



# Municipal Field Operations and Maintenance Activities Best Management Practices Guidelines

Updated May 2018

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## INTRODUCTION

Field operations and maintenance activities conducted by municipalities and their contractors have the potential to cause discharge of pollutants in stormwater runoff if the materials and activities are not properly controlled. Some of these pollutants are: sediment, green wastes, herbicides, trash, fertilizers, hydrocarbons, metals, detergents and paints. Best Management Practices or BMPs can be used to prevent the discharge of pollutants in stormwater.

The *Municipal Field Operations and Maintenance Activities Best Management Practices Guidelines* (hereafter Field O&M BMPs) provide information for municipal staff and municipal contractors on the protection of stormwater during field activities.

## PERMIT REQUIREMENTS

The Phase II Permit<sup>1</sup> requires municipalities to develop and implement a program to prevent or reduce the amount of pollutant runoff from municipal operations.

- Provision E.11.h requires municipalities to develop BMPs for field O&M activities likely to release pollutants.
- Provision E.11.g (e) requires municipalities to develop a procedure for the disposal of wastes removed from storm drains.

The Field O&M BMPs document addresses these provisions of the Phase II Permit as well as the prohibition of non-stormwater discharges (B.3). The Field O&M BMPs incorporate MCSTOPPP Action Plan 2010 requirements applicable to municipal field activities.

## ORGANIZATION AND USE OF DOCUMENT

The objective of the Field O&M BMPs document is to provide a field-useable summary of practices that can be used to prevent and minimize releases of pollutants in stormwater during routine operations and maintenance activities.

The Field O&M BMPs are arranged by common types of activities conducted by municipalities and their contractors for routine maintenance and operations.

- Field supervisors can use the relevant BMP sheets to plan for stormwater protection during field work and use the information in the sheets for tail gates and safety meetings.
- Field staff can pull the relevant BMP sheet for activities to be conducted during the work shift to take into the field as a reference.
- Staff responsible for contracting O&M services can include relevant BMP sheets in contracts and Purchase Orders.

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<sup>1</sup> Water Quality Order No. 2013-0001-DWQ National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000004 Waste Discharge Requirements (WDRS) for Storm Water Discharges From Small Municipal Separate Storm Sewer Systems (MS4s) (General Permit).

- Supervisors and Stormwater Program Coordinators can use the BMP sheets to inspect and review field implementation.

While similar activities and related pollutants may occur at construction sites and at facilities such as the Corp Yard, the Field O&M BMPs document does not directly address these activities. Additional BMPs may be needed for construction sites and at the Corp Yard. Check with your supervisor about BMPs for those activities.

## COMMON TERMINOLOGY

To keep BMP sheets short and to the point the use of precise technical terms have been avoided in favor of streamlined terms. In general the following shortcuts have been used.

**Storm drains** – is not limited to underground pipes and can mean any aspect of the municipal storm drainage system (pipes, drop inlets, catch basins, ditches, swales, and other infrastructure used to convey stormwater to a water body). In some cases, practices may differ between hard structures (e.g., pipes, drop inlets, catch basins) and soft structures (e.g., roadside ditches) these differences are identified in the BMP.

**Creeks** – this term is used to mean any surface water body or water course (creeks, rivers, lakes, bays, wetlands, the ocean).

## ACTIVITIES ADDRESSED

BMPs are included for activities specified in the Phase II Permit, performance standards for field O&M activities listed in Action Plan 2010, and activities identified by Marin municipalities. In addition to the activity-based BMPs, a general good housekeeping BMP sheet is included to address other activities not specified.

Activity	BMP Sheet Reference
General Good Housekeeping	O&M-01
Field Vehicle and Equipment Staging	O&M-02
Road Repair & Pavement Maintenance	O&M-03
Right of Way Maintenance	O&M-04
Bridge Maintenance	O&M-05
Cold Weather Operations	O&M-06
Street Sweeping	O&M-07
Green Waste Managed in Streets	O&M-08
Outdoor Events (sanctioned or sponsored by Permittees)	O&M-09
Storm Drain Cleaning and Catch Basin Dewatering and Waste Disposal	O&M-10
Stormwater Pump Station Maintenance	O&M-11
Graffiti Removal	O&M-12
Pesticide Application External to Buildings	O&M-13
Building Sprinkler System Flushing and Hydrant Testing	O&M-14
Water Line Flushing	O&M-15

## REFERENCES AND SOURCES OF INFORMATION

Information for BMP sheets were adapted and drawn from several existing resources, which can be accessed to obtain additional information.

- *Caltrans Stormwater Quality Handbook Maintenance Staff Guide*, CTSW-RT-02-057, Revised October 2009, Caltrans. Available at: <http://www.dot.ca.gov/hq/env/stormwater/pdf/CTSW-RT-02-057.pdf>.
- *California Stormwater BMP Handbook Municipal*, January 2003, with September 2004 errata, CASQA. Available at: <http://www.casqa.org>. (Free download)
- *California Stormwater BMP Handbook Construction*, 2013, CASQA. Available at: <http://www.casqa.org>. (Subscription)
- *Water-Based Fire Protection Systems Discharge Best Management Practices Manual*, September 2011, California Fire Marshall in cooperation with the State Water Resources Control Board. Available at: <http://osfm.fire.ca.gov/strucfireengineer/pdf/aes/waterdischargemanual.pdf> (copy link into your browser)
- *Statewide General NPDES Permit FOR Drinking Water Systems Discharges Order WQ 2014-0194-DWQ NPDES No. CAG140001*. Available at: [http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2014/wqo2014\\_0194\\_dwq.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2014/wqo2014_0194_dwq.pdf).
- *Best Management Practices Manual for Drinking Water System Releases*, 2014, California-Nevada Section of the American Water Works Association. Available at: [https://ca-nv-awwa.org/CANV/downloads/Armando/2014BMPManual\(Final\).pdf](https://ca-nv-awwa.org/CANV/downloads/Armando/2014BMPManual(Final).pdf).
- *Fact Sheet on Phase II Permit Compliance Tracking for: E.11.j. Municipal Landscape Design and Maintenance and Pesticide Total Maximum Daily Load (TMDL)*, July 2015, MCSTOPPP.
- *Marin County Stormwater Pollution Prevention Program Action Plan 2010*, 2010, MCSTOPPP.
- *Guidelines for Protecting Aquatic Habitat and Salmon Fisheries for County Road Maintenance*, December 2004, FishNet 4C.

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There are Best Management Practices (BMPs) that are commonly applied to all maintenance activities. These have been summarized as Good Housekeeping BMPs. The Good Housekeeping BMPs should be reviewed prior to beginning the scheduled maintenance activity and implemented as appropriate for the planned activity.

<b>Activity</b>	<b>✓ BMP Procedures</b>
<b>Scheduling and Planning</b>	<ul style="list-style-type: none"><li><input type="checkbox"/> Plan and schedule maintenance activities to include BMPs. Recognize how the activity will affect stormwater so that the proper BMPs can be used at the proper time.</li><li><input type="checkbox"/> Avoid working during the rainy season or during predicted storms to reduce the potential for erosion and pollutant transport through wind, rain, runoff, and vehicle track-out (Many field activities should not be performed during predicted rain events unless required by emergency conditions).</li><li><input type="checkbox"/> Plan your work to protect storm drains and creeks from discharge of potential pollutants.</li><li><input type="checkbox"/> Locate the drain inlets and creeks, both upstream and downstream of the work site and identify where a leak, spill, or other runoff would flow.</li><li><input type="checkbox"/> Keep vehicles and equipment clean and in good operating condition.</li><li><input type="checkbox"/> Perform a pre-operational inspection of vehicles and equipment.</li><li><input type="checkbox"/> Set-up the work area to minimize the tracking of material by vehicles and equipment in or out of the work area.</li></ul>
<b>Spill Prevention and Control</b>	<ul style="list-style-type: none"><li><input type="checkbox"/> Use dry clean-up methods. If water must be used, contain the water and do not discharge to the storm drains and creeks.</li><li><input type="checkbox"/> Keep spill clean-up materials available at work site.</li><li><input type="checkbox"/> Train staff on the use of spill kits and carry spill kits in field vehicles.</li><li><input type="checkbox"/> Control spills as soon as it is safe to do so.</li><li><input type="checkbox"/> Properly remove soils that are contaminated with spilled materials.</li><li><input type="checkbox"/> Transport collected materials back to the Corp Yard or approved storage or disposal site.</li><li><input type="checkbox"/> Use drip pans and/or absorbent materials to contain leaks or spills of vehicle fluids.</li><li><input type="checkbox"/> If a leak or spill occurs, protect storm drains and creeks from spilled material by covering and blocking drain inlets. Remove covers and blocks once clean-up is completed.</li><li><input type="checkbox"/> Follow the <a href="#">MCSTOPPP Illicit Discharge and Spill Response Plan</a>.</li><li><input type="checkbox"/> Large spills must be contained and cleaned up by trained personnel. Contact your supervisor.</li><li><input type="checkbox"/> <b>Call 911 for emergencies.</b></li></ul>

<b>Activity</b>	<b>✓ BMP Procedures</b>
<b>Sanitary Waste Management</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Inspect the portable toilet units before leaving the Corp Yard or upon delivery by the service provider.</li> <li><input type="checkbox"/> Use portable toilets equipped with secondary containment pans.</li> <li><input type="checkbox"/> Place portable toilet units away from storm drains, gutters, and creeks.</li> <li><input type="checkbox"/> Prevent spills by securing the units to prevent tipping.</li> </ul>
<b>Waste Management</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Collect trash and waste generated during field activities and return it to the Corp Yard for proper disposal or recycling.</li> <li><input type="checkbox"/> Secure trash and wastes, using proper containers and covering loose materials when transporting in open bed trucks.</li> </ul>
<b>Material Transport and Use</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Prevent materials used from entering the storm drains and creeks.</li> <li><input type="checkbox"/> Materials must be delivered, stored, prepared, transported and used in a manner that minimizes or eliminates the discharge of materials.</li> <li><input type="checkbox"/> Keep a supply of spill clean-up materials and tools near the material use area and clean-up all spills as soon as it is safe to do so.</li> <li><input type="checkbox"/> Use materials only where and when needed to complete the maintenance activity.</li> <li><input type="checkbox"/> Use proper loading and unloading techniques to prevent spills.</li> <li><input type="checkbox"/> Secure loads, using proper containers and covering loose materials when transporting in open bed trucks.</li> <li><input type="checkbox"/> When transporting liquids, inspect the condition of containers or tanks to ensure leakage does not occur. Make sure lids or covers are in place and secure.</li> <li><input type="checkbox"/> When transporting loose materials, inspect truck beds, sideboards, tailgates, cab protectors, and hitches before transporting and after completing the delivery.</li> <li><input type="checkbox"/> Return unused materials to the Corp Yard for reuse, recycling or proper disposal.</li> </ul>
<b>Chemical Storage and Use</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Review Material Safety Data Sheets (MSDS) for proper use, storage, cleanup, and reactivity.</li> <li><input type="checkbox"/> Store reactive, ignitable, or flammable liquids in accordance with fire and hazardous waste codes. Do not store incompatible products in the same storage area without a physical barrier separating the containers.</li> <li><input type="checkbox"/> Use proper safety equipment when using chemicals. Routinely inspect safety equipment and replace as needed.</li> <li><input type="checkbox"/> Avoid storing chemicals in the field. When possible return materials to the Corp Yard at the end of the shift or work day.</li> <li><input type="checkbox"/> Keep chemicals in their original containers with labels when possible. Label all secondary containers chemicals are transferred into.</li> <li><input type="checkbox"/> Inspect containers before bringing them into the field. Check containers for cracks or corrosion and securely fastened lids.</li> <li><input type="checkbox"/> Use the entire product before properly disposing of the container. Return containers to the Corp Yard for proper disposal.</li> </ul>

Activity	✓ BMP Procedures
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Keep a supply of spill clean-up materials and tools near the material use area and clean-up all spills as soon as it is safe to do so.</li> <li><input type="checkbox"/> Use secondary containment, drip pans, and covered storage areas.</li> </ul>
<b>Safer Alternative Products and Integrated Pest Management (IPM)</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Maintenance products may be harmful to the environment. In some cases, a less harmful product can be used for the same purpose. Safer alternative products should be considered for all maintenance activities.</li> <li><input type="checkbox"/> Evaluate all activities that involve the application of pesticides and herbicides for alternative practices to avoid and reduce the use of these products.</li> <li><input type="checkbox"/> When chemical applications are necessary, select the least toxic product and limit application to the target area or pest.</li> </ul>
<b>Vehicle/Equipment Cleaning, Fueling and Maintenance</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Wash vehicles and equipment only at properly functioning, designated rinsing areas, wash racks, or other designated areas.</li> <li><input type="checkbox"/> Maintain vehicles and equipment at the Corp Yard or vehicle maintenance facility. Whenever possible, conduct maintenance activities inside.</li> <li><input type="checkbox"/> Inspect vehicles and equipment before operating for leaks and repair as soon as possible. Use drip pans or absorbent pads to contain leaks until repairs are complete.</li> <li><input type="checkbox"/> Establish designated fueling areas and discourage mobile fueling. Do not fuel over open ground.</li> <li><input type="checkbox"/> Protect drain inlets before fueling when fueling equipment in the field is required.</li> <li><input type="checkbox"/> Flush sprayer paint supply lines at Corp Yard and dispose of all waste materials properly.</li> <li><input type="checkbox"/> Locate equipment and vehicles stored in the field away from storm drains, gutters, and creeks.</li> <li><input type="checkbox"/> Inspect equipment and vehicle stored in field daily.</li> </ul>
<b>Illicit Discharge Detection and Dumping</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Routinely report all observed or suspected illicit connections, illicit discharges or incidents of illegal dumping to the Stormwater Coordinator or hotline.</li> </ul>

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During off-shift staging of vehicles, equipment, field fueling, and minor field repairs:

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**BMP**

**Procedures**

- Return vehicles and equipment to the Corp Yard at the end of the work shift when feasible.
  - Conduct all fueling at permanent fueling sites (commercial or Corp Yard) when feasible.
  - Conduct all repairs at the Corp Yard or vehicle maintenance facility when feasible.
  - Inspect vehicles and equipment for leaks before taking into the field.
  - Designate a field storage area and place vehicles and equipment in the designated area at the end of the work shift.
  - Park/store equipment and vehicles areas away from storm drains, gutters, and creeks.
  - Cover sprayer, paving, and patch equipment waterproof tarps when stored outside.
  - Inspect equipment and vehicles stored in field daily.
  - When leaks are identified, contain the area, and arrange for transport of the vehicle and equipment to the Corp Yard or vehicle maintenance facility.
  - Use drip pans or absorbent pads to collect incidental drips that may occur.
  - Clean-up incidental drips and leaks immediately.
  - Protect drain inlets before fueling equipment in the field.
  - Use drip pans or pads under hose connections when fueling equipment in the field.
  - Maintain spill kits with sufficient absorbent on trucks and at field storage locations.
  - Use tarps and drip pans or absorbent pads when conducting maintenance work that involves fluids.
  - Collect liquid waste in a container, with a secure lid, for transport to the Corp Yard to be reused, recycled, or disposed of properly.
  - Collect solid waste by vacuum or sweeping and secure in an appropriate container for transport back to the Corp Yard to be reused, recycled or disposed of properly.
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Pavement maintenance can involve a variety of activities including crack and joint sealing, asphalt paving, digouts, sealing operations, saw cutting, and emergency pothole repairs.

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| <b>BMP</b>        | <input type="checkbox"/> Protect storm drains, creeks, and manholes from spills, trash and debris.   |
| <b>Procedures</b> | <input type="checkbox"/> Pavement maintenance shall not be performed during rain events or prior to predicted rain events unless required by emergency conditions.   |
|                   | <input type="checkbox"/> BMPs must still be followed for emergency work in order to minimize the potential for pollutant releases.   |
|                   | <input type="checkbox"/> Seal storm drain inlets and manholes before applying coatings (e.g., seal, slurry) or during any saw cutting operations.  |
|                   | <input type="checkbox"/> Vactor and dry sweep up all water and slurry materials from saw cutting.  |
|                   | <input type="checkbox"/> Minimize airborne dust. Use water spray during grinding but minimize runoff.  |
|                   | <input type="checkbox"/> Clean equipment over absorbent pads, drip pans, plastic sheeting or other material to capture all spillage. Clean up any spills or leaks using dry methods only. Properly dispose of all generated waste material.  |
|                   | <input type="checkbox"/> When using release agents for cleaning or coating equipment and tools, all products and by-products shall be captured and reused, recycled or properly disposed.  |
|                   | <input type="checkbox"/> Do not discharge release agents to storm drains or creeks.  |
|                   | <input type="checkbox"/> Do not stockpile sand, sediment, dirt, or grindings or cuttings in or near storm drains or creeks. Protect stockpiles with a cover and/or sediment barriers during rainstorms and wind events. Remove stockpiles to the Corp Yard or permanent designated site at the end of the job. |
|                   | <input type="checkbox"/> Collect liquid waste in a container, with a secure lid, for transport to the Corp Yard to be reused, recycled, or disposed of properly.   |
|                   | <input type="checkbox"/> Collect solid waste by shoveling, vacuum, or sweeping then secure it in an appropriate container for transport back to the Corp Yard to be reused, recycled, or disposed of properly.   |
|                   | <input type="checkbox"/> Remove pavement debris from the field site for disposal or recycling.   |
|                   | <input type="checkbox"/> Return equipment to the Corp Yard for cleaning and follow Corp Yard SWPPP.  |
|                   | <input type="checkbox"/> If field tool cleaning is necessary, clean tools over absorbent pads, drip pans, plastic sheeting or other material to capture all spillage.  |
|                   | <input type="checkbox"/> Minimize water used during paving operations (e.g., water used with the roller and for evaporative cooling of the asphalt) or during dust control to prevent runoff.  |
|                   | <input type="checkbox"/> Place the “cold-mix” and all asphalt products and grindings under a cover during rain events.   |
|                   | <input type="checkbox"/> Tarp or secure loads before hauling to storage site. Do not overfill trucks.  |
|                   | <input type="checkbox"/> Grout and slurries shall not be discharged to the storm drains and creeks.  |
|                   | <input type="checkbox"/> If washing the street or pond testing is required, plug storm drains and collect water used. Do not allow wash or test water to flow into the storm drains or creeks.   |
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Right of Way (ROW) maintenance includes a variety of activities including mowing, pruning, planting and chemical vegetation control. When performing ROW maintenance, implement landscape management measures that rely on non-chemical solutions.

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| <b>Landscaping<br/>BMP<br/>Procedures</b>                | <ul style="list-style-type: none"><li><input type="checkbox"/> Maintenance shall not be performed during predicted rain events unless required by emergency conditions.</li><li><input type="checkbox"/> BMPs must still be followed for emergency work in order to minimize the potential for pollutant releases.<ul style="list-style-type: none"><li><input type="checkbox"/> Protect drains and creeks from potential spills and vegetative debris.</li><li><input type="checkbox"/> Keep vegetation and clippings out of the storm drains, gutters, and creeks.</li><li><input type="checkbox"/> Preserve existing vegetation and minimize soil compaction by minimizing and delineating the work area. Replace damaged vegetation outside the defined work area and aerate compacted soil.</li><li><input type="checkbox"/> Consider hiring <a href="#">Bay-Friendly Qualified Landscape contractors</a>.</li><li><input type="checkbox"/> Grass-cycle and chip vegetation for use as mulch.</li><li><input type="checkbox"/> Apply mulch to landscape areas to help retain soil moisture, improve the soil profile, and aid in weed suppression.</li><li><input type="checkbox"/> Use drought tolerant or California native plants and trees when possible to reduce water and fertilizer use in all new and replaced landscaping.</li><li><input type="checkbox"/> Do not fuel equipment near storm drains or creeks.</li><li><input type="checkbox"/> Transport vegetation clippings, not used on site as mulch, to the Corp Yard for management as green waste.</li><li><input type="checkbox"/> Adjust irrigation systems, checking for spray coverage of sprinklers, and connections and drip lines for leaks or loose fit.</li><li><input type="checkbox"/> Respond to reported irrigation system malfunctions.</li></ul></li></ul> |
| <b>Pesticide,<br/>Herbicide,<br/>Fertilizer<br/>BMPs</b> | <ul style="list-style-type: none"><li><input type="checkbox"/> Follow the local Integrated Pest Management Policy or Ordinance. The policy/ordinance requires an IPM evaluation before applying pesticides or herbicides. Contact your IPM Coordinator and review the policy/ordinance for more details.</li><li><input type="checkbox"/> Follow SOPs for the application of pesticides, herbicides, and fertilizers.</li><li><input type="checkbox"/> Maintain records of applications by staff and contractors.</li><li><input type="checkbox"/> Monitor the National Weather Service for weather conditions and schedule applications accordingly ( See: National Weather Service Forecast Table Interface).<ul style="list-style-type: none"><li><input type="checkbox"/> Do not apply pesticides, herbicides, or fertilizers during irrigation or within 48 hours of predicted rainfall with greater than 50% probability.</li><li><input type="checkbox"/> When applying chemical and organic-based fertilizer manage and monitor “watering-in” to infiltrate fertilizer into the root zone and to minimize the chance of runoff from the landscaped area.</li></ul></li><li><input type="checkbox"/> Ensure staff and contractors hold a Pesticide Applicator's Certificate and training is up-to-date.</li><li><input type="checkbox"/> Consider hiring contractors that are <a href="#">Ecowise Certified</a> pesticide applicators.</li><li><input type="checkbox"/> Follow label requirements, and local, state, and federal rules for pesticide,</li></ul>   |
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herbicide, and fertilizer applications.

- Store pesticides, herbicides, and fertilizers, and associated wastes as required by federal, state, and local regulations.
  - Immediately respond to accidental spills or releases.
  - Properly dispose of out dated and unused products. Maintain records of disposal.
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Bridge maintenance can involve a variety of activities including welding and grinding, sand/grit blasting, painting, and repairs. Bridge work generally occurs over creeks and therefore requires special attention.

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**BMP****Procedures**

- Bridge maintenance shall not be performed during predicted rain events unless required by emergency conditions.
  - BMPs must still be followed for emergency work in order to minimize the potential for pollutant releases.
  - Secure all equipment and tools to prevent dropping them into the water.
  - Use containment to catch loose materials, wastes, and drift (e.g., grit, paint chips, paint spray, welding slag) when working on sides or under the bridge.
  - Protect drain inlets to catch loose materials and wastes and potential spills.
  - Transfer material captured into a waste container for proper disposal at the Corp Yard.
  - Use minimum amount of sand necessary when sandblasting. Use sand that is non-hazardous.
  - Implement hazardous materials protocols when removing or blasting lead-based paints.
  - Avoid excess use of water to minimize runoff.
  - Collect liquid waste in a container, with a secure lid, for transport to the Corp Yard to be reused, recycled, or disposed of properly.
  - Collect solid waste by vacuum or sweeping and secure in an appropriate container for transport back to the Corp Yard to be reused, recycled or disposed of properly.
  - Clean equipment over absorbent pads, drip pans, plastic sheeting or other material to capture all spillage. Properly dispose of generated waste material.
  - Secure paint and liquid containers during transport to prevent spillage.
  - Mix paint indoors, away from drain inlets or in a containment area. Load the paint spray equipment at the Corp Yard.
  - Monitor weather and wind when using spray equipment.
  - Use tarps or canvas under work area to capture excess paint or paint chips.
  - Do not remove original product label from paint or other hazardous materials containers as it contains important spill clean-up and disposal information. Use all of the product before disposing of the container.
  - Appropriately label all secondary containers.
  - Collect all paint equipment wash water and return it to the Corp Yard for proper disposal.
  - Implement Pavement Maintenance BMPs for pavement repairs.
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Cold weather operation involves the use of abrasives to maintain public safety. Proper ice control will reduce the discharge of sediment to the storm drains or creeks. Deicing agents are not used.

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| <b>BMP</b>        | <input type="checkbox"/> Sweep after storms to remove sand and abrasives and dispose of properly.                                       |
| <b>Procedures</b> | <input type="checkbox"/> Routinely calibrate spreaders to use no more than necessary for effective control.                             |
|                   | <input type="checkbox"/> Use road abrasives that have been washed, screened, or graded to reduce silt and clay to insignificant levels. |
|                   | <input type="checkbox"/> Avoid blowing or pushing ice, snow, abrasives, or other debris into creeks, or storm drains.                   |
|                   | <input type="checkbox"/> Store sand in covered stockpiles.  |
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# Street Sweeping

Street sweeping involves a variety of tasks to prepare streets for sweeping, conducting sweeping, and managing wastes generated from sweeping. **Specify in contracts** that the O&M-07 BMP Procedures shall be followed, that back up equipment shall be available, and that records shall be provided.

- BMP Procedures**
- Clean streets according to the established sweeping schedule. Take into account the heavy leaf season when scheduling.
  - Street sweeping should be done in such a way as to leave streets clean, with no dirt trails or debris.
  - Identify and prioritize areas that need more frequent cleaning than in the table below.
  - Report trees that interfere with sweeping operations.
  - Check sweeping equipment for proper adjustment before commencing route and at appropriate intervals during the work shift. No dirt trails or debris should be left behind.
  - Operate sweeping equipment at the speed specified by the manufacturer.
  - Inspect and maintain equipment at the designated frequencies
    - Replace worn out components as needed.
  - Report observed illicit discharges and spills to the Stormwater Program Coordinator or hot line.
  - Transport sweeping waste to the Corp Yard or temporary pre-designated storage location until disposed of properly.
    - Do not stockpile in or near storm drains or creeks. Protect stockpiles with a cover or sediment barriers.
  - Track and document:
    - Miles swept using the broom odometer.
    - Volume or weight of material removed each day.

Municipality	Sweeping Frequency		
	Residential	Commercial	Industrial
Belvedere	Weekly	Weekly	Not applicable
Corte Madera	Weekly	Weekly	Weekly
Fairfax	Monthly	Weekly	Not applicable
Larkspur	Monthly	Monthly	Weekly
County	Annually	2x/year	Not applicable
Mill Valley	Monthly	4x/month	Not applicable
Novato	Every 6 weeks	Weekly	Monthly
Ross	Weekly	Weekly	Not applicable
San Anselmo	1-2x/month	1-2x/month	Not applicable
San Rafael	Every 6 weeks	2x/week	2x/month
Sausalito	Monthly	3x/week	Monthly
Tiburon	Monthly	Monthly	Not applicable

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Management of green waste prior to recycling (composting) creates the potential for the green waste to be washed or blown into the storm drainage system. This BMP applies primarily to the collection of curbside green wastes and not management of green wastes associated with municipal landscaping activities, which are addressed in the Right of Way Maintenance BMP sheet.

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- BMP Procedures**
- Require the use of closed top carts and containers for the collection of green wastes where feasible.
  - Only allow combined food and green waste collection in closed bins and containers
  - Limit out-of-cart collection of loose green wastes.
  - For example limit out-of-cart waste to bundled and tied branches and seasonal collection of Christmas trees.
  - Where loose materials are occasionally collected, e.g., fall leaf drop season, follow-up collection days with street sweeping.
  - Encourage home composting to reduce waste placed at curbside for collection.
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Outdoor events include a variety of special events that can generate trash, recyclable materials, and potentially sanitary wastes, as a result of large congregations of people. Neighborhood and creek clean-ups result in the generation and temporary storage of trash.

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| <b>Trash and Recycling BMP Procedures</b> | <ul style="list-style-type: none"><li><input type="checkbox"/> Provide adequate trash and recycling receptacles for use by the public and workers/vendors.</li><li><input type="checkbox"/> Provide routine removal throughout the event of filled trash and recycling receptacles, especially in food service and toilet areas.</li><li><input type="checkbox"/> Provide routine litter removal during the event.</li><li><input type="checkbox"/> Remove and properly dispose trash and litter following the event.</li><li><input type="checkbox"/> Remove and transfer recyclables to a recycling center following the event.</li><li><input type="checkbox"/> Install temporary screens during the event for catch basins not equipped with a full trash capture device.</li><li><input type="checkbox"/> Remove screens following event.</li><li><input type="checkbox"/> Arrange for streets and sidewalks to be broom-cleaned or cleaned with a street sweeper following the event.</li><li><input type="checkbox"/> Washing streets or sidewalks into the storm drainage system is prohibited.</li></ul> |
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| <b>Sanitary Waste BMP Procedures</b> | <ul style="list-style-type: none"><li><input type="checkbox"/> Provide adequate accessible portable toilets and hand washing facilities.</li><li><input type="checkbox"/> Inspect the portable toilet units upon delivery by the service provider.</li><li><input type="checkbox"/> Locate portable toilet units away from storm drains, gutters, and creeks.</li><li><input type="checkbox"/> Use portable toilets equipped with secondary containment pans.</li><li><input type="checkbox"/> Prevent spills by securing the units to prevent tipping.</li><li><input type="checkbox"/> Instruct portable toilet service vendor to prevent discharge to ground or storm drains during cleaning and servicing.</li></ul> |
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| <b>Outreach and Clean-up Day BMP Procedures</b> | <ul style="list-style-type: none"><li><input type="checkbox"/> Plan for sufficient trash bags for volunteers.</li><li><input type="checkbox"/> Plan for windy conditions – bring paper weights for informational brochures and paperwork.</li><li><input type="checkbox"/> Identify waste staging area for collected trash and debris. Locate staging area sufficiently far from the creek and storm drain inlets.</li><li><input type="checkbox"/> If trash is not placed into trash bags or bins for staging, install temporary screens during the event for catch basins not equipped with a full trash capture device.</li><li><input type="checkbox"/> Remove screens following event.</li><li><input type="checkbox"/> Remove and properly dispose trash and litter following the event.</li><li><input type="checkbox"/> Remove and transfer recyclables to a recycling center following the event.</li><li><input type="checkbox"/> Arrange for the staging areas, streets and sidewalks to be swept following the event.</li></ul> |
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# Storm Drain Cleaning and Catch Basin Dewatering and Waste Disposal

O&M-10

Catch basin cleaning typically involves removal of solid, semi-solid, and liquid wastes. Wastes may be removed by hand or with vactor equipment. Following removal from the catch basin, wastes need to be managed for proper disposal. When cleaning roadside ditches and swales use the *County Road Maintenance Guidelines for Protecting Aquatic Habitat and Salmon Fisheries*.

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## **BMP Procedures**

- Catch basin maintenance shall not be performed during rain unless required by emergency conditions.
    - BMPs must still be followed for emergency work in order to minimize the potential for pollutant releases.
  - Inspect and clean storm drains according to the prioritized cleaning schedule and maintain/install storm drain markers (with no dumping message) in high foot-traffic areas.
  - Inspect catch basin prior to cleaning. If unusual odors or materials are detected (oil sheen, chemical odor), contact your supervisor for instructions and assessment for hazards before proceeding with the cleaning.
  - Follow Spill Response Plan for suspected spills into the storm drains.
  - When feasible, use vactor equipment to remove wastes from catch basins.
  - If water is used to flush the catch basin or storm drain pipes, install plugs downstream to contain waste material and cleaning water.
  - Dewater semi-solid wastes removed from catch basins at the Corp Yard following the Corp Yard SWPPP.
  - Properly dispose of decanted water.
    - Discharge decanted water to the sanitary sewer, with permission of the sewer agency.
    - If discharge to the sanitary sewer is not permitted, contain water and arrange for proper disposal.
    - Decanted water should never be discharged to the ground, storm drain, or creek.
  - Avoid stockpiling material in the field. When necessary, plan for enough storage to contain liquid and solid wastes and prevent discharges to the storm drain system.
  - Collect liquid and semi-solid waste in a container with a secure lid, in tanks, or in leak-free bins for transport to the Corp Yard.
  - Collect dry solid waste by shoveling, vacuum, or sweeping and secure in an appropriate container for transport back to the Corp Yard.
  - Dispose of solid wastes at appropriately permitted disposal sites.
  - Keep records of catch basins and lines cleaned and amount of material removed.
  - Report observed illicit discharges and spills to the Stormwater Program Coordinator or hot line.
  - Coordinate with assigned staff to report illicit discharges and connections.
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Stormwater pump station maintenance involves routine inspections of the pump station, cleaning of the wet wells and forebays, and management of the wastes generated from the cleaning operations.

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**BMP  
Procedures**

- Stormwater pump station maintenance shall not be performed during predicted rain events unless required by emergency conditions.
    - BMPs must still be followed for emergency work in order to minimize the potential for pollutant releases.
  - Inspect wet wells and forebays once per month during the dry season (April-Sept.) for spills or illicit discharges (oil sheen, discoloration, and odors).
  - Inspect wet wells and forebays weekly during the wet season (Oct.-March) for spills or illicit discharges (oil sheen, discoloration, and odors).
  - If a spill into the wet well or forebay is observed and it is safe to do so, shut down pumps. Follow the Spill Response Plan. Keep a spill kit on site.
  - Conduct one comprehensive cleaning of wet wells annually prior to the wet season.
  - When feasible use vacuor equipment to remove wastes from pump stations.
  - Transport waste removed from pump stations to the Corp Yard or temporary pre-designated storage location until disposed of properly.
  - Avoid stockpiling material in the field. When necessary, plan for enough storage to contain liquid and solid wastes and prevent discharges to storm drains and creeks.
  - Dewater semi-solid wastes removed from pump stations and properly dispose of decanted water.
    - Discharge decanted water to the sanitary sewer, with permission of the sewer agency.
    - If discharge to the sanitary sewer is not permitted, contain water and arrange for proper disposal.
  - Have a spill kit readily available if there is a large potential for pollutant discharge, or during pump maintenance activities.
  - Collect liquid and semi-solid waste in a container with a secure lid, in tanks, or in leak-free bins for transport to the Corp Yard or directly to proper disposal sites.
  - Collect dry solid waste and secure in an appropriate container for transport back to the Corp Yard or directly to proper disposal sites.
  - Dispose of solid wastes at appropriately permitted disposal sites.
  - Properly store materials kept at the pump stations, use secondary containment for lubricants, batteries, and fuels.
  - Keep records of pump station inspections, maintenance, and materials removed during cleaning.
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Graffiti removal can involve a variety of activities including painting, washing, use of solvents, and sand/grit blasting.

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**BMP  
Procedures**

- Graffiti removal shall not be performed during rain events or prior to predicted rain events.
  - Secure paint while transporting to avoid spills.
  - Protect drain inlets and creeks from potential spills.
  - Use tarps and similar control measures to prevent spills or material drift from being deposited into storm drains or creeks.
  - Mix paint indoors or in a containment area away from drain inlets.
  - Do not allow water used for cleaning and decontamination to enter storm drains or creeks.
  - Collect waste from cleaning paint equipment or brushes into a bucket or drum with a secure lid for transport back to the Corp Yard to be reused, recycled or disposed of properly.
  - Use minimum amount of sand/grit necessary when blasting. Use sand/grit that is non-hazardous.
  - Implement hazardous materials protocols when removing or blasting lead-based paints.
  - Avoid excess use of water to minimize runoff.
  - Collect liquid waste in a container, with a secure lid, for transport to the Corp Yard to be reused, recycled, or disposed of properly.
  - Collect solid waste by vacuum or sweeping and secure in an appropriate container for transport back to the Corp Yard to be reused, recycled or disposed of properly.
  - Clean equipment over absorbent pads, drip pans, plastic sheeting or other material to capture all spillage. Properly dispose of generated waste material.
  - Avoid using oil-based paints whenever possible.
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The local Integrated Pest Management Policy or Ordinance must be followed prior to and during any external pest control application. The policy/ordinance requires the least toxic approach to controlling pests. External pest control includes applications of pesticides (primarily insecticides) outside of municipal buildings where the pesticide is exposed to stormwater runoff or wind drift. Examples include controlling ants, termites, mosquitos, and other pests.

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**BMP  
Procedures**

- Implement the Integrated Pest Management Policy or Ordinance. All requirements in the local policy/ordinance supersede BMPs described in this document.
  - Follow SOPs for the application of pesticides.
  - Monitor NOAA for weather conditions and schedule applications accordingly.
    - Do not apply pesticides, herbicides, or fertilizers during irrigation or within 48 hours of predicted rainfall with greater than 50% probability.
  - Maintain records of every application. Track and document the amount of active ingredient applied by staff and contractors.
  - Use baits for controlling pests and remove baits if pests are gone.
  - Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of pesticides and other chemicals and training of applicators and pest control advisors.
  - Use pesticides only if there is an actual pest problem and not on a regular schedule.
  - Apply pesticides only when wind speeds are low (less than 5 miles per hour). Calibrate pesticide application equipment to avoid excessive application.
  - Employ techniques to minimize off-target application (e.g., spray drift) of pesticides.
  - Do not mix or prepare pesticides for application near storm drains or creeks.
  - Purchase only the amount of pesticides that can be reasonably used in the given time period (i.e., within expiration period).
  - Dispose of unused pesticides as hazardous waste. Dispose of empty containers according to the instructions on the label.
  - Train, including providing periodic refresher training, personnel on proper use of pesticides.
  - Pesticide application must be conducted under the supervision of a California qualified pesticide applicator.
  - Train and encourage personnel to use IPM methods to minimize use of chemical treatments.
  - Implement Spill Response Plan for any accidental spills or leaks of pesticides.
  - Inspect equipment and containers prior to use or storage.
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# Building Sprinkler System Flushing and Hydrant Testing

O&M-14

Water discharged from building sprinkler systems and fire hydrants during testing for fire safety may contain pollutants like metals and may wash off pollutants in the flow path. This BMP applies primarily to testing of fire safety systems and not water line flushing activities conducted to maintain drinking water quality which are addressed in the BMP sheet O&M-15.

## **BMP Procedures**

- Testing shall not be performed during rain events or prior to predicted rain events unless required by emergency conditions.
  - BMPs must still be followed for emergency work in order to minimize the potential for pollutant releases.
- Determine if chemicals have been added to the system.
  - If chemicals (other than residual chlorine from the potable source water) have been used arrange for testing and proper disposal of the test water.
- Determine if there is residual chlorine in the system.
  - If chlorine is present and more than 1,500 gallons will be discharged, arrange for dechlorination. If there is a nearby creek, dechlorinate all discharges regardless of volume.
  - Most building sprinkler systems will not contain residual chlorine due to the age of the water in the system. Water in fire hydrants typically has chlorine.
- Determine if the water is cloudy, discolored, or has odor.
  - If water is cloudy, discolored, or has odor it cannot be discharged to the storm drain or creek without treatment.
  - Install a filter sock designed to remove suspended sediments (including fine metal particulates)<sup>2</sup>.
- Check with other municipal crews to determine if water flow will interfere with their work or cause the release of pollutants.
- Sweep or vacuum the area where the water is anticipated to flow to remove trash and other debris.
- Install sediment control on storm drain inlets that will receive the flow or temporarily plug nearby drains.
- Minimize water discharged to storm drains and creeks. If possible reuse water for irrigation or direct to vegetated area or to Low Impact Development (LID) features that infiltrate water.
  - Do not exceed the infiltration capacity.
  - Manage flow rates to minimize erosion.
  - Do not wash out mulch or damage plants.
  - Repair incidental damage or erosion.

<sup>2</sup>One example of an acceptable filter sock can be found here: <http://www.eco-tec-inc.com/products/VMS.html>

Water line flushing may be conducted by municipalities who operate community water systems to maintain drinking water quality. Discharged water may contain chlorine, and may wash off pollutants on the ground and pavement where the water flows. Discharges associated with testing of fire safety systems are addressed in the BMP sheet O&M-14.

While these BMPs are consistent with the Statewide General NPDES Permit for Drinking Water System Discharges,<sup>3</sup> they do not address all requirements of that permit and Dischargers subject to it should use that permit to determine the appropriate BMPs.

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| <b>BMP Procedures</b> | <ul style="list-style-type: none"><li><input type="checkbox"/> Water line flushing shall not be performed during rain events unless required by emergency conditions.<ul style="list-style-type: none"><li><input type="checkbox"/> BMPs must still be followed in order to minimize the potential for pollutant releases.</li></ul></li><li><input type="checkbox"/> Dechlorinate potable water naturally or chemically.</li><li><input type="checkbox"/> Dechlorinate superchlorinated water chemically prior to discharge to a storm drain or creek.</li><li><input type="checkbox"/> During flushing, rehabilitation, or development of water supply wells, use multi-baffled settling tanks, or equivalent when needed to remove sediment and reduce turbidity.</li><li><input type="checkbox"/> If copper or zinc is used to treat water system, avoid discharges within 48 hours of application.</li><li><input type="checkbox"/> Minimize water discharged to storm drains and creeks. If possible reuse water for irrigation or direct to Low Impact Development (LID) features that infiltrate water.</li><li><input type="checkbox"/> Check with other municipal crews to determine if water flow will interfere with their work or cause the release of pollutants.</li><li><input type="checkbox"/> Sweep or vacuum the area where the water is anticipated to flow to remove trash and other debris.</li><li><input type="checkbox"/> Control (slow) release rate to prevent flooding, ensure public safety, and prevent erosion.</li><li><input type="checkbox"/> Set up dechlorination process if needed (e.g., dechlor mats, dechlor strips, dechlorinating defuser).</li><li><input type="checkbox"/> Install erosion and sediment controls in flow path and at drop inlets to slow water and retain sediment.</li><li><input type="checkbox"/> Check BMPs and test residual chlorine during discharge.</li><li><input type="checkbox"/> Clean-up at the end of the operation.<ul style="list-style-type: none"><li><input type="checkbox"/> Sweep, vacuum, or shovel sediment.</li><li><input type="checkbox"/> Remove BMPs from street and inlets.</li><li><input type="checkbox"/> Repair erosion damage.</li></ul></li></ul> |
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<sup>3</sup> Order WQ 2014-0194-DWQ, NPDES No. CAG140001

### Reporting an Illegal Stormwater Discharge

To report illegal discharges to storm drains, creeks, or wetlands, call the numbers below or file an anonymous complaint online at [www.mcstoppp.org](http://www.mcstoppp.org)

After normal business hours	Contact County Sheriff's non-emergency line: 415-473-7233
Hazardous Materials or Hazardous Waste	<ul style="list-style-type: none"> <li>• Call 911 – Local Fire Department &amp;</li> <li>• Marin County CUPA: 415-473-6647</li> </ul>
Sanitary Sewage	<ul style="list-style-type: none"> <li>• Marin County Environmental Health: 415-473-6907</li> <li>• Local Sanitary District</li> </ul>
Spills into creeks, bays or the ocean	<ul style="list-style-type: none"> <li>• San Francisco Regional Water Quality Control Board: 510-622-2300</li> <li>• California Department of Fish and Wildlife: 707-944-5500</li> <li>• California Office of Emergency Services (CalOES) 800-852-7550</li> </ul>

#### Non-hazardous nuisance stormwater discharges (see jurisdiction contacts below)

Belvedere	415-435-3838
Corte Madera	415-927-5057
County of Marin	415-473-6528
Fairfax	415-453-1584
Larkspur	415-927-5017
Mill Valley	415-388-4033
Novato	415-899-8246
Ross	415-453-1453 ext. 163
San Anselmo	415-258-4600
San Rafael	415-485-3355
Sausalito	415-289-4100 ext. 106
Tiburon	415-435-7399