Attachment C

Pollutant Profile Sheets

Bacteria

Mercury

Nutrients

Pesticides

Sediment

Trash

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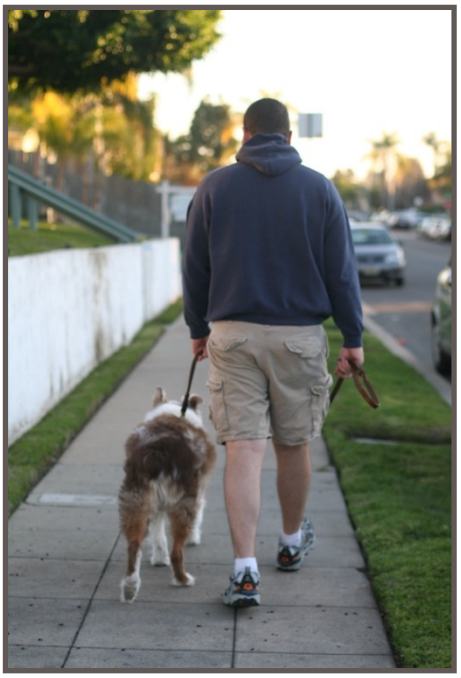
Bacteria

This fact sheet has been developed to assist stormwater program managers in understanding why this constituent can be problematic in stormwater and urban runoff, what the potential sources are, and how effectiveness assessment goals and metrics can be established to assist program managers in answering specific management questions in order to adaptively manage their programs.



The approach and methods described herein provide a "toolbox" for stormwater program managers so that they can select the program assessment methods and metrics that are most meaningful to their overall stormwater program.

INTRODUCTION

Bacteria naturally exist in the environment, and generally, most types of bacteria present do not cause adverse (i.e., pathogenic) effects to human health, however they are considered indicators of the presence of pathogens. Pathogens are of concern because of the potential for adverse effects to human health upon exposure through consumption or contact with contaminated water.

Many varieties of pathogenic organisms (including bacteria, viruses, and protozoa) exist in quantities so small that it is difficult, costly, and time-consuming to measure. Thus, indicator bacteria, which can be measured using standard laboratory analyses, are used as a surrogate measurement to identify the extent of fecal contamination and presence of other pathogens in a water source. Specifically, the most common indicator bacteria include total coliform bacteria, fecal coliform bacteria, *Escherichia coli* (*E. coli*), and *Enterococci*.

Each stormwater program may also wish to refer to the following source- and activity-specific profiles for additional, example program activities, management questions, goals, and metrics that may apply to this program element:

- Construction
- ✓ Industrial & Commercial
- ✓ Municipal Operations

Bacteria

SOURCES OF BACTERIA

Many bacteria occur naturally in the environment, but indicator bacteria can enter the environment through runoff from areas associated with animal or human activities and wastes. The most common source of bacteria from residential areas is runoff from open spaces contaminated with pets and/or wild animal feces. Less common sources of bacteria from residential areas include improperly working septic systems, faulty or leaking sewer lateral lines, leaking wastewater conveyance systems, sanitary sewer overflows, and illicit sewer connections to stormwater drains.

Agricultural sources, including herding and confined animal feeding operations, are a potential source of highly concentrated bacteria loadings. Uninhibited interactions between cattle and streams, as well as uncontained runoff from confined animal feeding operations entering receiving waters, can have a tremendous impact on the bacteria concentrations of receiving waters. The potential sources of bacteria to receiving waters from various activities are summarized in **Table 1**.

Table 1. Potential Sources of Bacteria

Sources and Activities
Residential Sources
Aging and leaking septic systems Leaking sanitary sewer connections (including laterals) Illicit sewage line connections to storm drains
Industrial/Commercial Sources
Uncontained surface cleaning Waste Handling and Disposal Building and Grounds Maintenance
Municipal Sources
Sanitary sewer overflows
Other Sources
Recreational Activities • Improper waste disposal from boats and/or house boats Agricultural • Close animal and receiving water contact • Improperly maintained and contained waste holding structures

Bacteria

MANAGEMENT QUESTIONS, GOAL SETTING, AND METRIC IDENTIFICATION

As the stormwater program is developed, it is important that the program manager considers how the program will be able to answer critical management questions (both environmental and programmatic), and incorporate measureable, achievable goals and corresponding metrics that are consistent with the program's priorities. Example management questions and the corresponding goals and metrics specific to bacteria are provided below. However, each stormwater program manager will need to decide what management questions and goals are most applicable to and in alignment with their program's priorities.

Example Bacteria-Related Management Questions and Goals

The management questions identified below are examples of the types of questions that a program can be designed to assist in answering. The questions are designed to assist program managers in adaptively managing their programs so that they can prioritize their resources.

Outcome Level	Management Question
6	Are impacted waterways meeting the TMDL targets for indicator bacteria as specified in the applicable TMDL(s)?
5, 6	Are the urban stormwater dischargers a significant source of indicator bacteria to the receiving waters? Are there other sources that are major contributors?
5	Are the Permittees meeting the load allocations for indicator bacteria as specified in the applicable TMDL(s)?
2 to 4	Are the Permittees effectively implementing BMPs that target bacteria indicators?

Table 3 provides example management questions, goals and metrics for outcome levels 2-4.

Bacteria

Table 3. Example Program Activities, Management Questions, Goals, and Metrics

Program Activity	Management Question	Goal/Metric[1]	Data/Information to be Collected
Residential Operations			
Develop educational materials with information regarding sources of bacteria. Update the website. Provide these materials at outreach events, etc.	Is the general public aware of the need to properly dispose of pet waste and are they doing so?	Based on survey results, 20-25% of the residents are aware of the need to properly dispose of pet waste. Based on survey results, 20-25% % of the residents are reporting that they are disposing of pet waste correctly.	Identify the source(s) of information for the residents (pet waste signs, PSAs, brochures, community events, dog tag licensing, etc.)
Provide outreach to houseboat owners/residents.	Are houseboat owners aware of the need to properly dispose of sump waste, and are they doing so?	20-25% of the houseboat owners are aware of the need to properly dispose of sump waste. 20-25% of the houseboat owners are reporting that they are disposing of sump waste correctly.	Surveys conducted at marinas and marine/boat supply stores.
Industrial/Commercial Operations			
Inspect facilities with the potential to contribute bacteria.	Are the industrial and commercial sites that could release bacteria aware of the BMPs that they should be implementing on for waste handling and disposal and surface cleaning, and are they implemented and maintained?	90-100% of the facilities are aware of the need to implement the necessary BMPs and are doing so. 90-100% are reporting that they are implementing BMPs.	Review inspection results and/or conduct surveys.

[1] It should be recognized that goals and metrics may be limited to TMDL requirements.

Bacteria

Program Activity	Management Question	Goal/Metric[1]	Data/Information to be Collected
Municipal Operations			
Inspect facilities with the potential to contribute bacteria (animal shelters, kennels, etc.).	Are the sites that may contribute bacteria aware of the BMPs that they should be implementing either on site or as part of their services, and are they implemented and maintained?	90-100% of the facilities are aware of the need to implement the necessary BMPs and are doing so. 90-100% are reporting that they are implementing BMPs.	Track inspection results and/or conduct surveys. Conduct audits of contracted services.
Coordinate with the sanitation district/agency for responses to sanitary sewer overflows	Are the reported sanitary sewer overflows (SSOs) potentially impacting the storm drains and/or receiving waters?	Based on the SSOs reported, <25% of the SSOs are reaching the storm drains or receiving waters.	Evaluate the estimated gallons and locations of impacts from SSO reports for the municipality compared to monitoring data

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Mercury

This fact sheet has been developed to assist stormwater program managers in understanding why this constituent can be problematic in stormwater and urban runoff, what the potential sources are, and how effectiveness assessment goals and metrics can be established to assist program managers in answering specific management questions in order to adaptively manage their programs.

The approach and methods described herein provide a "toolbox" for stormwater program managers so that they can select the program assessment methods and metrics that are most meaningful to their overall stormwater program.

INTRODUCTION

Mercury is primarily a concern because of the highly toxic and bioaccumulative nature of its methylated state, methylmercury. In the environment, mercury naturally cycles among its elemental, ionic, and methylated forms. Once mercury is released, local environmental conditions determine its transformations. Bacteria that process sulfate in the environment can take up mercury in its inorganic form and, through metabolic processes, convert it to methylmercury. Factors such as dissolved oxygen, pH, nutrient, sulfide, and sulfate concentrations may affect methylation rates.[1] Concentrations of methylmercury increase as it traverses the food web—from primary producers to higher trophic level fish to wildlife and humans—thereby causing a greater risk to consumers at the highest trophic level. Methylmercury is a neurotoxin that affects the brain and central nervous system, with long term exposure leading to loss of physical coordination and mental deficiencies. Developing fetuses and young children are most susceptible to its toxic effects.

Each stormwater program may also wish to refer to the following source- and activity-specific profiles for additional, example program activities, management questions, goals, and metrics that may apply to this program element:

- Construction
- ✓ Industrial & Commercial
- Municipal Operations

SOURCES OF MERCURY

Mercury enters the environment through natural sources, such as the natural breakdown of minerals in rocks and soils, as well as human activities such as mining, the burning of fossil fuels, and consumer

[1] USEPA (1997) Mercury Study Report to Congress, Volumes I through VIII. In: Office of Air Quality Planning and Standards and ORD. EPA/452/R-97-001. December.

product use. Mercury from these sources enters waterways through atmospheric deposition and direct contamination of water and sediment entering waterways. The potential sources of mercury are summarized in **Table 1**.

Mercury has useful properties which have been applied in many products and applications historically, and it is still widely used (**Table 2**). Thermometers, barometers, and other scientific instruments can contain mercury. Mercury vapor is used in streetlights, fluorescent light bulbs, computer equipment and advertising signs. Its ability to easily form amalgams with other metals such as gold, silver, zinc, and cadmium led to use of mercury in dental fillings and dry cell batteries. Mercury can form compounds with other elements to create cleaning chemicals, disinfectants, and paints. Improper disposal of these chemicals can contribute mercury directly to wastewater, stormwater, and the atmosphere.

Table 1. Potential Sources of Mercury

Sources and Activities
Residential Sources
Household products
Improper disposal of mercury-containing products
Industrial/Commercial Sources
Chemicals
Combustion
Manufacturing
Production
Dental offices
Hospitals
Laboratories
Medical clinics
Secondary schools
Universities
Vehicle service facilities
Other Sources
Atmospheric deposition
Legacy sources (i.e., mining)

Table 2. Common Mercury-Containing Products for Consumer and Commercial Uses

Mercury

Product Type	Mercury-Containing Products
Consumer Products	
Household Items	Airflow/thermostat controls, antique instruments (barometers, mirrors, organs), appliances, button cell batteries, clothes irons, light switches, latex paint, tilt switches, fluorescent light bulbs
Medical Pharmaceutical Products	Thimerosal (preservative in vaccines, antibiotics), contact lens solution, dental amalgam, thermometers, ear and eye drops, skin cream
Automotive Parts	Switches in pre-2003 cars: light switches, heated car rear windows, acceleration sensors, school bus braking systems; switches in new cars' navigation screens and HID headlights
Commercial Products	
Medical Products	Antibiotics, batteries, alarms, blood pressure cuffs, hearing aids, pacemakers, scales, ultrasound, tubes, vaccines
Electrical Products	Tilt switches, security systems, pressure controls, silent light switches, temperature control, thermometers, laptop computers, computer monitors
Manufacturing Products	Laboratory reagents (i.e., mercury chloride, mercury iodide, mercury nitrate, Hitachi Chem Analyzer reagent, Golgi's, Takata's reagent)

MANAGEMENT QUESTIONS, GOAL SETTING, AND METRIC IDENTIFICATION

As the stormwater program is developed, it is important that the program manager considers how the program will be able to answer critical management questions (both environmental and programmatic), and incorporate measureable, achievable goals and corresponding metrics that are consistent with the program's priorities. Example management questions and the corresponding goals and metrics specific to mercury are provided below. However, each stormwater program manager will need to decide what management questions and goals are most applicable to and in alignment with their program's priorities.

Mercury

Example Mercury-Related Management Questions and Goals

The management questions identified below are examples of the types of questions that a program can be designed to assist in answering. The questions are designed to assist program managers in adaptively managing their programs so that they can prioritize their resources.

Outcome Level	Management Question
6	Are impacted waterways meeting the TMDL targets for methylmercury as specified in the applicable TMDL(s)?
5, 6	Are the urban stormwater dischargers a significant source of total and/or methylmercury to the receiving waters? Are there other sources that are major contributors?
5	Are the Permittees meeting the load allocations for methylmercury as specified in the applicable TMDL(s)?
2 to 4	Are the Permittees effectively implementing BMPs that target mercury and/or prevent the creation of methylmercury?

Table 3 provides example management questions, goals and metrics for outcome levels 2-4.

Mercury

Table 3. Example Program Activities, Management Questions, Goals, and Metrics

Program Activity	Management Question	Goal/Metric[2]	Data/Information to be Collected
Residential Operations			
Develop educational materials with information regarding mercury. Update the website. Provide these materials at outreach events, etc.	Is the general public aware of the need to properly dispose of mercury-containing products at the local household hazardous waste (HHW) facility?	20-25% of the residents are aware of the need to properly dispose of mercury-containing products at the local HHW facility. 50% are aware of alternative products that don't contain mercury like digital thermometers.	Survey results using questions regarding awareness of proper disposal and existence of HHW facility Identify the source(s) of information for the residents (public service announcements (PSAs), brochures, community events, HHW facility, etc.)
Implementation of a program for diverting mercury-containing waste products (e.g., thermometers and gauges, batteries, fluorescent and other lamps, switches, relays, sensors, and thermostats) from the waste stream	Is the general public using the local HHW?	20-25% of the residents are reporting that they are disposing of mercury-containing products at the local HHW facility. Examples of such products include thermometers and other gauges, batteries, fluorescent and other lamps, switches, relays, sensors and thermostats.	Survey results using questions regarding reported use of HHW. Track how many people using HHW are turning in mercury containing products. How many mercury-containing products are turned in on an annual basis to the local HHW facility? What is the breakdown of the types of items collected at the centers?
Implementation of a public participation program, including cleanup events	Is the general public improperly disposing of mercury-related trash?	Less than 5% of the debris removed from local water ways during cleanup events contain mercury.	How much of the trash/debris that was collectively removed from the local waterways as a part of stream cleanup events was debris that contains mercury (e.g., thermometers,

[2] It should be recognized that goals and metrics may be limited to TMDL requirements.

Mercury

Program Activity	Management Question	Goal/Metric[2]	Data/Information to be Collected
			fluorescent lights, oil-based paints, appliances with mercury switches)?
Industrial/Commercial Operations			
Inspect facilities and/or activities with the potential to contribute mercury	Are the industrial and commercial sites that use, store, or could generate mercury aware of the BMPs that they should be implementing on site, and are they implemented and maintained?	Based on the results of inspections, 90-100% of the facilities are aware of the need to implement the necessary BMPs and are doing so. For example, facilities are using alternative products that do not contain mercury and are disposing of mercury containing products as hazardous waste.	Inspection results tracking BMPs.
Municipal Operations			
Inspect facilities and/or activities with the potential to contribute mercury.	Are the facilities that use, store, or could generate mercury aware of the BMPs that they should be implementing on site, and are they implemented and maintained?	Based on the results of inspections, 90-100% of the facilities are aware of the need to implement the necessary BMPs and are doing so. For example, facilities are using alternative products that do not contain mercury and are disposing of mercury containing products as hazardous waste.	Inspection results tracking BMPs. Conduct surveys with municipal staff.

Nutrients

This fact sheet has been developed to assist stormwater program managers in understanding why this constituent can be problematic in stormwater and urban runoff, what the potential sources are, and how effectiveness assessment goals and metrics can be established to assist program managers in answering specific management questions in order to adaptively manage their programs.

The approach and methods described herein provide a "toolbox" for stormwater program managers so that they can select the program assessment methods and metrics that are most meaningful to their overall stormwater program.

INTRODUCTION

The term "nutrients" primarily refers to nitrogen and phosphorous. In water bodies, small amounts of nutrients are needed to grow healthy sea grass, algae, and other forms of aquatic plant life. If too many nutrients are added, however, plant growth is over-stimulated, which can result in an adverse impact to the health of the aquatic environment. Nutrient enrichment (i.e., eutrophication) can lead to reduced water clarity and increased presence of undesirable algae. In addition, algae respiration and decay depletes oxygen from the water column, potentially creating an impaired aquatic environment and often causing nuisance odors. Nutrient levels in water bodies are typically evaluated based on nitrogen and phosphorus concentrations as these represent the primary constituents of concern.

Each stormwater program may also wish to refer to the following source- and activity-specific profiles for additional, example program activities, management questions, goals, and metrics that may apply to this program element:

- Construction
- ✓ Industrial & Commercial
- ✓ Municipal Operations

SOURCES OF NUTRIENTS

Sources of nutrients in freshwater and coastal areas are diverse and can include agricultural runoff, leaching of septic tanks, municipal and industrial wastewater, urban stormwater runoff, runoff from open space, and

fossil fuel combustion. In the urban environment, nutrient concentrations in stormwater may be elevated, often caused by runoff from over-fertilized lawns and landscaped areas, leaf litter and detritus, and/or suspended solids. In agricultural areas, commercial fertilizers and animal manure are typically the primary sources of nutrients in waterways, while wastewater and stormwater flows are primary sources of nutrients in urban waterways. The potential sources of nutrients are summarized in **Table 1**.

Nitrogen and phosphorus are the main ingredients in fertilizers, which are widely applied in agricultural and residential areas. Historically, they have also been used in detergents and cleaning products, although they are being phased out for these applications. Major uses of these constituents are summarized in **Table 2**.

Nutrients

Table 1. Potential Sources of Nutrients (Nitrogen and Phosphorus)

Sources and Activities
Residential Sources
Lawn and gardening fertilizers
Car washing
Pet waste
Septic tanks
Industrial/Commercial Sources
Nurseries
Landscaping businesses
Commercial laundries
Car washes
Municipal Sources
Lawn and gardening fertilizers
Car washing
Pet waste
Septic tanks
Other Sources
Agricultural • Animal wastes, especially from confined animal feeding operations • Over-fertilized agricultural areas
Open space runoff and bank erosion (especially during storms)
Leaf litter and detritus
Groundwater infiltration

Table 2. Common Nutrient-Containing Products for Consumer and Commercial Uses

Product Type	Nutrient-Containing Products
Consumer Products	
Household Items	Detergents and cleaning chemicals
Landscaping Products	Fertilizers and soil-enrichment/gardening supplements

Nutrients

MANAGEMENT QUESTIONS, GOAL SETTING, AND METRIC IDENTIFICATION

As the stormwater program is developed, it is important that the program manager considers how the program will be able to answer critical management questions (both environmental and programmatic), and incorporate measureable, achievable goals and corresponding metrics that are consistent with the program's priorities. Example management questions and the corresponding goals and metrics specific to nutrients are provided below. However, each stormwater program manager will need to decide what management questions and goals are most applicable to and in alignment with their program's priorities.

Example Nutrient-Related Management Questions and Goals

The management questions identified below are examples of the types of questions that a program can be designed to assist in answering. The questions are designed to assist program managers in adaptively managing their programs so that they can prioritize their resources.

Outcome Level	Management Question
6	Are impacted waterways meeting the TMDL targets for nutrients (usually expressed as nitrogen and phosphorus) as specified in the applicable TMDL(s)?
5, 6	Are the urban stormwater dischargers a significant source of nutrients (usually expressed as nitrogen and phosphorus) to the receiving waters? Are there other sources that are major contributors?
5	Are the Permittees meeting the load allocations for nutrients (usually expressed as nitrogen and phosphorus) as specified in the applicable TMDL(s)?
2 to 4	Are the Permittees effectively implementing BMPs that target nutrient reduction in the waterways?

Table 3 provides example program activities, management questions, goals and metrics for outcome levels 2-4.

Nutrients

Table 3. Example Program Activities, Management Questions, Goals, and Metrics

Program Activity	Management Question	Goal/Metric[1]	Data/Information to be Collected
Residential Operations			
Develop educational materials with information regarding nutrients. Update the website. Provide these materials at home and gardening stores, nurseries, outreach events, etc.	Is the general public aware of proper nutrient management practices (e.g., do not overuse fertilizer; sweep, do not hose, sidewalks and driveways; sweep leaves and detritus away from storm drains, wash cars on lawns, not driveways)?	Based on survey results, 80-100% of the residents are aware of proper landscaping practices that help minimize stormwater pollution. Based on survey results, 80-100% of the residents are reporting that they are implementing these practices	Identify the source(s) of information for the residents (public service announcements (PSAs), brochures, community events, outreach at home and gardening stores, etc.)
Industrial/Commercial Operations			
Inspect facilities with the potential to contribute nutrients: • Nurseries • Landscaping • Car washes • Golf Courses • Cemeteries	Are the sites that may contribute nutrients aware of the BMPs that they should be implementing either on site or as part of their services, and are they implemented and maintained?	90-100% of the facilities are aware of the need to implement the necessary BMPs and are doing so. For example, car washing facilities are using phosphate-free detergents and capture, treat, and recycle all of their water, or landscaping businesses are regularly training employees on proper watering practices and fertilizer application.	Track inspection results and/or conduct surveys.

[1] It should be recognized that goals and metrics may be limited to TMDL requirements.

Nutrients

Program Activity	Management Question	Goal/Metric[1]	Data/Information to be Collected
Municipal Operations			
Inspect facilities with the potential to contribute nutrients: • Parks • Landscaping	Are the sites that may contribute nutrients aware of the BMPs that they should be implementing either on site or as part of their services, and are they implemented and maintained?	90-100% of the facilities are aware of the need to implement the necessary BMPs and are doing so. For example, parks and contract landscaping services are regularly training employees on proper watering practices and fertilizer application.	Track inspection results and/or conduct surveys. Conduct audits of contracted services.
Maintenance of the municipally owned and operated landscape and right of way	Are the Permittees actively managing municipal use of fertilizers on right-of-way and other landscaped areas?	The total amount of fertilizers applied is being reduced by 50% over 5-10 years. The total amount of acreage to which fertilizers are applied is being reduced by 20% over 5-10 years. Of the total municipally owned and operated landscaped acreage, 20-30% is being managed with practices that reduce or eliminate fertilizer use (e.g., efficient watering, landscape planning, use of native plants, soil testing, composted organic material).	How many acres is fertilizer used on, and what approaches are used? How much fertilizer is used for the applications?

Pesticides

This fact sheet has been developed to assist stormwater program managers in understanding why pesticides can be problematic in stormwater and urban runoff, what the potential sources are, and how effectiveness assessment goals and metrics can be established to assist program managers in answering specific management questions in order to adaptively manage their programs.

The approach and methods described herein provide a "toolbox" for stormwater program managers so that they can select the program assessment methods and metrics that are most meaningful to their overall stormwater program.

INTRODUCTION

The term "pesticides" includes herbicides, fungicides, rodenticides, biocides, and insecticides. Pesticides are intended to be toxic to unwanted pests but can also be harmful to people, pets and the environment. Some pesticides (primarily historic pesticides) tend to persist in the environment and, in fact, pesticides that have been banned for decades (e.g., DDT) are still found in urban waterbodies, especially in sediments. Modern pesticides have been linked to widespread toxicity to sensitive organisms in California's urban watersheds.

The primary pesticides currently of concern in California urban water bodies are the pyrethroids and fipronil, both insecticides used widely for structural pest control. Pyrethroids almost completely replaced the organophosphate pesticides diazinon and chlorpyrifos, which have been phased out for almost all urban uses. Fipronil use has been on the rise in recent years, and monitoring has shown it to be a problem in urban waters as well. Other pesticides of interest include indoxacarb (another insecticide increasing in use in urban areas), the herbicide diuron, and biocides like chlorine and copper that are used in swimming pools and outdoor building materials.

Each stormwater program may also wish to refer to the following source- and activity-specific profiles for additional, example program activities, management questions, goals, and metrics that may apply to this program element:

- ✓ Construction
- ✓ Industrial & Commercial
- ✓ Municipal Operations

Pesticides

SOURCES OF PESTICIDES

In urban areas, the main categories of outdoor pesticide use are structural pest control (primarily insecticides), landscaping (mostly herbicides and fungicides, some insecticides), right-of-way maintenance (herbicides), swimming pools/spas/fountains (biocides), and building materials (biocides like wood and paint preservatives). By far, the most problematic uses from a stormwater quality perspective are outdoor structural applications of insecticides, primarily to control Argentine ants that invade buildings. Prior to the discontinuation of their registration for almost all urban uses, diazinon and chlorpyrifos were the primary insecticides used to control these ants. Pyrethroids and fipronil are currently the dominant chemicals used outdoors for structural pest control. In 2012 the California Department of Pesticide Regulation (DPR) adopted regulations to address the problem of pyrethroids. DPR is evaluating the effectiveness of the pyrethroid regulations, and in 2015 has begun to develop approaches to mitigate the fipronil problem. *For outdoor uses, fipronil is only available for structural applications by licensed professionals.*

Although pesticide use and sales data indicate that large amounts of a wide variety of herbicides and fungicides are applied in outdoor urban settings by both residents and professionals, with the exception of diuron, monitoring data does not implicate them as a widespread cause of impairment in urban receiving waters in California. Biocides in pool, spa, and fountain discharges have been linked to fish kills in creeks. A few biocides, like copper swimming pool additives and wood preservatives, contribute to copper impairments that stem from both pesticide and non-pesticide sources. The potential sources of pesticides are summarized in **Tables 1** and **2**.

Pesticides

Table 1. Potential Sources of Pyrethroids and Fipronil in Urban Runoff

Sources and Activities
Construction Sources
Key Source: Pre-construction termiticide treatment of soil. Done by licensed pest control operators, prior to pouring of concrete slabs and foundations.
Residential Sources
Key Source: Outdoor structural pest control, mostly by licensed pest control operators (primarily for Argentine ants). Landscaping insect applications (much lower amount than for structural; Applications to pervious surfaces much less likely to mobilize in runoff).
Industrial/Commercial Sources
Key Source: Outdoor structural pest control, mostly by licensed pest control operators (outdoor, primarily for cockroaches and other insects associated with restaurants; some Argentine ant control around office buildings) Commercial nurseries
Municipal Sources
Outdoor structural pest control, mostly by licensed pest control operators (office buildings, transfer stations) Vector control. Mosquitoes, fire ants, yellow jackets (Vector control is often done by special districts, not cities or counties)

Pesticides

Table 2. Other Pesticide Uses in Urban Areas

Other Pesticide Uses by Source
Residential Sources
Landscaping: broadleaf and pre-emergent control in turf areas (2,4D; oryzalin); weed control (glyphosate, many others) in hardscape crevices, fencelines, tree wells, planting beds; some insecticide use for fire ants (So. Calif.) ; lawns (often unnecessary scheduled applications); nuisance honeydew producers; various landscape pests
Building materials: treated wood, roof shingles, outdoor paint (biocides)
Swimming pool, spa, and fountain water (if drained to storm drains) (chlorine, copper, PHMB, many others)
Industrial/Commercial Sources
Herbicides used for weed control for turf, paved areas, fencelines.
Cooling water system discharges (if drained to storm drains) (copper and other biocides)
Golf courses: broadleaf control in turf areas, fungicides and insecticides (greens)
Municipal Sources
Herbicides used for vegetation control in rights of way: drainage facilities, roadsides,
Rodenticides for burrowing rodents
Corporation yards: Herbicides for weed control
Treated wood (pentachlorophenol, copper, and other wood preservatives)
Street tree pests: Insecticides for honey dew producers, defoliators (elm leaf beetles)
Parks: tree wells, fence lines,
Vector control: rats

Pesticides

CASQA Pesticide Strategy

In California, municipalities do not have the authorities necessary to prevent pesticides from occurring in their stormwater discharges. Under State and federal pre-emptions, municipalities cannot control pesticide labels, they cannot regulate pesticide users, and they cannot determine which pesticides can be sold in their cities. As such, the tools available to local stormwater agencies to control pesticide discharges are limited to control of municipal operation uses and public outreach programs. While such efforts should be part of a comprehensive pesticide control strategy, they are not likely to reduce the application of widely-used currently registered pesticides, such as pyrethroids, such that they are not causing water quality impairments.

CASQA's strategy for addressing pesticide water quality problems is based on the statutory authority already possessed by State and federal pesticide regulators to protect the state's surface waters. Since the mid-1990s, CASQA (and its predecessor organization) has been working closely with the State Water Resources Control Board, multiple Regional Water Quality Control Boards, the Department of Pesticide Regulation (DPR), and federal pesticide regulators at USEPA toward achieving the goal of eliminating pesticide-related water pollution in California's urban waterways.

Significant progress has been made toward improving how pesticides are regulated, most notably the surface water protection regulations adopted by DPR, which establish restrictions on pyrethroid applications by licensed applicators. Other achievements include pyrethroid label restrictions, and improvements in how USEPA evaluates, at least for some pesticides, the potential for urban water quality impacts during the registration process.

MANAGEMENT QUESTIONS, GOAL SETTING, AND METRIC IDENTIFICATION

As the stormwater program is developed and implemented, it is important that the program manager considers how the program will be able to answer critical management questions (both environmental and programmatic), and incorporate measureable, achievable goals and corresponding metrics that are consistent with the program's priorities. Example management questions and the corresponding goals and metrics specific to pesticides are provided below. However, each stormwater program manager will need to decide what management questions and goals are most applicable to and in alignment with their program's priorities.

Pesticides

Example Pesticide-Related Management Questions and Goals

The management questions identified below are examples of the types of questions that a program can be designed to assist in answering. The questions help program managers in adaptively managing their programs so that they can prioritize their resources.

Outcome Level	Management Question
The CASQA Pesticides Subcommittee intends to implement actions to address the following questions through its annual workplan and its annual reports:	
5 to 6	Are actions being taken by State and Federal pesticides regulators and stakeholders that are expected to end recently observed pesticide-caused toxicity or exceedances of pesticide water quality objectives in surface waters receiving urban runoff? [Near-term/Current Problems]
2 to 6	Do pesticides regulators have an effective system in place to exercise their regulatory authorities to prevent pesticide toxicity in urban water bodies? [Long-term/Prevent Future Problems]
CASQA's Pesticides Subcommittee is implementing actions addressing the following questions through its annual workplan and potentially in a new annual monitoring report if funding becomes available. These questions may be answered utilizing primarily statewide representative monitoring conducted by DPR and the Water Boards (SWAMP), complemented by applicable, representative MS4 data. Other applicable data could be considered as well.	
5 6	Do water column samples or sediments in surface waters receiving urban runoff exhibit toxicity to standard test organisms that is caused by pesticides in urban runoff?
6	How do conditions in surface waters receiving urban runoff compare with EPA pesticides benchmarks and pesticides water quality objectives?
5	Do urban runoff discharges achieve pesticide TMDL allocations?
General questions related to management outcomes within permittees' individual control:	
2 to 4	Do the Permittees have and are implementing in-house IPM policies and contracting requirements that reduce the use of pyrethroids, fipronil, and other insecticides at municipal facilities by staff and/or pest management vendors?
2 to 4	Does the Permittee have and are implementing a program to direct swimming pool, spa, fountain, and cooling water system discharges to the sanitary sewer?
2 to 4	Are the Permittees effectively implementing outreach and education programs that target pesticides?

Pesticides

Table 3. Example Program Activities, Management Questions, Goals, and Metrics

Program Activity	Management Question	Goal/Metric[1]	Data/Information to be Collected
Residential Operations			
For problem pesticides, use federal pesticide registration and labeling authority to limit availability to the public. *[Anticipated to be addressed by CASQA Pesticide Subcommittee]*	Does legal application of this pesticide by residents in urban areas result in toxicity in urban water bodies?	Pesticide regulators and manufacturers have established product labels that effectively limit the use of the pesticide by the public. Modeling by USEPA supports label changes.	Relative contribution of residential use to the problem. Runoff characteristics, fate and transport of pesticide and its degradates, test organism toxicity.
Develop educational materials with information regarding pesticides. Update the website. Provide these materials at home and gardening stores, nurseries, outreach events, etc.	Is the general public aware of the need to reduce the use of pesticides and use IPM[2] based approaches for the control of pests?	Based on survey results, 20-25% of the residents are aware of the need to reduce pesticide use. Based on survey results, 20-25% of the residents are reporting that they are using IPM-based approaches. Based on survey results less than 30% of the residents reported using pesticides within the past year.	Identify the source(s) of information for the residents (public service announcements (PSAs), brochures, community events, outreach at home and gardening stores, etc.)

[1] It should be recognized that goals and metrics may be limited to TMDL requirements.

[2] IPM encourages alternative pest-management approaches to reduce the use of pesticides along with best management practices to apply necessary pesticides in ways that reduce runoff into stormwater.

Pesticides

Program Activity	Management Question	Goal/Metric[1]	Data/Information to be Collected
Industrial/Commercial Operations			
Use state and federal pesticide regulations to require mitigation of applications by licensed pesticide applicators. *[Anticipated to be addressed by CASQA Pesticide Subcommittee]*	Does legal application of this pesticide by licensed applicators in urban areas result in toxicity in urban water bodies?	Pesticide regulators and manufacturers have established State or federal pesticide label and licensed applicator requirements that will reduce runoff sufficiently to prevent impacts to urban water bodies. Modeling predicts effectiveness of mitigation measures.	Pesticide use data, runoff characteristics, fate and transport of pesticide and its' degradates, test organism toxicity. Data from enforcement, pesticide use reports, and surveillance monitoring of water bodies will measure effectiveness of regulation.
Inspect facilities with the potential to contribute pesticides: Nurseries Landscaping Golf Courses Cemeteries	Are the sites that may contribute pesticides aware of the BMPs that they should be implementing either on site or as part of their services, and are they implemented and maintained?	90-100% of the facilities are aware of the need to implement the necessary BMPs and are doing so. For example, landscaping businesses are regularly training employees on IPM, proper watering practices, and pesticide application.	Track inspection results and/or conduct surveys.
Integrated pest management (IPM) for commercial sites	Are the group of local businesses that are likely to use pesticides aware of IPM methods and certification programs that are available to them?	90-100% of the facilities are aware of IPM certification programs such as GreenPro, EcoWise, and eco-friendly landscaping.	Track inspection results and/or conduct surveys.

Pesticides

Program Activity	Management Question	Goal/Metric[1]	Data/Information to be Collected
Municipal Operations			
Inspect municipal facilities with the potential to contribute pesticides: Parks Landscaping	Are the sites that may contribute pesticides aware of the BMPs that they should be implementing either on site or as part of their services, and are they implemented and maintained?	90-100% of the facilities are aware of the need to implement the necessary BMPs and are doing so. For example, parks and contract landscaping services are regularly training employees on IPM, proper watering practices, and pesticides application.	Track inspection results and/or conduct surveys. Conduct audits of contracted services.
Structural pest control around municipal buildings.	Has the agency minimized use of pyrethroids around its buildings?	Establish IPM certification requirements, such as GreenPro and EcoWise, for structural pest management vendors.[3]	Does vendor contract require IPM certified services? Does vendor possess IPM certification? Is the vendor actually delivering IPM services according to certification standards? Is vendor using pyrethroids and fipronil around municipal facilities? What are the amounts of pyrethroids and fipronil being applied [active ingredient]?

[3] Green Pro (www.certified**greenpro**.org) and EcoWise Certified (www.ecowisecertified.org) are independent Integrated Pest Management certification programs for licensed structural pest control businesses.

Pesticides

Program Activity	Management Question	Goal/Metric[1]	Data/Information to be Collected
Implementation of a municipal integrated pest management (IPM) program as a part of the overall maintenance of the municipal owned and operated landscape and right of way	Are the Permittees actively implementing the IPM program and actively managing municipal use of pesticides on public rights-of-way and other landscaped areas?	The IPM program is being implemented. The total amount of pesticides applied to public rights-of-way, parks, and other landscaped areas (as measured by active ingredient) is being reduced by 30% in 5-10 years.	Is there an agency-wide IPM program in place? Are activity-specific IPM practices documented? How many acres is IPM used on, and what approaches are used? How much total active ingredient is used for the pesticides applications?
Collection of pesticide waste at HHW sites.	Is the general public aware of the need to properly dispose of pesticide-containing products at the local HHW collection center, and are they doing so?	20-25% of the residents are aware of the need to properly dispose of pesticide-containing products at the local HHW collection center. 20-25% of the residents are reporting that they are disposing of pesticide-containing products at the local HHW collection center.	Track the quantity of pesticide-containing products turned in on an annual basis to the local HHW collection center. Determine the breakdown of the items collected. Identify the source(s) of information for the residents (public service announcements [PSAs], brochures, community events, "Our Water Our World" campaign [OWOW][4], etc.

[4] Private-public partnership between local stormwater agencies and garden and hardware stores to encourage the use of less toxic products and proper disposal of pesticides.

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Sediment

This fact sheet has been developed to assist stormwater program managers in understanding why this constituent can be problematic in stormwater and urban runoff, what the potential sources are, and how effectiveness assessment goals and metrics can be established to assist program managers in answering specific management questions in order to adaptively manage their programs.

The approach and methods described herein provide a "toolbox" for stormwater program managers so that they can select the program assessment methods and metrics that are most meaningful to their overall stormwater program.

INTRODUCTION

Sediment is a natural component of stormwater. Sediment resulting from excessive erosion is a pollutant. Sediment can be detrimental to aquatic life (primary producers, benthic invertebrates, and fish) by interfering with photosynthesis, respiration, growth, reproduction, and oxygen exchange in water bodies. Sediment can transport other pollutants that are attached to it including nutrients, trace metals, and hydrocarbons. Sediment is the primary component of turbidity, total suspended solids (TSS), and Suspended Sediment Concentration (SSC), common water quality analytical parameters.

SOURCES OF SEDIMENT

Soil erosion, either natural or due to construction or other deliberate activities, is the process by which soil particles are detached by water, wind, or gravity. Sediment resulting from erosion enters waterways primarily through runoff. Runoff from agricultural fields and construction operations can carry high sediment loads because these operations expose the soil surfaces. Within an urban setting, runoff from commercial landscaping or residential yards and gardens with exposed or newly-tilled soil may carry sediment to the storm drain system. Certain types of residential or commercial operations may be a source of sediment. Minor construction and maintenance

Each stormwater program may also wish to refer to the following source- and activity-specific profiles for additional, example program activities, management questions, goals, and metrics that may apply to this program element:

- ✓ Construction
- ✓ Industrial & Commercial
- ✓ Municipal Operations

activities may be source if soil surfaces are exposed. Illicit discharges from commercial/industrial operations such as nurseries could result in sediment releases to the storm drain. The potential sources of sediment are summarized in **Table 1**.

Table 1. Potential Sources of Sediment

Sources and Activities
Construction Sources
Construction site erosion
Residential Sources
Yard and garden runoff
Roof runoff (from dust)
Industrial/Commercial Sources
Illicit discharges/Illegal connections • Vegetable washing/ food processing • Car washing • Mobile surface cleaning
Unpaved operations and storage yards
Nurseries
Animal boarding facilities
Landscaping runoff
Municipal Sources
Road runoff
Corporation yards
Road maintenance
Landscape runoff
Parks and playfields
Other Sources
Agricultural runoff
Streambed and bank erosion due to hydromodification
Natural erosion

Sediment

MANAGEMENT QUESTIONS, GOAL SETTING, AND METRIC IDENTIFICATION

As the stormwater program is developed, it is important that the program manager considers how the program will be able to answer critical management questions (both environmental and programmatic), and incorporate measureable, achievable goals and corresponding metrics that are consistent with the program's priorities. Example management questions and the corresponding goals and metrics specific to sediment are provided below. However, each stormwater program manager will need to decide what management questions and goals are most applicable to and in alignment with their program's priorities.

Example Sediment-Related Management Questions and Goals

The management questions identified below are examples of the types of questions that a program can be designed to assist in answering. The questions are designed to assist program managers in adaptively managing their programs so that they can prioritize their resources.

Outcome Level	Management Question
6	Are impacted waterways meeting the TMDL targets for sediment as specified in the applicable TMDL(s)?
5, 6	Are the urban stormwater dischargers a significant source of sediment to the receiving waters? Are there other sources that are major contributors?
5	Are the Permittees meeting the load allocations for sediment as specified in the applicable TMDL(s)?
2 to 4	Are the Permittees effectively implementing BMPs that target sediment reduction in the waterways?

Table 2 provides example management questions, goals and metrics for outcome levels 2-4.

Sediment

Table 2. Example Program Activities, Management Questions, Goals, and Metrics

Program Activity	Management Question	Goal/Metric[1]	Data/Information to be Collected
Construction Operations			
Inspect sites	Are construction sites being managed so that they are in compliance with the local codes and ordinances and preventing sediment from leaving the site?	>85% of the construction sites are in compliance and are implementing and maintaining the necessary BMPs on site. 100% of sites where a sediment control deficiency was identified were corrected by the re-inspection.	Inspection results
Residential Operations			
Develop educational materials with information regarding sediment. Update the website. Provide these materials at outreach events, etc.	Is the general public aware of proper sediment management practices (e.g., sweep, do not hose, sidewalks and driveways; wash cars on lawns, not driveways)?	20-25% of the residents are aware of proper landscaping practices that help minimize runoff and sediment in runoff. 20-25% of the residents are reporting that they are implementing these practices.	Survey results Identify the source(s) of information for the residents (public service announcements (PSAs), brochures, community events, etc.)
Industrial/Commercial Operations			
Inspect facilities with the potential to contribute sediment.	Are commercial and industrial sites being managed so that they are in compliance with the local codes and ordinances and preventing sediment from	Greater than 90% of the sites are in compliance and are implementing and maintaining the necessary BMPs on site	Inspection results

[1] It should be recognized that goals and metrics may be limited to TMDL requirements.

Sediment

Program Activity	Management Question	Goal/Metric[1]	Data/Information to be Collected
	leaving the site?		
Municipal Operations			
Inspect facilities with the potential to contribute sediment.	Are the municipal facilities that could generate sediment aware of the BMPs that they should be implementing on site, and are they implemented and maintained?	90-100% of the facilities are implementing the necessary BMPs.	Track inspection results and/or conduct surveys. Conduct audits for contracted services
Implement a street sweeping and catch basin cleaning program.	How much material is removed in the street sweeping program? How much material is removed in the catch basin cleaning program?	Regular *[specify stormwater program's frequency]* street sweeping is being implemented to remove sediment from the storm drain system for 80% of the jurisdiction's streets. Regular *[specify stormwater program's frequency]* catch basin cleaning is being implemented to remove sediment from the storm drain system.	Track the amount of materials collected as a part of the street sweeping program. Track the amount of material collected as a part of the catch basin cleaning program. Review maintenance records to determine the frequency with which these activities are being conducted a
Conduct field observations for illicit discharges and document/report evidence of non-stormwater discharges or illegal dumping	How many illicit discharges involve sediment? Are there recurring sources that can be addressed through education and outreach?	Reduce number of illicit discharges involving sediment by 5% each year.	Track IDDE results.

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Trash

This fact sheet has been developed to assist stormwater program managers in understanding why this constituent can be problematic in stormwater and urban runoff, what the potential sources are, and how effectiveness assessment goals and metrics can be established to assist program managers in answering specific management questions in order to adaptively manage their programs.

The approach and methods described herein provide a "toolbox" for stormwater program managers so that they can select the program assessment methods and metrics that are most meaningful to their overall stormwater program.

INTRODUCTION

The term "trash" primarily refers to anthropogenic waste materials, including, but not limited to, convenience food, beverage, and other product packages or containers constructed of steel, aluminum, glass, paper, plastic, and other natural and synthetic materials. When improperly discarded, trash may adversely affect the environment, economy, and/or human health and safety. For example, trash may be ingested by or entangle organisms, alter a sensitive ecosystem, necessitate costly removal and disposal procedures, injure people, and/or pose serious health risks. The extent of such impacts is determined, in part, by the type of trash and where it settles in the environment.

Plastics comprise a significant portion of both existing aquatic debris and the nation's current trash output. Durable and lightweight, plastics can travel significant distances, accumulate in or near waterbodies, and persist in the environment almost indefinitely, all while breaking into smaller and smaller pieces. Coincidentally, the trash of most concern to water quality tends to be small, buoyant, and persistent.[1] Buoyant items tend to be more harmful than settleable

Each stormwater program may also wish to refer to the following source- and activity-specific profiles for additional, example program activities, management questions, goals, and metrics that may apply to this program element:

- ✓ Construction
- ✓ Industrial & Commercial
- ✓ Municipal Operations

[1] USEPA (2002) Assessing and Monitoring Floatable Debris. In: Office of Wetlands, Oceans, and Watersheds; Oceans and Coastal Protection Division. EPA-842-B-02-002. August.

items, due to their ability to be transported throughout a waterbody and ultimately to the marine environment.[2] Additionally, small items are difficult to capture and remove.

SOURCES OF TRASH

Identification of trash sources is important and necessary for regulating, controlling, and preventing the improper release of trash. However, determining exactly from where trash originates can be challenging, since trash can travel long distances before being deposited on shorelines or settling to the bed of a waterbody. Trash that ends up in an aquatic environment is often the result of deliberate or accidental actions by people, whether on land or over water. Even trash that has been deposited into waste receptacles may not be safely contained because stormwater flows and wind action can transport such items to nearby waterbodies. This is especially problematic in urban areas, where population density is high, littering is frequent, and paved surfaces are common.

Possible sources of trash include individuals, industrial and commercial activities, construction, and natural events (**Table 1**). Additionally, municipalities are responsible for capturing trash that is dropped or discarded by individuals. Without sufficient mechanisms for capturing trash, municipal separate storm sewer systems (MS4s) may convey trash into nearby waterbodies or the ocean.

[2] Surface Water Ambient Monitoring Program (2007). A Rapid Trash Assessment Method Applied to Waters of the San Francisco Bay Region: Trash Measurement in Streams. April.

Trash

Table 1. Potential Sources of Trash

Sources and Activities
Construction Sources
Construction and demolition sites
Residential Sources
Littering or dumping
Open or overflowing waste management bins
Special events
Homeless encampments
Illegal dumping
Industrial/Commercial Sources
Production, transport, maintenance, cleanup, and disposal activities
Open or overflowing waste management bins
Municipal Sources
Littering or dumping
Open or overflowing waste management bins
Special events
Homeless encampments
Illegal dumping

Examples of common trash types, categorized by probable sources, are provided in **Table 2**.

Trash

Table 2. Examples of Trash Types[3]

Sources and Types
Construction Sources
Bricks Concrete Insulation Rebar Wood debris Garbage • Paper/cardboard • Containers • Utensils • Organics
Residential Sources
Plastic • Bags and wrappers • Containers • Utensils Glass Paper/cardboard Metal Cigarette butts Medical and personal waste Syringes
Industrial/Commercial Sources
Plastic • Pre-production plastic pellets • Other plastics Metal parts Synthetic rubber, cloth, or fabric Chemical containers Garbage • Paper/cardboard • Containers • Utensils • Organics

[3] This list is not intended to be comprehensive.

Trash

MANAGEMENT QUESTIONS, GOAL SETTING, AND METRIC IDENTIFICATION

As the stormwater program is developed, it is important that the program manager considers how the program will be able to answer critical management questions (both environmental and programmatic), and incorporate measureable, achievable goals and corresponding metrics that are consistent with the program's priorities. Example management questions and the corresponding goals and metrics specific to trash are provided below. However, each stormwater program manager will need to decide what management questions and goals are most applicable to and in alignment with their program's priorities.

Example Trash-Related Management Questions and Goals

The management questions identified below are examples of the types of questions that a program can be designed to assist in answering. The questions are designed to assist program managers in adaptively managing their programs so that they can prioritize their resources.

Outcome Level	Management Question
6	Are impacted waterways meeting the TMDL targets for trash as specified in the applicable TMDL(s)?
5, 6	Are the urban stormwater dischargers a significant source of trash to the receiving waters? Are there other sources that are major contributors?
5	Are the Permittees meeting the load allocations for trash as specified in the applicable TMDL(s)?
2 to 4	Are the Permittees effectively implementing BMPs that target and/or prevent trash?

Table 3 provides example management questions, goals and metrics for outcome levels 2-4.

Trash

Table 3. Example Program Activities, Management Questions, Goals, and Metrics

Program Activity	Management Question	Goal/Metric[4]	Data/Information to be Collected
Construction Operations			
Inspect sites with the potential to contribute trash.	Are construction sites that could generate trash aware of the BMPs that they should be implementing on site, and are they implemented and maintained?	90-100% of the sites are aware of the need to implement the necessary BMPs and are doing so. For example, trash should be properly managed and contained within appropriate, covered waste containers.	Track inspection results and/or conduct surveys.
Residential Operations			
Develop educational materials with information regarding trash. Update the website. Provide these materials at outreach events, etc.	Is the general public aware of the need to properly dispose of trash?	Based on survey results, 20-25% of the residents are aware of the need to properly dispose of trash. Based on survey results, 20-25% of the residents are reporting that they properly dispose of trash. The amount of materials collected as a part of the creek cleanups is decreasing.	Identify the source(s) of information for the residents (public service announcements (PSAs), brochures, community events, etc.) Track how much trash/debris was collectively removed from the local waterways as a part of stream cleanup events. Itemize the types of materials collected.
Industrial/Commercial Operations			
Inspect facilities with the potential to contribute trash.	Are industrial and commercial facilities that could generate trash aware of the BMPs that they should be implementing on site, and are they implemented and maintained?	90-100% of the facilities are aware of the need to implement the necessary BMPs and are doing so. For example, trash should be properly managed and contained within appropriate, covered waste containers.	Track inspection results and/or conduct surveys.

[4] It should be recognized that goals and metrics may be limited to TMDL requirements.

Trash

Program Activity	Management Question	Goal/Metric[4]	Data/Information to be Collected
Municipal Operations			
Inspect facilities with the potential to contribute trash.	Are the municipal facilities that could generate trash aware of the BMPs that they should be implementing on site, and are they implemented and maintained?	90-100% of the facilities are aware of the need to implement the necessary BMPs and are doing so.	Track inspection results and/or conduct surveys. Conduct audits for contracted services
Implement a street sweeping and catch basin cleaning program.	How much material is removed in the street sweeping program? How much material is removed in the catch basin cleaning program?	Regular *[specify stormwater program's frequency]* street sweeping is being implemented to remove trash from the storm drain system for 80% of the jurisdiction's streets. Regular *[specify stormwater program's frequency]* catch basin cleaning is being implemented to remove trash from the storm drain system.	Track the amount of materials collected as a part of the street sweeping program. Track the amount of material collected as a part of the catch basin cleaning program.