

BEST MANAGEMENT PRACTICES



5

NON-STORMWATER AND WASTE/MATERIAL MANAGEMENT

IN THIS CHAPTER:

- | | | | |
|-----|--------------------------------|------|------------------------------|
| 5.1 | Water Conservation | 5.8 | Solid Waste |
| 5.2 | Concrete Management | 5.9 | Liquid Waste |
| 5.3 | Paving and Grinding Operations | 5.10 | Spill Prevention and Control |
| 5.4 | Material Delivery and Storage | 5.11 | Contaminated Soil |
| 5.5 | Stockpile Management | 5.12 | Paint and Stucco |
| 5.6 | Sanitary Waste | 5.13 | Illicit Connection/Discharge |
| 5.7 | Hazardous Waste | 5.14 | Dewatering Operations |

5.1 WATER CONSERVATION

DESCRIPTION

This BMP reduces the amount of water consumed for a given activity, thereby reducing the chance of erosion and transport of pollutants off-site.

GUIDELINES

- Avoid overfilling watering equipment. If overfilling persists, stabilize the area, and provide means to control the runoff.
- Discourage on-site vehicle and equipment washing.
- Avoid cleaning construction areas with water. If water must be used, first sweep and vacuum to minimize amount of water needed.
- Always protect storm drain inlets or natural waterways from sediment and pollutants generated by watering activities.
- Direct non-polluted runoff into areas on-site where it can percolate into the ground or be collected and reused.
- Water equipment should be kept in good working order.
- Always promptly repair leaky watering equipment.
- Lock water tank valves to prevent unauthorized use.

MAINTENANCE AND INSPECTION

Inspect water equipment at least weekly, and repair as needed:

- Water trucks
- Water reservoirs
- Irrigation systems
- Hydrant connections

Inspect all non-stormwater management BMPs daily when discharge occurs.

5.2 CONCRETE MANAGEMENT

DESCRIPTION

Concrete management includes the proper procedures to reduce or eliminate the contamination of stormwater runoff during concrete curing, cutting, drilling and coring. Discharges of stormwater and non-stormwater exposed to these concrete activities may have a high pH and may contain chemicals, metals, and fines. Proper procedures reduce or eliminate the contamination of stormwater runoff during these procedures

GUIDELINES

This BMP is suitable for all projects where Portland Cement Concrete (PCC) and concrete curing chemicals are placed where they can be exposed to rainfall, runoff from other areas, or where runoff from the PCC will leave the site. Concrete management is also applicable on projects where asphalt is used or where slurry or pavement/concrete wastes are generated by construction activities, including: sawcutting, coring/drilling, grinding, repaving or patching, and encasing conduit in concrete.

All operations shall adequately mitigate polluted water discharge:

- Capture all runoff from curing

MAINTENANCE AND INSPECTION

- Inspect containment structures prior to rainfall and prior to and during use.

Required repairs must be done before a rain event, and in a timely manner.

- At the end of a shift or after use, ensure containment structures and the general work area are clean. Properly dispose of all wastes.



Runoff from the curing operation is captured in a concrete washout.



Wastes from concrete curing are not contained, and are open to contact with runoff.

5.3 PAVING AND GRINDING OPERATIONS

DESCRIPTION

This section discusses the handling of materials and wastes for (and the use of equipment associated with) pavement preparation, paving, surfacing, resurfacing, paint striping, thermoplastic striping and placement and the removal of all the above.

GUIDELINES

- Install BMPs prior to beginning paving and grinding operations.
- Avoid paving during wet season.
- Collect and remove grindings and wastes from removal of pavement and related materials as the work progresses.
- Temporary waste stock piles containing wastes from paving and grinding need to be covered with plastic sheeting until removed from the site.
- Asphalt concrete placement and removal equipment needs to be cleaned off-site.
- Do not apply seal coat, tack coat, slurry seal or fog seal during rain or if rain is expected during curing period. If unexpected rain occurs, capture all runoff from treated areas, and dispose off-site.
- Prior to operation, verify that shut-off valves are operable on painting and thermoplastic applying equipment. Do not overfill the thermoplastic pre-heater to prevent spills. Clean truck beds daily and recycle thermoplastic material when

possible.

- Do not transfer or load bituminous materials near storm drains or natural waterways.

MAINTENANCE AND INSPECTION

Inspect and maintain machinery regularly to minimize potential leaks.



Inactive paving equipment is properly stored with perimeter protection.

5.4 MATERIAL DELIVERY AND STORAGE

DESCRIPTION

This BMP provides the proper procedures for delivery and storage of the following:

- Soil stabilizers and binders
- Detergents
- Plaster
- Petroleum products such as fuel, oil and grease
- Asphalt and concrete components
- Hazardous compounds such as acids, lime, glues, adhesives, paints, solvents and curing compounds

GUIDELINES

Outdoor Loading Areas

- Grade the area or construct a low berm to prevent run-on of stormwater and runoff of spills, or provide a roof/seal/door skirt to keep out rain.
- Prevent roof runoff from draining onto loading area.

Storage

- Construction materials must be stored onsite at all times. Storing materials together in a staging area will make it easier to cover them to prevent runoff caused by wind or rain.
- Only exception is possession of a right-of-way permit.
- Store materials away from outside drains and high traffic.
- Keep chemicals in their original labeled

container.

- Chemical storage areas must have spill kits.
- Materials must be labeled.
- Petroleum products (fuels and oils) should be stored in approved containers and should not be overfilled. Containers should be placed in temporary containment facilities for storage.
- Compressed gases:
 - Label cylinders with contents
 - Secure cylinders from falling
 - Nation Fire Protection Association (NFPA) symbol posted in storage area.
- Store oxygen at least 25 feet away from fuel.
- Separate cylinders in bulk storage from incompatible materials by fine barriers or by appropriate distance.
- Stored items in contained areas to prevent leaks or spills from directly/indirectly entering storm drains.
- The storage volume within the containment area should be 10% greater than the total volume of all containers.
- Secondary containment for hazardous materials, liquids and solids. Design secondary containment for outdoor storage areas to contain a spill from the largest individual vessel. If the area is open to rainfall, design secondary containment to include the volume of

a 24-hour rainfall as determined by a 25 year storm, and make provisions to drain accumulations of groundwater and rainwater.



These materials are covered but require a secondary containment facility for storage.

5.4 MATERIAL DELIVERY AND STORAGE

Material Safety Data Sheets (MSDS)

The project site manager needs to have available all MSDS for all toxic materials and liquids used and stored on the site. Storage instructions should be posted, and employees need to be trained in proper storage and delivery procedures.

Hazardous Materials

Store hazardous materials in their original containers with their original product labels attached. Do not store incompatible materials in the same temporary storage facility. Allow sufficient space between storage containers to allow for spill cleanup and emergency response access.

- Ensure that adequate storage volume is provided and is located as far away as possible from storm drains, natural waterways and drainage channels. Secondary containment should be impervious to spilled wastes. Supply equipment storage areas with appropriate spill cleanup materials.
- Secondary containment must be kept clean, dry, and free of debris.
Additional containment requirements:
 - **Capable of holding 110 percent of material stored (unless exposed to rain)**
 - **Lining to remain intact**
 - **No materials overhanging berms**
 - **No materials stored on berms**
 - **No flammable materials used to form berms**
- Post the NFPA symbol at storage area.



Materials are stored in bins but there is leakage, discarded oil cans, and uncovered containers.

5.5 STOCKPILE MANAGEMENT

DESCRIPTION

This BMP describes proper procedures for stockpiling construction material. Stockpile protection is a year round requirement.

GUIDELINES

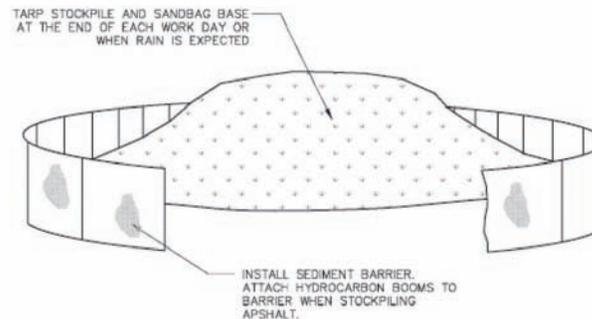
Soil stockpiles:

- Soil or gravel stockpiles must be stored onsite. During the rainy season, these stockpiles must be covered with a tarp each day.
- When in use, all exposed soil piles must be sprayed with water to prevent excessive dust.
- If a soil stockpile is to remain inactive for a season, consider hydroseeding the pile or using vegetation to stabilize it.

Other stockpiles:

- Install temporary barriers around the stockpile perimeter to prevent contact with runoff. Temporary barriers may be berms, dikes, silt fences, fiber rolls and gravel bag berms. Attach hydrocarbon booms to barrier if stockpiling asphalt. Hydrocarbon is part of the crude oil mixture that makes asphalt. The booms absorb the oil and prevent it from leaving the site.
- Place active and inactive cold-mix stockpiles on plastic sheeting or tarps, and securely cover them.

Stockpiles should be checked weekly, prior to rain events, daily during extended rain events, and after rain events. Remove sediment from stockpile perimeter controls when sediment reaches 1/3 of the barrier height.



A properly protected stockpile with a plastic cover anchored down by gravel bags.



Asphalt debris is escaping from this poorly installed stockpile. Asphalt can release pollutants like hydrocarbons when not properly contained.

MAINTENANCE AND INSPECTION

5.6 SANITARY WASTE

DESCRIPTION

Measures must be taken to keep waste from portable sanitary facilities out of the storm drain system, natural waterways or channels. Discharges to the City's sanitary sewer system are not allowed from sanitary facilities.

GUIDELINES

- Locate temporary sanitary facilities behind sidewalks and away from storm drain inlets, natural waterways, channels and traffic areas.
- Anchor the sanitary facility to the ground as a precaution for both vandalism and high winds.
- Do not discharge, dump or bury wastewater on private or public property.
- If a spill occurs from the facilities, follow federal, state and local regulations for containment and clean-up.

MAINTENANCE AND INSPECTION

The general contractor monitors any sanitary/septic waste storage and disposal procedures on a weekly basis. The contractor is responsible for ensuring that the sanitary/septic facilities are maintained in good working order and wastes are transported offsite by a licensed sanitary service provider.



Improper disposal of sanitary wastes.



Properly installed portable sanitary facilities.

5.7 HAZARDOUS WASTE

DESCRIPTION

This section describes proper hazardous waste handling procedures to prevent associated pollutants from entering stormwater.

Hazardous waste includes but is not limited to the following substances: petroleum products, concrete curing compounds, sanitary wastes, paints, stains, wood preservatives, asphalt products, pesticides, acids, solvents and roofing tar. If non-hazardous waste comes into contact with the above wastes, it is considered hazardous.

Sites with existing structures may contain wastes which must be disposed of in accordance with Federal, State, and local regulations, including: sandblasting grit mixed with lead, cadmium, or chromium-based paints; asbestos; and polychlorinated biphenyls (PCBs).

GUIDELINES

- Refer to the applicable Material Safety Data Sheet (MSDS) for clean-up and reporting procedures for all hazardous spills.
- Do not remove the original product label; it contains important safety and disposal information.
- Use secondary containment berms in fueling areas.
- Place hazardous waste collection containers at convenient locations.
- All hazardous waste must be stored within secondary containment.
- See Hazardous Materials BMP Section for additional guidelines.
- Containers properly labeled: name, address, and US Environmental Protection Agency (EPA) identification (ID) number or ID number of generator listed (not required if contractor is an exempt small quantity generator).
- Do not store different wastes in the same container. Do not store incompatible materials in the same temporary containment facility.
- Hazardous waste shall be transported from the site by a licensed hazardous waste transporter and disposed of at an authorized, licensed disposal or recycling facility within 90 days of being accumulated.
- Properly dispose of rain water removed from temporary containment areas that may have mixed with hazardous waste.
- Educate contractor and subcontractors regarding identification, storage, and disposal of hazardous waste. Ongoing hazardous waste training should be included in regular safety meetings.



Runoff containing concrete admixtures from unprotected construction activities have made their way to a drainage inlet.

5.8 SOLID WASTE

DESCRIPTION

Materials that are collected and disposed of on-site in solid waste storage bins cannot come in contact with stormwater runoff.

Solid wastes include items such as:

- Construction wastes including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, non-hazardous equipment parts, styrofoam and other materials used to transport and package construction materials.
- Scrap or surplus building materials including metals, rubber, plastic, glass pieces and masonry products.
- Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, plastic wrappers, and cigarettes.
- Planting wastes, including vegetative material, plant containers, and packaging materials.

GUIDELINES

- Solid waste should be stored at a location which is least likely to be flooded, and at a location away from a storm drain, natural waterway or drainage channel.
- Use berms, dikes or other temporary diversion structures to protect stockpiled waste from contacting stormwater.

- During rain events, waste materials need to be stored in watertight dumpsters and kept securely covered. Liquids must be kept out of dumpsters and waste receptacles. The areas around the dumpsters should be swept daily.
- Provide an adequate number of trash receptacles on-site including field trailer areas and where workers gather for breaks except near drainage inlets, natural waterways or drainage channels. All litter within the construction site should be collected weekly, regardless of the litter's origin. Litter needs to be removed from the site by a licensed solid waste contractor.
- Provide an adequate amount of watertight dumpsters to collect the anticipated volume of construction waste. Also, plan for additional dumpsters to be delivered to the site and schedule additional pickups during demolition phases. Washing out dumpsters on the construction site is prohibited.

MAINTENANCE AND INSPECTION

Construction debris and waste should be removed from the site biweekly or more frequently as needed. Arrange for regular waste collection.



There are no dumpsters, containers or diversion structures to stop stormwater runoff from coming in contact with this construction litter and debris.

5.9 LIQUID WASTE

DESCRIPTION

This section describes proper procedures to prevent non-hazardous liquid wastes from entering the storm drain system. This section does not apply to the following: dewatering operations, solid wastes, hazardous wastes, concrete slurries, and liquid wastes covered by specific laws or permits.

This BMP addresses non-hazardous liquid wastes:

- Drilling slurries and fluids
- Dredgings
- Other non-storm water liquid discharges, which are not covered by separate permits
- Grease and oil-free wastewater and rinse water

GUIDELINES

- Use temporary dikes or berms to direct surface flow of liquid wastes to a containment structure or device. The containment area should be structurally sound, leak free, and have sufficient storage for anticipated volume.
- Appropriate structures include holding pits, sediment basins, roll off bins and portable tanks. Locate the containment structure far from storm drains, natural waterways and drainage channels.
- Some liquid wastes may require testing and certification that they are non-hazardous before an appropriate disposal

method is selected.

- Educate employees and subcontractors on liquid waste generating activities and liquid waste storage and disposal procedures.
- Refer to Vehicle and Equipment Cleaning BMP when applicable.
- Avoid spills or accidental releases of contained liquid wastes. Apply Spill Prevention and Control BMPs as needed.

MAINTENANCE AND INSPECTION

- Remove deposited solids in containment areas and capturing devices as needed, and at the completion of the task. Dispose of any solids as described in Solid Waste BMP on pg. 76.
- Inspect containment areas and capturing devices and repair as needed.
- Frequently inspect liquid waste containment areas and capturing devices for damage, and repair as needed.



Drilling fluids from a small residence project are leaving the site untreated.



The waste runs into the street allowing pollutants to enter the City storm drain system.

5.10 SPILL PREVENTION AND CONTROL

DESCRIPTION

Spill prevention and prompt appropriate spill response reduces the potential for discharging pollutants to drainage system. Typical spills of concern include chemicals and hazardous waste such as soil stabilizers/binders, dust palliatives, herbicides, growth inhibitors, fertilizers, petroleum products, fuels, pesticides, lubricants, paints and solvents.

GUIDELINES

In preparation of a potential spill, locate and clearly label spill-kits and disposal containers. Appropriateness of the response is determined by the quantity and/or composition of the spilled substance as follows:

- **Minor Spill** - Small quantity of oil, gas, paint, etc, that can be controlled by the first responder at the scene. Instructions: contain the spill, recover the spilled material, clean the spill area and dispose of cleanup materials appropriately.
- **Semi-Significant Spill** - Can be controlled by the first responder with the aid of another person, and the spill may require the stopping of all other activity. On impermeable surfaces, surround the spill with absorbent material to contain it. Clean spill using absorbent material. On dirt areas, construct an earthen dike to contain the spill. Dig up contaminated

soil and dispose of properly. If spill occurs in rain, cover spill area to prevent contaminating stormwater runoff.

- **Significant/Hazardous Spill** - Significant spills cannot be controlled by personnel in the immediate vicinity. In the event of a significant spill the discharger should immediately call 911. Additionally, the discharger should call 311. Contractor's staff should not attempt to clean up until qualified assistance has arrived on-site.

MAINTENANCE AND INSPECTION

- Keep ample supplies of spill control and cleanup materials on-site, near storage, unloading, and maintenance areas.
- Update the spill prevention and control plan, and stock cleanup materials as changes occur in the types of chemicals on-site.



Minor oil spills need to be cleaned to prevent them from running into the storm drain system.

5.11 CONTAMINATED SOIL

DESCRIPTION

This section is particularly applicable when conducting construction in highly urbanized or industrial areas where soil contamination may have occurred due to spills, illicit discharges, and leaks from underground storage tanks.

GUIDELINES

The procedures and practices presented in this BMP are general. The contractor should identify appropriate practices and procedures for the specific contaminants known to exist or discovered on-site.

It is important to confirm a site assessment before moving earth.

- Identify contaminated soils by investigating the following items. All suspected soils should be tested at a certified laboratory.
- Past site uses and activities.
- Detected or undetected spills and leaks.
- Acid or alkaline solutions from exposed soil or rock formations high in acid or alkaline forming elements.
- Contaminated soil as evidenced by discoloration, odors, differences in soil properties, abandoned underground tanks or pipes, or buried debris.
- Contaminated soil is prohibited from entering storm drains, natural waterways or drainage channels.

- Depending on the type of contamination, different handling requirements will need to be met. In some cases contaminated soils may need to be placed in steel barrels, sealed and removed from the site. This waste will need to be taken to a licensed hazardous waste disposal site. Along with this, soil testing for contaminants in stormwater may be required at the discretion of the Construction or Stormwater Inspector.
- Avoid stockpiling contaminated soils. If stockpiling is necessary and allowed, cover the stockpile and install a berm around the pile to prevent runoff for secondary containment.



Soil from this City site, which sits on an old industrial area, needs to be tested at a certified laboratory.

5.12 PAINT AND STUCCO

DESCRIPTION

This section describes how to properly store and dispose of paint and stucco as well as their tools.

GUIDELINES

Contact your local jurisdiction SFEvironment to locate facilities that accept paint cans, paint, solvents, and thinners.

- All paint and stucco materials stored on-site must be contained and covered.
- It is illegal for contractors to wash out paintbrushes in the street or dump any residues in the sewer or storm drain.
- Paintbrushes, spray guns, and other tools must be washed/cleaned out into a hazardous materials barrel or original container. Avoid doing this where wash water can flow to the storm drain, even if the paint is latex.
- Paint out brushes as much as possible. Always wash brushes with latex paint in a sink that goes to the sanitary sewer.
- Clean up latex paint spills with rags and wash in the sink. Avoid using oil-based paints, which require solvents. Filter and reuse thinners and solvents.



Dry out empty paint cans prior to disposal.

5.13 ILLICIT CONNECTION/DISCHARGE WASTE

DESCRIPTION

This section describes how to recognize and report illicit connections or illegally discharged material on a construction site. Illicit discharges are generally any discharge into a storm drain system that is not composed entirely of stormwater.

GUIDELINES

Before beginning the job, inspect the site for evidence of illicit connections, illegal dumping or discharges. Observe site perimeter for evidence for potential of illicitly discharged or illegally dumped material, which may enter the job site.

Identification:

- Treat unlabeled and unidentifiable material as dangerous hazardous materials.
- Solids – Look for debris piles. Solid waste dumping often occurs on roadways with light traffic loads or in areas not easily visible from the traveled way.
- Liquids – signs of illegal liquid dumping or discharge can include:
 - Visible signs of staining or unusual colors to the pavement or surrounding adjacent soils.
 - Pungent odors coming from the drainage systems.
 - Discoloration or oily substances in the water, or stains and residues detained within drainage structures

- In urban areas, be aware of:
 - Abnormal water flow during the dry weather season.
 - Pungent odors coming from the drainage systems.
 - Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes.
 - Excessive sediment deposits, particularly adjacent to or near active off-site construction projects.



Untreated runoff from an upstream construction site is being discharged to the City storm system.



Contractors are illegally pumping unfiltered site runoff directly into the storm system.

5.13 ILLICIT CONNECTION/DISCHARGE WASTE

Reporting:

- Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery.
- To report illegal dumping, call 311. Examples of illegal dumping include leaving bulky items, such as couches and mattresses, garbage bags, or any debris on city sidewalks.

Cleanup and Removal: Contractors, site supervisors and property owners are responsible for preventing illicit discharges, and for reimbursing the City for expenses associated with clean up and removal.

MAINTENANCE INSPECTION

Inspect the site regularly to check for any illegal dumping or discharge. Prohibit employees and subcontractors from disposing of non-job related debris or materials at the construction site.



Illegal trash dumping on a construction site.

5.14 DEWATERING OPERATIONS

DESCRIPTION

Dewatering operations include the proper procedures for managing the discharge of stormwater and non-stormwater from the construction site.

GUIDELINES

- Sediment treatment options include: sediment traps, dewatering tanks, weir tanks, cartridge filters and pressurized bag filters. See the CalTrans Dewatering Operations guidelines for further information regarding the tanks and filters.
 - The contractor is to provide a dewatering plan that details the location of dewatering activities, equipment and discharge point.
 - Retain water on the site for construction use. Re-use water for dust control, irrigation or another on-site purpose to the greatest extent possible.
 - Discharging construction site waste to the sanitary sewer is a final option and requires a Batch Wastewater Permit.
 - Appropriate wastewater treatment or off-site disposal will be required in those situations where the initial sampling and analysis reveal noncompliance with the applicable regulatory limits.
 - When flushing chlorinated water lines, test and remove all chlorine content before discharging to the sewer system.
- Dewatering discharges must not cause erosion at the discharge point

MAINTENANCE AND INSPECTION

Inspect all BMPs frequently, and repair or replace to ensure the BMPs function as designed. Accumulated sediment removed during maintenance of a dewatering device must be disposed of according to the Registered Engineer. If the sediment contains hazardous pollutants, it must be removed in accordance with the guidelines for Hazardous Waste on pg. 75.



Polluted construction site runoff



Treated construction site runoff