



**Description**

The purpose of this activity is to help eliminate non-stormwater discharges to the stormwater collection system. Non-stormwater discharges may include oils, paints, acids, solvents, process wastewaters, cooling waters, wash waters, and sanitary wastewater. This task will help eliminate all types of pollution such as nutrients, heavy metals, toxic materials, floatable debris, oil and grease, bacteria and viruses, and oxygen demanding substances.

**Approach**

Non-stormwater discharges to the stormwater collection system may include any water used directly in the manufacturing process (process wastewater), non-contact cooling water, outdoor secondary containment water, vehicle and equipment wash water, sink and drinking fountain wastewater, sanitary wastes (including “gray water” discharged from washing machines or dishwashers), or other wastewaters.

In addition to mechanical discharges, employees or subcontractors could dump or pour materials directly into a storm drain or open channel. Common substances illegally dumped on the street or directly into the storm drain system and creeks include: paint, used oil, automotive fluids, construction debris, chemicals, fresh concrete, leaves or grass, mop water, and pet wastes. All of these wastes can cause quality problems for stormwater and receiving waters as well as clog the storm drain system itself. The reader is referred to other reference sources for disposal alternatives for various types of discharges and waste-producing activities. For example, the City of Knoxville’s Stormwater BMP Manual provides a very helpful table in its employee training section, “Quick Reference for Disposal Alternatives” (Knoxville, 2001).

Many businesses, commercial facilities and industries are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit as part of their operations. Requirements to identify and eliminate non-stormwater discharges are integral to every NPDES permit. Keys to this activity are information and investigation.

This BMP should be very closely coordinated with employee training, in that the principal goal is to eliminate all substances (liquid or solid) that do not belong in stormwater. Employee training and knowledge is the beginning point for solving stormwater pollution problems. Employee training is considered by many stormwater managers to be the most critical aspect of controlling stormwater pollution. An employee who is trained at the start will recognize and understand activities that pollute stormwater. An untrained employee may not perform the task correctly and may never learn to do it the right way after the initial opportunity is lost. Management should integrate key elements from individual BMPs into a comprehensive training program.

Some stormwater ordinances specifically describe what is allowable to discharge into the stormwater; all other discharges are prohibited by ordinance. The following non-stormwater discharges are typically considered allowable:

1. Water line flushing
2. Landscape irrigation
3. Diversion of stream flows or rising groundwater
4. Infiltration of uncontaminated groundwater
5. Pumping of uncontaminated groundwater from potable water sources, foundation drains, irrigation waters, springs; or water from crawl spaces or footing drains
6. Lawn watering
7. Individual car washing on residential property; or car washing of less than two consecutive days in duration for a charity, nonprofit fund raising or similar noncommercial purpose
8. Dechlorinated swimming pool discharges
9. Street washing by municipal vehicles or by municipal subcontractors
10. Any activity authorized by a valid NPDES permit
11. Any flows that result from firefighting
12. Air conditioning condensate or refrigeration condensate
13. Flows from riparian habitats and natural wetlands

The director of engineering for the municipality has the authority to order the above listed activities to be stopped or modified if sewage, industrial wastes, or other objectionable wastes are being discharged to the stormwater system. Non-stormwater discharges, even if there are no pollutants present, may have different temperatures than the ambient stream temperature. Manmade temperature variations, whether continuous or intermittent, in a natural stream may cause loss of habitat to aquatic organisms and to vegetation.

***General Guidelines***

To ensure that the stormwater system discharge contains only stormwater, commercial and industrial facilities should:

- Locate all discharge points from the property. Identify where discharges lead into the municipal storm sewer system or into “Waters of the State” (as defined by the blue-line streams and lakes from the USGS quadrangle map). At a minimum, use construction drawings, as-built drawings, pipeline schematics, visual observation by walking the property boundary and by examining all indoor pipes.
- Use additional methods as appropriate for locating discharge points.
  - Dye tracing
  - Inserting TV camera
  - Chemical field test kits
  - Smoke tests
  - Surface water sampling
  - Groundwater sampling

- Isolate discharges one at a time to verify source
- Develop a plan to eliminate illicit connections.
  - Plug illicit discharge points.
  - Repair or replace discharge lines as necessary. Examine types of disposal options. Use alternative products or methods to reduce the amount of pollution.
  - Repair sewer lines or connect to sanitary sewer system. Coordinate with local utility for permission to connect to sanitary system.
- Document that non-stormwater discharges have been eliminated by recording tests performed, methods used, dates of testing, and onsite drainage points observed.

### *Investigation*

The following lists include further information on investigation activities.

- A piping schematic or sketch will show pipes and stormwater systems used to carry wastewater, cooling water, sanitary wastes, etc. Look carefully at the drawing to determine date, accuracy, and level of information. Sometimes it may be necessary to interview the field engineer or a construction worker to determine what was built.
- Visual observation of the property boundary should be conducted during daylight hours in both dry weather and wet weather. Ideally, visual observation should also include different times of the year that may affect the groundwater level and the amount of heavy vegetation.
- Visual observation of indoor pipes includes inspecting the path of floor drains in older buildings, where it is not uncommon to find cross-connections. Examine materials, condition and repairs for each pipe as a clue to what it may carry.
- A dye test can be performed by simply releasing a non-harmful tracing dye into a sanitary or process wastewater system and examining potential discharge points into the stormwater collection system for discoloration.
- TV and visual inspections can identify illicit connections to the storm sewer, but further testing is usually required (dye, smoke, isolation) to identify sources.
- Smoke testing of wastewater and stormwater collection systems is commonly used to detect connections between the two systems. During dry weather a stormwater collection system is filled with smoke and then traced to sources. The appearance of smoke in a waste vent pipe, sewer manhole, or even the base of a toilet indicates that there may be a connection between the sanitary and stormwater systems.

### **Limitations**

- Many facilities do not have accurate, up-to-date schematic drawings. Mistakes in construction may not be reflected in the schematics. It can be difficult to locate illicit connections especially if there is groundwater infiltration.
- The easiest method is to inspect each discharge point during dry weather. Keep in

mind that flow from a storm event can continue for three days or more, and that groundwater often infiltrates the underground stormwater collection system.

**References**

California State Water Resources Control Board (SWRCB), *General Industrial Storm Water Permit*, 1992.

Camp Dresser & McKee, Larry Walker Associates, Uribe & Associates, Resources Planning Associates, *Industrial/Commercial Handbook, California Storm Water Best Management Practice Handbooks*, for the California Storm Water Quality Task Force (SWQTF), March 1993.

Camp Dresser & McKee, Woodward-Clyde, Aguilar Engineering, Psomas & Associates, MK Centennial, *Construction Contractors Guide and Specifications, Caltrans Storm Water Quality Handbooks*, prepared for the California Department of Transportation, 1997.

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San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), *General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity in Santa Clara County to South San Francisco Bay or its Tributaries*, 1992.

United States Environmental Protection Agency (USEPA), *Storm Water Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices*, EPA 832-R-92-006, September 1992.