COURT

SUPERIOR COURT OF CALIFORNIA

COUNTY OF LOS ANGELES

COUNTY OF LOS ANGELES AND LOS ANGELES COUNTY FLOOD CONTROL DISTRICT, Plaintiffs, vs. CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD FOR THE LOS ANGELES REGION, et al., Defendants	CASE NO. BS 080758 RULING ON DEMURRER TO COUNTY, ET AL.'S PETITION FOR WRIT OF MANDATE AND COMPLAINT FOR DECLARATORY RELIEF

Hearing date: 2/18/04
Ruling date: 2/19/04

After considering the moving, opposing, and reply papers and the arguments of counsel at the hearing, the court now rules as follows:

Respondent's demurrer to the 3rd and 5th causes of action is sustained without leave to amend. Respondent and intervenor have 10 days from the hearing to file and serve their answers.

Respondent, the California Regional Water Quality Control Board, Los Angeles, Joined by Heal the Bay, demurs to the 3rd and 5th causes of action of the petition by the

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County of Los Angeles and the Los Angeles County Flood Control District for a writ of mandate and injunctive and declaratory relief.

A. Remedy

The 3rd and 5th causes of action allege violation of Cal. Const. Art. XIIIB, § 6: Unfunded mandate. Petitioners seek a writ of mandate to eliminate portions of the permit that violate the Constitution's unfunded mandate section. (FAP, prayer, ¶ 3.)

However, petitioners' remedy for an unfunded mandate is not to have the mandate eliminated but to have it funded. (Gov. Code § 17558 et seq.)

> In 1984, the Legislature created a statutory procedure for determining whether a statute imposes state-mandated costs on a local agency within the meaning of section 6. (Gov. Code, § 17500 et seq.) The local agency must file a test claim with the Commission, which, after a public hearing, decides whether the statute mandates a new program or increased level of service. (Gov. Code, §§ 17521, 17551, 17555.) If the Commission finds a claim to be reimbursable, it must determine the amount of reimbursement. (Gov. Code, § 17557.) The local agency must then follow certain statutory procedures to obtain reimbursement. (Gov. Code, § 17558 et seq.)

(*County of San Diego v. State of California* (1997) 15 Cal.4th 68, 82-83.)

Petitioners offer no authority, and the court has found none, supporting the remedy they seek. Therefore, the demurrer is sustained without leave to amend.

B. Procedure

The demurrer is also sustained on an independent ground.

Petitioners allege they filed test claims with the Commission on State Mandates (Commission), which were rejected. (FAP, ¶¶ 16(b), 53, 67.) However, this does not exhaust the procedure petitioners must follow to bring a Section 6 claim. As outlined in *County of San Diego*, *supra*, a test claim must be followed by a test *case*. "If the Commission finds no reimbursable mandate, the local agency may challenge this finding

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by administrative mandate proceedings under section 1094.5 of the Code of Civil Procedure. (Gov. Code§ 17559.)" (15 Cal.4th at 83.) This is the "sole and exclusive procedure by which a local agency . . . may claim reimbursement for costs mandated by the state as required by Section 6 . . . ." (Gov. Code, § 17552.) While this case is pending "orderly determination of unfunded mandate questions demands that only one claim on any particular alleged mandate be entertained by the courts at any given time. Thus, if a test claim is pending, other potential claims must be held in abeyance." (15 Cal.4th at 86, quotation, citation and editorial marks omitted.)

The court does not understand petitioners to seek reimbursement in the instant claims. Even so, their exclusive procedure is to proceed under section 1094.5 of the Code of Civil Procedure and name the Commission on State Mandates as a party. (See Gov. Code, § 17559.) Only in this manner may the state avoid multiple proceedings in multiple counties addressing the same issues, with the risk of inconsistent rulings. (15 Cal.4th at 86-87, citing *Kinlaw v. State of California* (1991) 54 Cal.3d 326, 333.)

By definition, a state mandate is of statewide concern, requiring statewide resolution. Because petitioners have not named the Commission as a party and have not otherwise offered the instant case as a test case for the issues presented state wide, the court is not satisfied it is a proper vehicle for resolution of their claim of unfunded state mandate.

For this independent reason, the demurrer is sustained.

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In sum:

Respondent's demurrer to the 3rd and 5th causes of action is sustained without leave to amend. Respondent and intervenor have 10 days from the hearing to file and serve their answers.

IT IS SO ORDERED.

Dated: 2/19/04

Victoria Gerrard Chaney
Judge

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CERTIFICATE OF MAILING

Los Angeles Superior Court Central

Civil Division

COUNTY OF LOS ANGELES, et al. Plaintiff(s) Vs. CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD Defendant(s)	Case no. BS080758

Document(s) served as follows:

RULING ON DEMURRER TO COUNTY, ET AL.'S PETITION FOR WRITE OF MANDATE AND COMPLAINT FOR DECLARATORY RELIEF

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I am over the age of 18 years and not a party to the within action. I am familiar with the Los Angeles Superior Court practice for collection and processing of correspondence and know that such correspondence is deposited with postage prepaid with the United States Postal Service the same day it is delivered to the mail room in the Los Angeles Superior Court. I declare under penalty of perjury under the laws of the State of California that I delivered a true copy of the above notice to the party(ies) or his (their) attorney of record addressed and listed above by placing the copy in a sealed envelope to the mail room of this court.

Dated: February 19, 2004

Elmer Sabalburo, Judicial Assistant

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EXHIBIT 27

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Response to Comments July 9, 2010
Los Angeles River Watershed Bacteria TMDL
Comment due date: June 05, 2010

Comment Letters
1. Boeing
2. California Department of Transportation (Caltrans)
3. City of Bell, Bell Gardens, Commerce, Downey, Lynwood, Monrovia, Signal Hill, South Gate, and Vernon
4. City of Burbank
5. City of Carson
6. City of Carson, Duarte, El Monte, Irwindale, San Fernando, San Gabriel, San Marino, and South El Monte
7. City of Downey (2)
8. City of Inglewood
9. City of La Canada Flintridge
10. City of Long Beach
11. City of Los Angeles Bureau of Sanitation (LABOS)
12. City of Los Angeles Department of Water and Power (LADWP)
13. County of Los Angeles Flood Control District (LACFCD)
14. County of Los Angeles Department of Public Works (LACDPW)
15. County Sanitation District of Los Angeles County (LACSD)
16. Flow Science for Cities of Arcadia, Bellflower, Carson, Cerritos, Claremont, Commerce, Downey, Duarte, Glendora, Hawaiian Gardens, Irwindale, Lawndale, Lynwood, Monterey Park, Paramount, Santa Fe Springs, Signal Hill, Vernon, and Whittier
17. Heal the Bay
18. Santa Monica Bay Keeper
19. United States Environmental Protection Agency (USEPA)
20. Rutan and Tucker, LLP (1) and (2) for Cities of Arcadia, Bellflower, Carson, Cerritos, Claremont, Commerce, Downey, Duarte, Glendora, Hawaiian Gardens, Irwindale, Lawndale, Lynwood, Monterey Park, Paramount, Santa Fe Springs, Signal Hill, Vernon, and Whittier

No.	Author	Comment	Response
1	**Boeing: June 04, 2010**		
1.1	Boeing	The Boeing Company appreciates the opportunity to submit comments on the proposed amendment to the Water Quality Control Plan for the Los Angeles Region (Basin Plan) to incorporate Total Maximum Daily Load for Bacteria in the Los Angeles River ("Proposed TMDL") that is scheduled for a public hearing at the July meeting of the Los Angeles Regional Water Quality Control Board ("Regional Board"). Boeing requests that these comments also be considered in the development of any regulations or polices related to the proposed amendment.	Comment noted.
1.2	Boeing	Storm water from Boeing's Santa Susana Field Laboratory drains in part to the Los Angeles River watershed and is subject to regulation under NPDES Permit No. CA0001309. As amended by the Regional Board on June 3, 2010, the Santa Susana	Comment noted.

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Response to Comments July 2010
Los Angeles River Watershed Bacteria TMDL

No.	Author	Comment	Response
			reference deadlines of "25 years after effective date of the TMDL" and adding "dry weather" to each segment's description.
20.12	Rutan & Tucker	XII. THE PROPOSED BACTERIA TMDL, ONCE EFFECTIVE AND ENFORCEABLE, WOULD RESULT IN AN UNFUNDED STATE MANDATE, IN VIOLATION OF THE CALIFORNIA CONSTITUTION **[See Rutan & Tucker, LLP Comment Letter in the Board Package for the rest of the comment]**	The Regional Board staff does not agree that the TMDL provisions contain unfunded state mandates, as that term is used in the California Constitution. Nevertheless, at the appropriate time, should the commenters believe they have a claim for subvention, the appropriate venue to determine that claim is with the Commission on State Mandates.
20.13	Rutan & Tucker	XIII. THE SUBSTITUTE ENVIRONMENTAL DOCUMENTS VIOLATE THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA). **[See Rutan & Tucker, LLP Comment Letter in the Board Package for the rest of the comment]** A. THE SED's ALTERNATIVES ANALYSIS IS FATALLY DEFECTIVE **[See Rutan & Tucker, LLP Comment Letter in the Board Package for the rest of the comment]** 1. THE SED Fails to Establish Project Objectives and Unlawfully Confuses the Concept of "Alternatives to the Project" with the Concept of "Alternative Methods of Compliance with the TMDL." **[See Rutan & Tucker, LLP Comment Letter in the Board Package for the rest of the comment]** 2. The SED also Fails to Analyze a Reasonable Range of Legitimate Project Alternatives. **[See Rutan & Tucker, LLP Comment Letter in the Board Package for the rest of the comment]**	The CEQA Guidelines require the Regional Board to consider a "range of reasonable alternatives" which would "feasibly attain most of the objectives of the project" using a "rule of reason." See Tit. 14 Cal. Code Regs. §15126.6(a). In this case, as described in the staff report, the Regional Board is obligated to prepare the TMDL to address impairment due to bacterial pollution. The feasible alternatives are those that would meet this objective. The Regional Board reasonably chose the proposed TMDL and a TMDL prepared by USEPA because those are the only legal alternatives. The Regional Board also evaluated various alternatives to implementing the water quality objectives that it could use in the TMDL. The TMDL also has a very detailed description of the purpose of the project and the Regional Board's legal responsibility to prepare the TMDL, including the consequences if it does not. The CEQA Guidelines also require consideration of a "no project" alternative. For projects that are a revision

Commission on State Mandates

Original List Date: 7/9/2010
Last Updated: 6/2/2011
List Print Date: 06/20/2011
Claim Number: 09-TC-03
Issue: Santa Ana Region Water Permit - Orange County

Mailing List

TO ALL PARTIES AND INTERESTED PARTIES:

Each commission mailing list is continuously updated as requests are received to include or remove any party or person on the mailing list. A current mailing list is provided with commission correspondence, and a copy of the current mailing list is available upon request at any time. Except as provided otherwise by commission rule, when a party or interested party files any written material with the commission concerning a claim, it shall simultaneously serve a copy of the written material on the parties and interested parties to the claim identified on the mailing list provided by the commission. (Cal. Code Regs., tit. 2, § 1181.2.)

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COMMISSION ON STATE MANDATES
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DECLARATION OF SERVICE BY EMAIL

I, the undersigned, declare as follows:

I am a resident of the County of Solano and I am over the age of 18 years, and not a party to the within action. My place of employment is 980 Ninth Street, Suite 300, Sacramento, California 95814.

On June 20, 2011, I served the:

Claimant Rebuttal Comments
***Santa Ana Region Water Permit*, 09-TC-03**
California Regional Water Quality Control Board, Santa Ana Region,
Order No. R8-2009-0030
County of Orange, Orange County Flood Control District, Cities of Anaheim, Brea, Buena Park, Costa Mesa, Cypress, Fountain Valley, Fullerton, Huntington Beach, Irvine, Lake Forest, Newport Beach, Placentia, Seal Beach and Villa Park, Claimants

by making it available on the Commission's website and providing notice of how to locate it to the email addresses provided on the attached mailing list.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that this declaration was executed on June 20, 2011 at Sacramento, California.

Heidi J. Palchik