

Building Better Storm Water Quality



Storm Water Pollution Prevention Guidelines for Development Construction Projects

City of El Segundo • 350 Main Street • (310) 524-2380
El Segundo, California 90245

Introduction To Storm Water Pollution Prevention

In 1987 amendments to the Federal Clean Water Act established a frame-work for regulating storm water discharges from municipal, industrial and construction activities under the National Pollution Discharge Elimination System (NPDES). The primary objectives of the NPDES Program are to:

1. Effectively prohibit non-storm water discharges; and,
2. Reduce the discharge of pollutants into storm water to the maximum extent practicable.

Storm water quality is degraded by contact with pollutants on the ground, by falling on exposed equipment, by excessive erosion of soil, or many other factors. When water falls on



the ground it comes into contact with these pollutants and carries them through the storm drain system and eventually into the ocean. This pollution impairs the beneficial uses of the ocean and beaches, and has been the cause of many health warnings and beach closures.

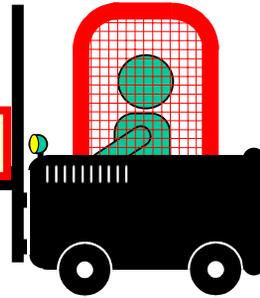
The Los Angeles Countywide Municipal NPDES Permit requires construction development projects to provide storm water quality protection by implementing the appropriate Best Management Practices (BMP's) that will reduce the amount of pollution in storm water which leaves the development site. BMP's should be chosen based on several factors, including:

1. What kind of water quality controls are needed?
2. Where should the controls be implemented?
3. How much control is enough?



This pamphlet has been designed to aid the construction community in identifying potential storm water quality problems, developing design objectives, evaluating alternatives and selecting the most appropriate alternatives for their project.

Step 1 - Type of Project



A Development Construction Project is defined as a site where activities such as **clearing, grading, excavation, road construction or demolition** results in the disturbance of soil. There are four separate categories of Development Construction Projects: **Exempt, Conditionally Exempt, Priority, and General Permit**. THE DETERMINATION OF WHICH CATEGORY YOUR PROJECT FALLS UNDER CAN ONLY BE MADE BY THE APPROPRIATE **BUILDING SAFETY and PLANNING DIVISION PERSONNEL**.

Exempt: Projects that do not disturb soil and have little or no potential effect on storm water quality, such as Interior Remodeling or interior mechanical and electrical work, are not subject to the requirements of this program. This does NOT exempt the contractors on these projects from their responsibility to protect storm water quality. Educational pamphlets and handouts with storm water protection information are available at the Building Safety/Planning and Public Works front counter lobby area.

Conditionally Exempt: This category includes Development Construction Projects with less than 2 acres of disturbed soil. Contractors for these projects are required to certify that they will implement (at least) the minimum required BMP's to protect storm water quality. These minimum BMP's are described later in this booklet. In addition, if the project is over $\frac{1}{4}$ acre in size, a BMP site plan may be required.

Priority Project: This category is for all hillside sites and those sites greater than 2 acres in disturbed area but less than 5 acres. These projects are required to prepare a Local Storm Water Pollution Prevention Plan, which must be reviewed and approved by the Building Department prior to the issuance of any permits for the project. In addition, if the project will be underway between November 1 and April

15, a Wet Weather Erosion Control Plan will also be required. Standard forms for these plans are available at the Public Works/Building & Planning counters.



General Permit Project: This category is for all Development Construction Projects with disturbed soil areas greater than 5 acres. Projects in this category fall under the requirements of the California General Permit for Storm Water Discharges Associated with Construction Activities. These projects are required to file for a State permit as well as to follow local guidelines. To obtain City permits for this category of project, the contractor must provide the City with evidence that a State permit has been requested, and, a copy of the State Storm Water Pollution Prevention Plan (State SWPPP) for the project.



Step 2 - What is Required?

Exempt Projects: These projects are not required to prepare storm water plans or obtain storm water specific approval from the City. Exempt projects are, however, required to make sure that they conduct operations in a manner that will prevent pollution of storm water.

Conditionally Exempt: Contractors for these projects are required to submit a certification statement to the City stating that they will comply with the minimum BMP requirements. These minimum requirements are:

1. **Erosion and Sediment Control:** Sediments from areas disturbed by construction shall be retained on site, using structural drainage controls to the maximum extent practicable. Stockpiles of soil shall be properly contained to minimize sediment transport from the site to nearby streets, drainage facilities or adjacent properties via runoff, vehicle tracking and/or wind.
2. **Construction Materials Control:** Construction related materials, wastes, spills or residues shall be retained on site to minimize transport from the site to nearby streets, drainage facilities or adjoining properties by wind and/or runoff. Runoff from equipment and vehicle washing shall be contained on-site unless treated to remove sediments and pollutants.

In addition, **Conditionally Exempt** sites with disturbed areas over $\frac{1}{4}$ acre shall obtain City approval by submitting a site plan of the project showing the type(s) and location of all BMP's.



Priority Project: These projects will require a Local Storm Water Pollution Prevention Plan (LSWPPP) for approval by the City before any permits are issued. The LSWPPP must include:

- Project name, location, period of construction and a brief description.
- Contact information for owner and contractor.
- Name, location and description of any environmentally sensitive areas in or adjacent to the project.
- A list of major construction materials, wastes and activities at the project site.
- A list of BMP's to be used to control pollutant discharges from major construction materials, wastes and activities.
- A site plan indicating the selection of BMP's and their location (where appropriate).
- A developers certification statement that all required and selected BMP's will be effectively implemented.

A copy of the approved LSWPP must be kept on the project site at all times after the start of construction. The contractor may use his own LSWPP forms (as long as 7 items above are included) or may use the example forms available from the City. In addition to the LSWPP, if construction occurs between November 1 and April 15, the contractor must prepare and submit a Wet Weather Erosion Control Plan (WWECP) for City approval. The WWECP must contain the following information:

- Project name, location, period of construction and a brief description.
- Contact information for the owner and contractor.
- A site map showing the location of erosion control and sediment control BMP's that will be implemented for the rainy season.
- A certification statement that all required and selected BMP's will be effectively implemented.



If the LSWPP and WWECP are combined and submitted as a single document, only one certification form is necessary.

General Permit Projects: Contractors for these types of projects are required to prepare and implement a Storm Water Pollution Prevention Plan that conforms with the requirements of the California General Construction Permit. This "State SWPPP" addresses all categories of control measures, and has specific documentation



requirements. For more information regarding the California General Construction Permit, contact the California Regional Water Quality Control Board: (213) 576-6600

When a project falls into this category, the contractor/developer must certify to the City that they are complying with the State permit requirements. This certification may take one of the following three forms:

1. Provide a copy of the State receipt letter.
2. Provide a verifiable State Identification Number.
3. Provide a signed statement certifying that a Notice of Intent has been filed with the State and that an SWPPP has been prepared.

Step 3 - Selecting BMP's

After determining which project category and which plans are required (if any), the next step is to determine which and how many BMP's will be necessary for the project.

BMP generally fall into four categories:

1. **Sediment Control** - Methods of trapping eroded sediment to prevent an increase in sediment in storm water discharges from the project.
2. **Erosion Control** - Measures that prevent erosion and keep soil particles from entering storm water.
3. **Site Management** - Methods to manage the construction site and construction activities in a manner that prevents pollutants from entering storm water.
4. **Materials & Waste Management** - Methods to manage construction materials and wastes to prevent their entry into storm water.

The number of BMP's necessary to effectively control storm water runoff from a project is highly dependant on the size of the project and the Development Construction Project category:

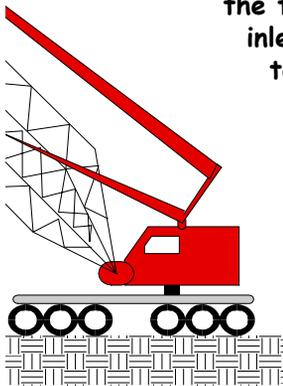
Exempt: No specific BMP's required, but contractor must conduct activities in a way that minimizes potential for storm water contamination.



Conditionally Exempt: Contractor may use any combination of BMP's that meet the minimum requirements (as stated earlier).

Priority Project: Contractor must consider all BMP's, and, at a minimum, include the following:

- **Sediment Control** - At site perimeters, below significant slopes (grade of 1:5 or greater) and at other similar locations, use at least one type of BMP such as silt fence, straw bale or sand bag barrier to minimize the transport of sediment. At interior storm drain inlets use at least one type of Inlet Protection BMP to minimize the transport of sediment off-site.
- **Erosion Control** - On completed disturbed surfaces, use at least one type of erosion control (soil stabilization BMP during the rainy season).
- **General Site Management, Materials and Waste Management** - The developer/contractor should use all BMP's applicable to specific construction operations that will occur at the site.



General Permit Project: The type and number of BMP's selected for these projects must comply with the requirements of the State General Construction Permit. The BMP's selected for each site should fulfill the following goals and objectives:

- Be appropriate for the given site constraints.
- Have a beneficial or neutral impact on the environment.
- Provide moderate to high pollutant source control and/or removal capability.
- Meet regulatory requirements.
- Minimize changes in hydrological conditions.
- Be cost effective.

Criteria to be considered in selecting BMP's to meet these goals and objectives should include:

- Site specific factors such as slope, water table, type of soil, etc.
- Type, size and duration of project.
- Source control as compared to pollutant removal capability



- Cost of implementation (including upkeep and maintenance).
- Environmental compatibility.

Other general principals that should be considered:

- Preventing the release of pollutants is more desirable than treatment after release. Source Control BMP's should be considered before Treatment BMP's.
- For effective BMP design, the site drainage must be analyzed to verify where runoff enters, crosses and leaves the site.
- Runoff should be diverted from exposed areas whenever possible.
- Retaining existing vegetation is generally the most effective erosion control.
- Limit an phase clearing.
- Incorporate natural drainage features where possible.
- Minimize slope length and steepness.
- Reduce tracking of sediment off site.
- Select and install controls that can easily be maintained.



Examples of BMP's

Sediment Control

- **Silt Fence:** A silt fence is made of a filter fabric which has been entrenched, attached to supporting poles, and sometimes backed by a wire fence for support. The silt fence detains sediment laden water, promoting sedimentation behind the fence.
- **Straw Bale Barrier:** Consists of straw bales placed end to end along a level contour in a shallow trench and staked to hold them in place. The barrier detains runoff, creating a pond behind the barrier where sedimentation occurs.
- **Sand Bag Barrier:** Stacking sand bags along a level contour creates a barrier which detains sediment laden water, ponding water upstream of the barrier and promoting sedimentation.



- **Storm Drain Inlet Protection:** Devices of various designs which detain sediment and laden runoff which will allow the sediment to settle prior to discharge into a storm drain inlet or catch basin.
- **Sediment Trap:** A small, excavated or bermed area where runoff from small drainage areas is detained and sediment can settle.
- **Stabilized Construction Entrance:** A stabilized pad of aggregate underlain with filter fabric, located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way. This can significantly reduce the amount of sediment tracked off-site.

Erosion Control



- **Scheduling:** Sequencing the construction to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff and vehicle tracking.
- **Preserve Vegetation:** Preserving existing vegetation minimizes the potential of removing or injuring vegetation that serves as natural erosion control.
- **Seeding and Planting:** Seeding of grasses and planting of trees, shrubs, vines and ground covers provides long term stabilization of soil.
- **Mulching:** Mulching is used to temporarily and permanently stabilized cleared or freshly seeded areas.
- **Geotextiles and Mats:** Mattings made of natural or synthetic material which are used to temporarily or permanently stabilize soil.
- **Dust Control:** Measures used to stabilize soil from wind erosion, and reduce dust generated by construction activities.
- **Construction Road Stabilization:** Access roads, subdivision roads, parking areas and other on-site vehicle transportation routes should be stabilized immediately after grading and frequently maintained to prevent erosion and control dust.



- **Earth Dike:** Temporary berm or ridge of compacted soil used to divert runoff or channel water to a desired location.
- **Temporary Drains and Swales:** These are used to divert off-site runoff around the construction site, around disturbed areas, or into sediment basins or traps.
- **Slope Drains:** A temporary pipe or channel to drain from the top of a slope to a stabilized discharge point at the bottom of the slope without causing erosion.



Construction Materials & Waste Management

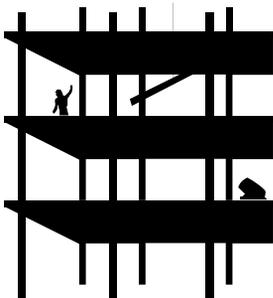
- **Material Delivery & Storage:** Minimize storage of hazardous materials on site, store materials in designated areas, install secondary containment, conduct regular inspections and train employees and subcontractors.
- **Material Use:** Use alternative products, minimize hazardous material use on-site, train employees and subcontractors.
- **Spill Prevention & Control:** Reduce chances for spills, stop source of spills, contain and clean up spills, properly dispose of spill materials.
- **Solid Waste Management:** Provide designated waste collection areas and containers, arrange for regular disposal.
- **Concrete Waste Management:** Conduct wash-out at designated off-site facility, perform on-site washout in designated areas.

General Site Management

- **Vehicle & Equipment Cleaning:** Clean at an off-site facility, wash in designated, contained area, recycle wash water or allow to infiltrate .



- **Vehicle and Equipment Fueling:** Use off-site facilities, fuel in designated areas only, enclose or cover stored fuel, implement spill controls.
- **Vehicle & Equipment Maintenance:** Use off-site facilities, work in designated areas, provide cover for stored materials, check for leaks and spills, contain and cleanup spills immediately.
- **Dewatering Operations:** Use sediment controls and test groundwater for pollution.
- **Paving Operations:** Prevent run-on and runoff pollution, properly dispose of waste materials.
- **Structure Construction & Painting:** Enclose, cover or berm building material storage areas, use good housekeeping practices, use safer alternative products.



BMP Sizing Considerations

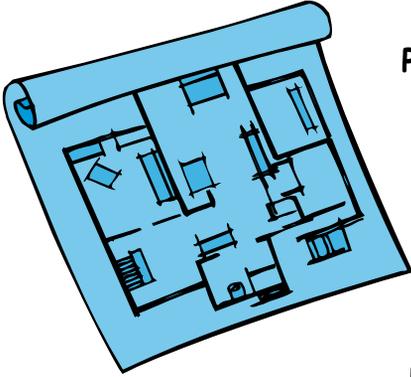
Most storm water pollution occurs during the first flush of rainfall, although erosion and sedimentation can take place throughout a storm event. A variety of different types of BMP's are used for construction projects, using several different treatment methods (i.e. containment and sedimentation, diversion, etc.). The sizing criteria for each of these types of treatment methods is different: In general:

- **Retention & Sedimentation BMP's:** Sediment traps and basins should be sized to retain the runoff from a 2-year, 24 hour storm.
- **Diversion BMP's:** Earth dikes, sand bags, etc. should be sized according to individual site constraints and topography, following the guidelines provided in the California Storm Water Best Management Practices Handbook fact sheets. Copies of the fact sheets are available.
- **Site and Waste Management:** BMP's do not have actual "sizing criteria." These BMP's consist of management practices oriented towards preventing storm water contact with pollutants, rather than treating storm water to remove the pollutants after contact.





Step 4 - Submitting Plans



Plans Requirements:

- **For Conditionally Exempt Projects:** Submit a completed Owner's Certification. If the site is over $\frac{1}{4}$ acre, also submit a Site Plan showing the type and location of BMP.
- **For Priority Projects:** Submit a Local Storm Water Pollution Prevention Plan. At a minimum, the LSWPPP must include the information listed on page 5 of this pamphlet. In addition, the submittal must include a completed Owner's Certification.
- **For Priority Projects Where Construction Will Take Place Between November 1 and April 15:** Submit all information in Item 2. Also, submit a Wet Weather Erosion Control Plan containing erosion and sediment control BMP information on the LSWPPP Site Plan or include that information on a separate site plan.
- **For General Permit Projects:** Submit certification that the project is complying with State requirements. A copy of the State SWPPP for the project may also be requested at the discretion of the City.

For additional information regarding the California General Construction Activity Storm Water Permit Requirements, contact the California Regional Water Quality Control Board (L.A. Region): (213) 576-6600, or the City of El Segundo: (310) 524-2380.

