PORT OF SAN DIEGO

JURISDICTIONAL

STANDARD URBAN STORMWATER MITIGATION PLANNING DOCUMENT
January 14, 2011

December 2010

This page intentionally left blank

Table of Contents

LIST OF TABLES

Section 1 Introduction

1.1 Background

The municipal stormwater National Pollutant Discharge Elimination System (NPDES) permit (Order No. R9-2007-0001, NPDES No. CAS0108758, hereinafter referred to as "Municipal Permit") issued to San Diego County, the Port of San Diego (Port), San Diego County Regional Airport Authority and 18 cities (Copermittees) by the San Diego Regional Water Quality Control Board (Regional Board) on January 24, 2007, requires the development and implementation of a program addressing urban runoff pollution issues in development planning for public and private projects.

The requirement to implement a program for development planning is based on federal and state statutes including: Section 402 (p) of the Clean Water Act, Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 ("CZARA"), and the California Water Code. The Clean Water Act amendments of 1987 established a framework for regulating urban runoff discharges from municipal, industrial, and construction activities under the NPDES program. The Municipal Permit requires the implementation of a Jurisdictional Urban Runoff Management Program (JURMP). The primary objectives of the JURMP requirements are to:

1. Ensure that discharges from municipal urban runoff conveyance systems do not cause or contribute to a violation of water quality standards;
2. Effectively prohibit non-stormwater discharges in urban runoff; and
3. Reduce the discharge of pollutants from urban runoff conveyance systems to the Maximum Extent Practicable (MEP statutory standard).

One component of the Port's JURMP is to prepare and implement a Jurisdictional Standard Urban Stormwater Mitigation Plan (SUSMP). As required by the Municipal Permit, the Copermittees jointly developed a Countywide Model SUSMP as the basis for jurisdictional plans. The Port Jurisdictional SUSMP (Port SUSMP) is based on the Countywide Model SUSMP and tailored to Port specific conditions and requirements. The Countywide Model SUSMP is referenced throughout this document and can be found at http://www.waterboards.ca.gov/sandiego/water_issues/programs/stormwater/docs/sd_permit/updates_4_2_09/Updated%20Model%20SUSMP.pdf.

.

1.2 Summary

The Port SUSMP has been developed by the Port to address post-construction urban runoff pollution from new development and redevelopment projects that fall under "priority development project" categories. The goal of the Port SUSMP is to develop and implement practicable policies to ensure to the maximum extent practicable that development does not increase pollutant loads from a project site and considers urban runoff flow rates, velocities and durations. This goal may be achieved through site-specific controls and/or drainage area-based or shared treatment controls. The Port SUSMP was developed to meet the requirements of the Countywide Model SUSMP, collectively developed by the Copermittees, approved by the Regional Board on January 2, 2009.

Under the Port SUSMP, the Port will approve the SUSMP project plan(s) as part of the development plan approval process for discretionary projects, and prior to issuing permits for ministerial projects. To allow flexibility in meeting Port SUSMP design standards, treatment control BMPs may be located on- or off-site, used singly or in combination, or shared by multiple developments, provided certain conditions are met.

All new development and redevelopment projects that fall into one of the following "priority development project" (PDP) categories are subject to Port SUSMP requirements, subject to the lawful prior approval provisions of the Municipal Permit. In the instance where a project feature, such as a parking lot, falls into a PDP category, the entire project footprint is subject to Port SUSMP requirements. These categories are:

- Commercial development greater than 1 acre.
- Heavy industry development greater than 1 acre.
- Automotive repair shops.
- Restaurants (includes a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands).
- Projects located within or directly adjacent to or directly discharging to receiving waters within Environmentally Sensitive Areas that create 2,500 square feet or more of impervious surface or increase the area of imperviousness to 10% or more of its naturally occurring condition.
- Parking Lots 5,000 square feet or more of impervious surface or with a minimum of 15 parking spaces and potentially exposed to urban runoff.
- Streets, roads, highways, and freeways which would create a new paved surface that is 5,000 square feet or greater.
- Retail gasoline outlets 5,000 square feet or more or with a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.

Note that San Diego Bay is an Environmentally Sensitive Area. Further information is provided in Section 1.3 "Definitions" and Section 1.5 "Implementation Process." It should also be noted that the following project priority categories identified in the Municipal Permit and Countywide Model SUSMP do not apply to Port projects: residential developments of 10 units or more and hillside development greater than 5,000 square feet. These categories have been eliminated from the implementation and BMP selection process in this document. Also note that for the purpose of implementing Port SUSMP requirements, all projects within the Port are considered "commercial" projects, unless a project meets the definition of "auto repair shop," "restaurants," "parking lot," or "streets or roads."

Limited Exclusion: Trenching and resurfacing work associated with utility projects are not considered priority projects; resurfacing and reconfiguring surface parking lots and existing roadways; new sidewalk construction, pedestrian ramps, or bike lane on existing roads; maintenance of shoreline protection structures; and routine replacement of damaged pavement, such as pothole repair. Parking lots, buildings and other structures associated with utility projects are subject to SUSMP requirements if one or more of the criteria for the above categories are met. See the Definition for "Redevelopment" for further clarification.

1.3 Definitions

The definitions provided in this section are based on those provided in the Model SUSMP. Some definitions have been enhanced to clarify applicability to Port tidelands. Other definitions have been removed because they do not apply to projects within the Port's jurisdiction.

"Automotive Repair Shop" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539. Information regarding these SIC codes are provided in Appendix A.

"Best Management Practice (BMP)" is any procedure or device designed to minimize the quantity of pollutants that enter the municipal separate storm sewer system (MS4).

"Commercial Development" means any development that is not exclusively heavy industrial. The category includes, but is not limited to: mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses, hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities, automotive dealerships, commercial airfields, and other light industrial complexes. In regards to SUSMP priority project categories, most development or redevelopment in the Port tidelands is considered "commercial," unless the project is exclusively a "restaurant," "auto repair shop," "parking lot," or "street or road."

"Commercial Development greater than 1 acre" means any commercial development that results in the disturbance of one acre or more of land.

"Directly Connected Impervious Area (DCIA)" means the area covered by a building, impermeable pavement, and/ or other impervious surfaces, which drains directly into the storm drain without first flowing across permeable vegetated land area (e.g., lawns).

"Drainage Management Areas (DMAs)" are the areas contributing runoff (drainage areas) from the site to discrete collection locations. Each drainage area must have a unique treatment of stormwater pollution from the area. The treatment can be any of the Integrated Management Practices (IMPs) including self-treating areas, self-retaining areas, LID BMPs or Treatment Control BMPs. Essentially, each drainage area is accounted for as a DMA and each DMA must have a corresponding IMP to treat runoff from the area.

"Environmentally Sensitive Areas" means areas that include, but are not limited to, all Clean Water Act 303(d) impaired water bodies ("303[d] water bodies"); areas designated as an "Area of Special Biological Significance" (ASBS) or RARE beneficial use by the State Water Resources Control Board (SWRCB) (Water Quality Control Plan for the San Diego Basin (1994 and amendments) [San Diego Basin Plan]; or areas designated as preserves or their equivalent under the Multiple Species Conservation Program (MSCP) within the Cities and County of San Diego. The limits of ASBS are those defined in the San Diego Basin Plan. Environmentally sensitive area is defined for the purposes of implementing SUSMP requirements, and does not replace or supplement other environmental resource-based terms. It should be noted that the SWRCB has designated San Diego Bay, in its entirety, as having a RARE beneficial use in the San Diego Basin Plan.

"Fifty Percent (50%) Rule" applies to projects on previously developed sites. This rule states that when sites create or replace more than 5,000 square feet of impervious area:

- If the new project (as defined in "project area") results in an increase of, or replacement of, 50% or more of the previously existing impervious surface, and the existing development was not subject to SUSMP requirements, then the entire project must be included in the LID and/or treatment measure design.

- If the new project results in less than a 50% increase of, or replacement of the previously existing impervious surface, only that portion affected must be included in the LID and/or treatment measure design.

"Hillside" means lands that have a natural gradient of 25 percent (4 feet of horizontal distance for every 1 foot of vertical distance) or greater and a minimum elevation differential of 50 feet, or a natural gradient of 200 percent (1 foot of horizontal distance for every 2 feet of vertical distance) or greater and a minimum elevation differential of 10 feet.

"Hydromodification" means the change in the natural watershed hydrologic processes and runoff characteristics (i.e. interception, infiltration, overland flow, interflow and groundwater flow) caused by urbanization or other land use changes that result in increased stream flows and changes in sediment transport. In addition, alteration of stream and river channels, installation of dams and water impoundments, and excessive streambank and shoreline erosion are also considered hydromodification, due to their disruption of natural watershed hydrologic processes.

"Hydromodification Plan" is a plan implemented by the discharger so that post-project runoff shall not exceed estimated pre-project rates and/or durations, where increased runoff would result in increased potential for erosion and other adverse impacts to beneficial uses.

"Infiltration" is seepage of runoff into soils underlying the site. Infiltration rate is the rate at which water flows through a section of soil, usually expressed in length per time units (e.g. inches/hour).

"Integrated Management Practice (IMP)" is a BMP facility that provides small-scale treatment, retention, and/or detention and is integrated into the site layout, landscaping and drainage design.

"Low Impact Development (LID)" means a stormwater management and land development strategy that emphasizes conservation and the use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely reflect pre-development hydrologic functions.

"Maximum Extent Practicable (MEP)" is the standard, established by the 1987 amendments to the Clean Water Act, for the implementation of municipal stormwater pollution prevention programs. According to the Act, municipal stormwater NPDES permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants."

"Municipal Separate Storm Sewer System (MS4)" is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that are: (i) owned or operated by a state, county, city, town, borough, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or designated and approved management agency under section 208 of the Clean Water Act that discharges to waters of the United States; (ii) designated or used for collecting or conveying storm water; (iii) which is not a combined sewer; (iv) which is not part of the Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.26.

"National Pollutant Discharge Elimination System (NPDES)" is the national program for issuing, modifying, revoking, and reissuing, terminating, monitoring and enforcing permits, and imposing

and enforcing pretreatment requirements, under the Clean Water Act. The NPDES system regulates discharge of pollutants from municipal sanitary sewers and industrial activities and stormwater.

“Natural Drainage” means a natural swale or topographic depression which gathers and/or conveys runoff to a permanent or intermittent watercourse or waterbody.

“New Development” means land disturbing activities on a previously undeveloped parcel of land; surface grading for structural development, including construction or installation of a building or structure, the creation of impervious surfaces; and land subdivision.

“Numeric Criteria” refer to the sizing requirements for stormwater treatment facilities established in Provision D.1.d(6)(c) of the Municipal Permit.

“Parking Lot” means land area or facility for the temporary parking or storage of motor vehicles used personally, or for business or commerce.

“Priority Development Project (PDPs)” is a project subject to requirements in this SUSMP document. PDPs are defined as those meeting criteria in Provision D.1.d(1) of the Municipal Permit.

“Project Area” is the entire project area comprising all areas to be altered or developed by the project, plus any additional areas that drain on to areas to be altered or developed.

“Projects Discharging to Receiving Waters within Environmentally Sensitive Areas” means all development and significant redevelopment that would create 2,500 square feet of impervious surfaces or increase the area of imperviousness of a project site to 10% or more of its naturally occurring condition, and either discharge urban runoff to a receiving water within or directly adjacent (where any portion of the project footprint is located within 200 feet of the environmentally sensitive area) to an environmentally sensitive area, or discharge to a receiving water within an environmentally sensitive area without mixing with flows from adjacent lands (where the project footprint is located more than 200 feet from the environmentally sensitive area).

“Project Footprint” means the limits of all grading and ground disturbance, including landscaping, associated with a project.

"Receiving Waters” means surface bodies of water, which directly or indirectly receive discharges from urban runoff conveyance systems, including naturally occurring wetlands, streams (perennial, intermittent, and ephemeral (exhibiting bed, bank, and ordinary high water mark), creeks, rivers, reservoirs, lakes, lagoons, estuaries, harbors, bays and the Pacific Ocean. The Port shall determine the definition for wetlands and the limits thereof for the purposes of this definition, which shall be as protective as the Federal definition utilized by the United States Army Corps of Engineers and the United States Environmental Protection Agency. Constructed wetlands are not

considered wetlands under this definition, unless the wetlands were constructed as mitigation for habitat loss or are BMPs originally constructed in receiving waters.

Construction of treatment control BMPs is prohibited in "Receiving Waters" may not be used to satisfy SUSMP requirements.

"Redevelopment" is the creation, addition, and / or replacement of impervious surface on a previously developed site. Examples include expansion of a building footprint, road widening, the addition to or replacement of a structure, and creation or addition of impervious surfaces. Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction. Redevelopment does not include trenching and resurfacing associated with utility work; resurfacing and reconfiguration of surface parking lots and existing roadways; new sidewalk construction, pedestrian ramps, or bike lane on existing roads; and routine replacement of damaged pavement, such as pothole repair. Redevelopment projects are considered PDPs if the project would create add or replace at least 5,000 square feet of impervious surfaces on an already developed site and the project falls under a priority development project category. Where redevelopment results in an increase of less than 50% of the impervious surfaces of a previously existing development, and the existing development was not subject to SUSMP requirements, the numeric sizing criteria identified in Table 2-12 apply only to the addition, and not to the entire development. When redevelopment results in an increase of more than 50% of the impervious surfaces of a previously existing development, the numeric sizing criteria applies to the entire development.

"Restaurant" means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812), where the land area for development is greater than 5,000 square feet. See Appendix A for information on this SIC code. Restaurants where land development is less than 5,000 square feet shall meet all SUSMP requirements except for treatment control BMP and numeric sizing criteria requirement and hydromodification requirement.

"Sediment" means soil, sand, and minerals washed from land into water. Sediment resulting from anthropogenic sources (i.e. human induced land disturbance activities) is considered a pollutant. This SUSMP regulates only the discharges of sediment from anthropogenic sources and does not regulate naturally occurring sources of sediment. Sediment can destroy fish-nesting areas, clog animal habitats, and cloud waters so that sunlight does not reach aquatic plants.

"Self-retaining areas" are areas designated to retain runoff. The area is allowed to include contributing areas up to a total combined impervious-to-pervious area ratio of up to 2:1.

"Self-treating areas" are natural, landscaped, or turf areas that drain directly off the project site or to the MS4.

"Site Design BMP", means any project design feature that reduces the amount of impervious surfaces, disconnects impervious surfaces, reduces creation or severity of potential pollutant sources and/or reduces the alteration of the project site's natural flow regime. Redevelopment projects that are undertaken to remove pollutant sources or to reduce the need for new roads and other impervious surfaces (as compared to conventional or low-density new development) by incorporating higher densities and/or mixed land uses into the project design, are also considered site design BMPs. Site design BMPs are a significant part of Low Impact Development (LID),

"Standard Industrial Classification (SIC)" is a federal government system for classifying industries by 4-digits. It will be replaced by the North American Industrial Classification System, but SIC codes are still referenced by existing NPDES permits. Information on SIC codes can be found at: http://www.bls.gov/bls/NAICS.htm. These codes will be replaced with the North American Industrial Classification System although the SIC codes are still referenced by NPDES permits at this time.

"Source Control BMP (both structural and non-structural)" means land use or site planning practices, or structures that aim to prevent urban runoff pollution by reducing the potential for contamination at the source of pollution. Source control BMPs minimize the contact between pollutants and urban runoff. Examples include roof structures over trash or material storage areas, and berms around fuel dispensing areas.

"Stormwater BMP" means any schedules of activities, prohibitions of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures, treatment control BMPs, and other management practices to prevent or reduce to the maximum extent practicable the discharge of pollutants directly or indirectly to receiving waters. Stormwater BMPs also include treatment requirements, operating procedures and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. This SUSMP groups stormwater BMPs into the following categories: site design, source control, and treatment control (pollutant removal) BMPs.

"Stormwater Conveyance System" also known as "municipal separate storm sewer system," "MS4," or "storm drain system" means private and public drainage facilities by which stormwater may be conveyed to Receiving Waters, such as: natural drainages, ditches, roads, streets, constructed channels, aqueducts, storm drains, pipes, street gutters, or catch basins.

"Streets, Roads, Highways, and Freeways" means any project that is not part of a routine maintenance activity, and would create a new paved surface that is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles and other vehicles. For the purposes of SUSMP requirements, Streets, Roads, Highways and Freeways do not include trenching and resurfacing associated with utility work; applying asphalt overlay to existing pavement; new sidewalk, pedestrian ramps, or bike lane construction on existing roads; and replacement of damaged pavement.

"Treatment Control (Structural) BMP" means any engineered system designed and constructed to remove pollutants from urban runoff. Pollutant removal is achieved by simple gravity settling of particulate pollutants, filtration, biological uptake, media adsorption or any other physical, biological, or chemical process.

"Water Quality Flow" is the peak flow rate resulting from the water quality design storm which is defined as a one-inch rainfall event for LID BMPs or defined by the numeric criteria in Table 2-12 for treatment control BMPs.

"Water Quality Volume" is the volume of stormwater that must be treated by an Integrated Management Practice (IMP), defined as one inch of rainfall over the contributing area to a self-retaining LID BMP or defined by numeric criteria provided in Table 2-12 for treatment control BMPs.

1.4 Conflicts with Local Practices or Municipal Permit

The Port SUSMP contains provisions related to any conflicts between SUSMP requirements and established local codes. The Port knows of no apparent conflicts between Port SUSMP requirements and established local codes or ordinances. If an apparent conflict is identified by a project proponent, it should be brought to the attention of the Port Project Architect for tenant projects or the Port Environmental Services Department for capital projects.

1.5 Implementation Process

As described in the Port JURMP Document, the Port is a special government entity, created in 1962 by the California legislation under the "San Diego Unified Port District Act." The Act defines the Port as a public corporation with the responsibility of managing San Diego Harbor and administering approximately 5500 acres of public lands along San Diego Bay. The Port has the authority to protect, preserve, and enhance physical access, natural resources and quality of water in the bay. Approximately 176 tenants and 277 subtenants operate businesses on lands leased from the Port. In addition, the Port operates its own "municipal" facilities including the Tenth Avenue Marine Terminal, the National City Marine Terminal, the Cruise Ship Terminal, various parks and recreational facilities, and other municipal operations facilities.

Article 10 of the Port Code is titled "Stormwater Management and Discharge Control Ordinance." A copy of Article 10 of the Port Code is available at www.portofsandiego.org/sandiego_environment/documents/CODE-STORMWATER-WEB.doc. Section 10.08.(c) addresses New Development and Redevelopment and states that "All priority development projects and redevelopment projects shall be designed using the methods described

in the SUSMP and shall include all applicable studies and reviews required by the SUSMP. The Port SUSMP Document represents one mechanism by which the Executive Director has established such controls in order to comply with the Municipal Permit.

New development and redevelopment projects are conducted by two major categories of project proponents, tenants of the Port (hereafter referred to as "tenant projects") and the Port District itself (hereafter referred to as "capital projects"). The Port has different project approval processes for tenant and capital projects and accordingly has slightly different approval processes for Port SUSMP project review and approval. The Port SUSMP project approval process, including roles and responsibilities of Port departments, is described below for both tenant and capital projects.

A) TENANT PROJECTS

Port tenants desiring surface or subsurface improvements or to perform new construction, reconstruction, modification, or demolition, must submit a request for approval. Project approval typically involves several steps and review by several Port departments. The process is outlined in the flow chart in Figure 1-1 and is further described below.

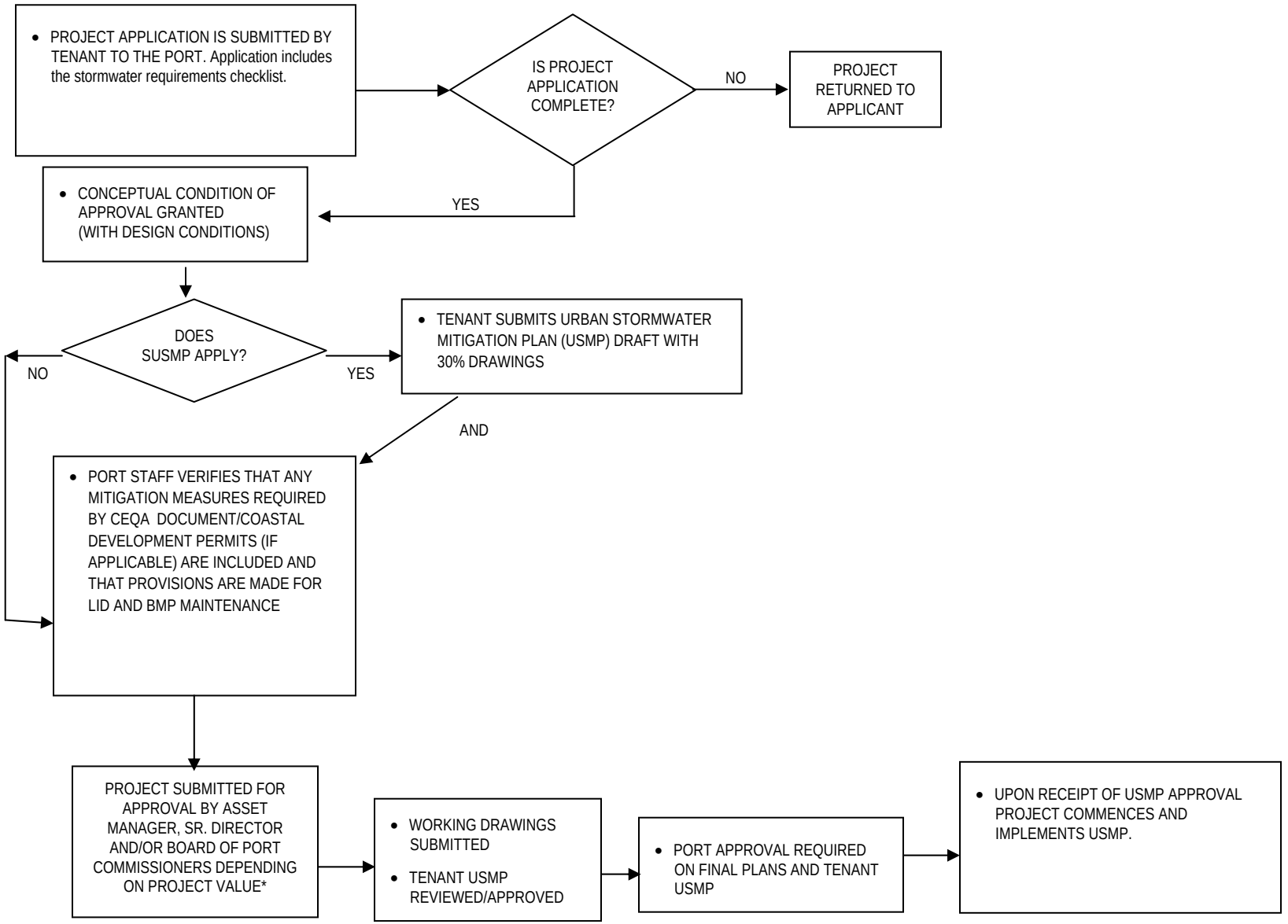
Project approval starts with the project proponent submitting a Tenant Project Improvement Application to the Port, where a project application completeness check is conducted. The first step in SUSMP compliance for tenant projects is that all projects must complete a stormwater requirements checklist to determine whether SUSMP conditions apply. Completed project applications are then logged and assigned a project architect. The Port then verifies whether SUSMP requirements apply to the project. Guidelines are provided in Table 1-1 to assist project proponents in determining whether SUSMP requirements apply to projects conducted within the Port jurisdiction. If SUSMP requirements apply, the project proponent must submit an Urban Stormwater Mitigation Plan (USMP) describing how the project will meet SUSMP requirements for the project application to be considered complete. The Port also determines if an Environmental Review is needed. The Port will perform a CEQA and Coastal Development Permit determination if necessary. The appropriate Port staff coordinates a technical review and approval of the project including obtaining review from other Port Departments. The Port reviews and approves all USMP documents and final design plans to ensure that SUSMP requirements are met. The tenant may be required to revise plans throughout the process if deemed necessary by the Port. Upon submittal of the final working drawings, an approval letter will be granted by the Port. The project is submitted for approval by asset manager, Senior Director and/or Board of Port Commissioners depending on project value.

The approval of a Port tenant project becomes part of the lease or part of a use permit. For discretionary projects, any mitigation measures required by the environmental review process, such as implementation and maintenance of stormwater BMPs, become part of the lease or use

permit and are adopted by the Executive Officer or the Board of Port Commissioners as a Mitigation Monitoring and Reporting Program.

This page intentionally left blank

Figure 1-1 Port Tenant Plan Processing and Project Approval



*Point of "Lawful Approval"

This page intentionally left blank

Table 1-1 Applicability of SUSMP Requirements by Project Type – Port of San Diego

Project Type	Reference in the Municipal Permit	Do SUSMP Requirements Apply? (Yes/No)
Projects Considered Priority Projects and Required to Comply with SUSMP Requirements:		
1) Commercial Development:		
a. Any project located within 200 feet of San Diego Bay and creates 2,500 square feet or more of impervious surfaces or increases the area of imperviousness of a project site to 10% or more of its naturally occurring condition.	D.1.d(2)(b)	Yes
b. Any project located greater than 200 feet from San Diego Bay that discharges urban runoff directly to San Diego Bay or directly adjacent (where any portion of the project footprint is located within 200 feet of the San Diego Bay) without mixing with flows from adjacent lands and creates 2,500 square feet or more of impervious surfaces or increases the area of imperviousness of a project site to 10% or more of its naturally occurring condition.	D.1.d(2)(g)	Yes
c. Other Redevelopment Projects that create, add or replace at least 5,000 square feet of impervious surfaces on an already developed site that fall under a priority development project categories, including, but not limited to: the expansion of a building footprint; addition to or replacement of a structure; replacement of an impervious surface that is not part of a routine maintenance activity; and land disturbing activities related with structural or impervious surfaces. Replacement of impervious surfaces includes any activity where impervious material(s) are removed, exposing underlying soils during construction.	D.1.d(1)(a)	Yes
d. Any commercial development project with a footprint greater than 1 acre.	D.1.d(2)(b)	Yes
e. Redevelopment projects that result in an increase of less than 50% of the impervious surfaces of a previously existing development, and the existing development was not subject to SUSMP requirements, the numeric sizing criteria identified in Table 2-12 apply only to the addition, and not to the entire development. When redevelopment results in an increase of more than 50% of the impervious surfaces of a previously existing development, the numeric sizing criteria applies to the entire development	D.1.d(1)(a)	Yes
2) Automotive Repair Shop of any size. See definition of "Automotive Repair Shop."	D.1.d(2)(d)	Yes
3) Restaurants of any size. See definition of "Restaurant."	D.1.d(2)(e)	Yes
4) Parking Lots more than 5,000 square feet or more with 15 or more parking spaces, and potentially exposed to urban runoff.	D.1.d(2)(h)	Yes
5) Streets or Roads with a project footprint of 5,000 square feet or greater.	D.1.d(2)(i)	Yes
6) Heavy Industry greater than one acre. This category includes, but is not limited to, manufacturing plants, food processing plants, metal working facilities, printing plants, and fleet storage areas (bus, truck, boat, etc.)	D.1.d(2)(c)	Yes
7) Retail gasoline outlets (RGOs) 5,000 square feet or more or with a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.	D.1.d(2)(c)	Yes
8) Pollutant generating projects which disturb more than one acre of land	Model SUSMP	Yes
Project Types Not Considered Priority Projects and Exempted from SUSMP Requirements:		
▪ Any trenching and resurfacing associated with utility work ▪ Any resurfacing and reconfiguring of surface parking lots ▪ Application of asphalt overlay to existing pavement ▪ New sidewalk or pedestrian ramp construction ▪ Construction of bike-lanes on existing roads	-	No

Project Type	Reference in the Municipal Permit	Do SUSMP Requirements Apply? (Yes/No)
▪ Replacement of damaged pavement or impervious surfaces as part of routine maintenance activities.	-	No
▪ Projects (except mandatory categories above) that create less than 2,500 square feet of impervious surfaces or do not increase the area of imperviousness of a project site to 10% or more of its naturally occurring condition.	-	No

Notes for References to the Countywide Model SUSMP:

1. Definition of "Projects Discharging to Receiving Waters within Environmentally Sensitive Areas"
2. Definition of "Redevelopment"
3. Definition of "Streets, Roads, Highways, and Freeways"
4. Projects that generate pollutants at levels greater than background levels and disturb one acre or more of land are considered PDPs. In most cases linear pathway projects that are for infrequent vehicle use (such as emergency or maintenance access) or for pedestrian or bicycle use are not considered pollutant generating above background levels if they are built with pervious surfaces or if they allow runoff to sheet flow to surrounding pervious surfaces.

B) CAPITAL PROJECTS

Capital projects are evaluated, designed, and approved in accordance with the same environmental and coastal development permitting standards that are applied to any development in the Port tidelands. The approval of development and improvement projects carried out by the Port itself includes the environmental mitigation measures that are self-imposed as a result of the environmental review process. Such mitigation measures become part of the project design and/or implementation and are formalized as an adopted Mitigation Monitoring and Reporting Program. The process for implementing SUSMP requirements for capital projects is outlined in the flow chart in Figure 1-2 and is further described below.

All development projects in the Port's tidelands undergo an environmental review as part of the coastal development permit process. Port staff initiates the review process by completing a "Preliminary Environmental Checklist Form." The checklist is then submitted under cover of an Environmental Review and Coastal Development Permit Memorandum for environmental review. The memorandum must include the designated SUSMP project priority category and square footage. Projects are evaluated for environmental impacts and the imposition of mitigation measures to eliminate or minimize any impacts. Port Staff determines if Coastal Development Permit or CEQA requirements apply.

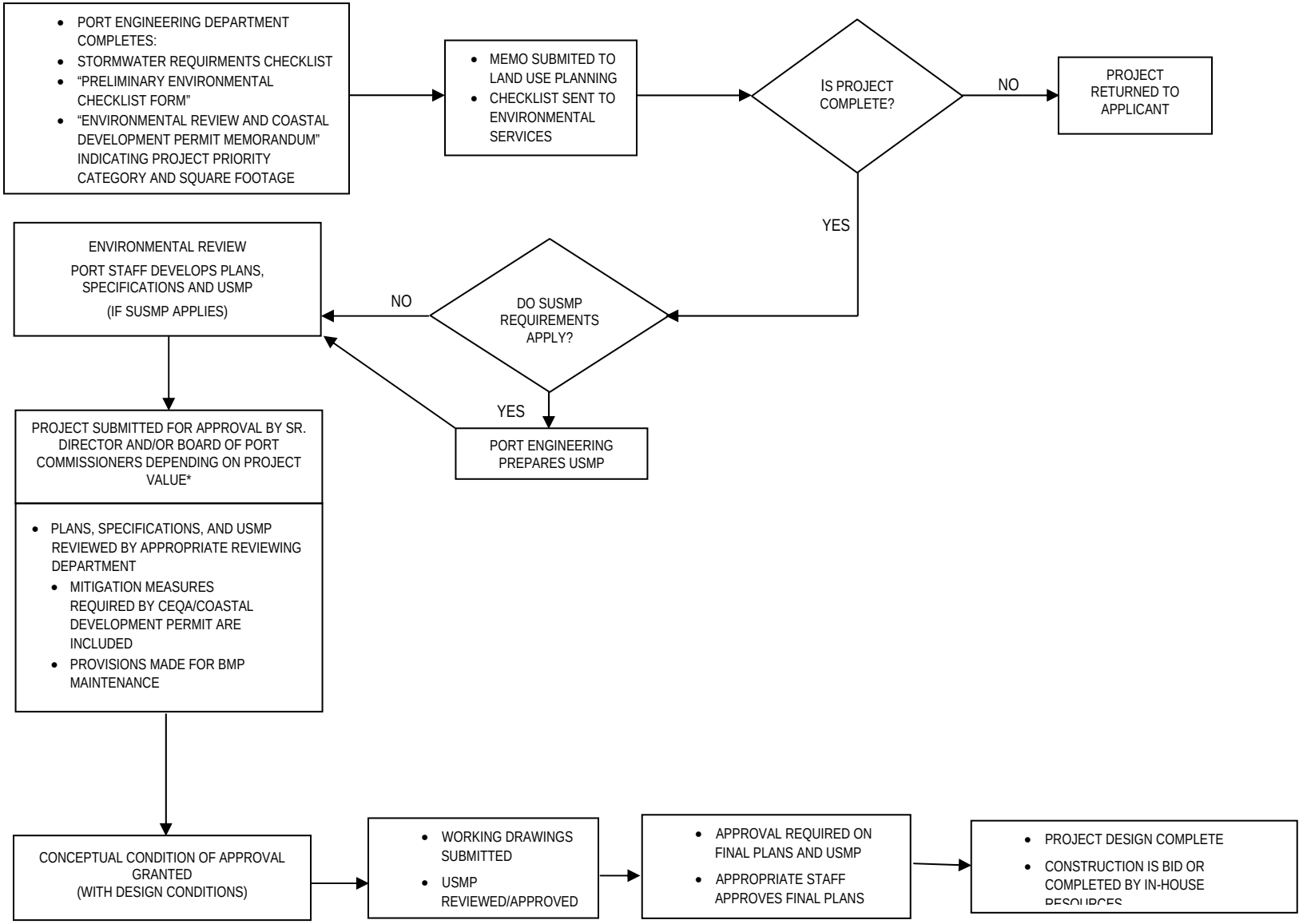
The appropriate Port department evaluates whether SUSMP requirements apply during this stage, using general guidelines provided in Table 1-1.

If SUSMP requirements apply, the Port advises the project proponent that an USMP describing how the project will meet SUSMP requirements must be submitted prior to final construction plan approval. At this stage, project environmental mitigation measures are developed and the project

is forwarded for coastal development permit approval. Once a coastal development permit is approved, the Port prepares plans, specifications, and the USMP document. The Port reviews and approves the USMP document and final design plans to ensure that SUSMP requirements are met. Any mitigation measures required by the environmental review process, such as implementation and maintenance of stormwater BMPs, become part of the coastal development permit and are adopted by the Board of Port Commissioners as a Mitigation Monitoring and Reporting Program. This process ensures that SUSMP requirements are incorporated into the project design and shown on the plans prior to bidding for construction contracts or completion of construction work by Port staff.

This page intentionally left blank

Figure 1-2 Port Capital Project Plan Processing and Approval



*Point of "Lawful Approval"

This page intentionally left blank

Departmental Responsibilities

The general responsibilities of those departments involved in the implementation of the Port SUSMP process are listed in Table 1-2. The responsibilities of the Port departments involved in the planning and/or review and/or approval of SUSMP requirements for tenant and capital projects is outlined in subsections A) and B) above. The inspectors of the Construction Support Department ensure that structural BMPs installed according to approved plans. Environmental Services also verifies that the BMPs proposed in the USMP are installed. General Services Department staff is involved with the operation and proper maintenance of BMPs installed for capital projects.

Table 1-2 Departmental Responsibilities for SUSMP Implementation

	Real Estate Division (including Architecture and Mapping Services)	Land-Use Planning Department	Environmental Services Department	Facilities & Engineering Division	Construction Support	General Services
Education	X		X	X		
Tenant Project Review	X	X	X			
Tenant Project Approval	X	X	X			
Capital Project Planning		X	#	X		
Capital Project Review		X	X	X		
Capital Project Approval		X	X	X		
Construction Inspection			#	#	X	
Capital Project Operations and Maintenance			#			X
Enforcement	#		X		X	

X – Primary responsibility

– Secondary responsibility

This page intentionally left blank

Section 2 Stormwater BMP Selection Procedure

Section 2 provides a procedure for selecting BMPs for a priority development project (PDP). The selection procedure includes identifying a project's pollutants and conditions of concern and addressing those pollutants through Low Impact Design (LID), site design, source control, and treatment control stormwater BMPs. All PDPs shall implement one or a combination of stormwater BMPs, including, 1) LID and site design BMPs, 2) source control BMPs and, 3) treatment control BMPs (when LID BMPs do not completely treat all project site drainage areas) after the pollutants and conditions of concern have been identified. Stormwater BMPs, from those listed in Appendix B: "Approved Stormwater Best Management Practices", shall be considered and implemented where expressly required by the Municipal Permit and if not required, where determined applicable and feasible by the Port. Additional Information on BMPs is included in the notes to Table 2-9 and in Section 2.8 C. It is recommended that the U.S. Environmental Protection Agency's "Preliminary Data Summary of Urban Runoff Best Management Practices" (August 1999, EPA-821-R-99-012) or the Caltrans Treatment BMP Technology Report (April 2008, CTSW-RT-08-167.02.02) be used as a guide for BMP selection. The stormwater BMPs shall adhere to the requirements in Section 2 of this Jurisdictional SUSMP, and shall be correctly designed so as to remove pollutants to the maximum extent practicable. A flow chart summarizing the stormwater BMP selection procedure is provided in Figure 2-1.

2.1 Urban Stormwater Mitigation Plan Development

In order to ensure that SUSMP requirements are integrated into all applicable projects, project proponents are required to prepare an USMP for all PDPs. An USMP is to be prepared by a licensed civil engineer, registered in California. The required components of an USMP are identified in this Section and shown in Table 2-1. Further detail is provided in Section 2.2 through 2.9. It should be noted that the project proponent must comply with all applicable requirements in this document and not rely solely on the outline of USMP requirements provided in Table 2-1.

In general, the USMP must clearly convey the process used to identify pollutants of concern, conditions of concern and BMPs selected for the project as well as identifying BMP maintenance requirements.

To ensure that an USMP contains all requirements of this SUSMP, an USMP template has been developed by the Port. The intent of the USMP template is to provide consistent and complete applications for PDPs on Port tidelands. The use of this template is required. BMPs chosen should be consistent with the requirements that follow this section. A copy of the USMP template is located on the Port website at:

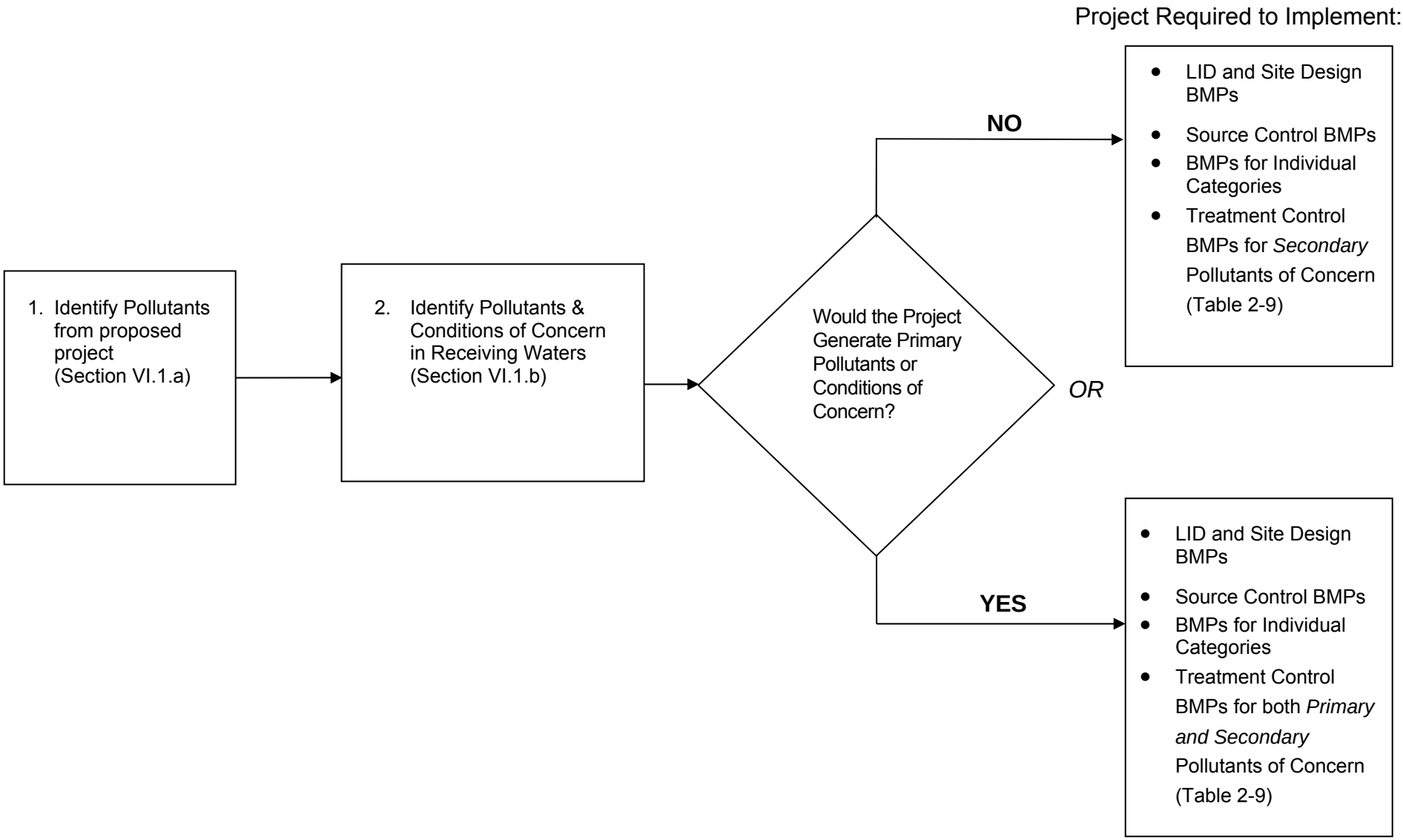
http://www.portofsandiego.org/environment/stormwater/1766-usmp-template.html.

The requirements for a Port USMP are similar to "Water Quality Technical Report" requirements established by the City and County of San Diego. The fundamental steps in implementing SUSMP requirements and completing the USMP are contained in Table 2-1 and will be described in the following subsections.

2.2 USMP Document Descriptive Components

Refer to Table 2-1 for the USMP preparation, organization and content. Each USMP must be signed and stamped by a registered Civil Engineer in the state of California. USMPs must contain a table of contents to assist reviewers in finding required parts of the document. USMPs must contain a vicinity map containing major roadways, geographic features or landmarks, the project site perimeter, geographic features, general topography, downstream receiving waterbody, and a scale and north arrow. USMPs must also contain a site map including the entire property on one map or using a key map if multiple sheets are required, scale, north arrow, and legend, impervious features including location of proposed impervious areas such as paved areas, buildings, covered areas, etc., potential pollutant source areas such as fueling island(s), garage(s), outdoor storage area(s), waste container area(s), wash-racks, hazardous material storage area(s). The Port USMP template assists with the completion of this information.

Figure 2-1 Stormwater BMP Selection Procedure Flow Chart



This page intentionally left blank

Table 2-1 Required Components of an Urban Stormwater Mitigation Plan (USMP) for Priority Projects

Preparation	▪ Prepared by CA Registered Civil Engineer
Organization & Content	▪ Table of contents ▪ Vicinity map ▪ Project description ▪ Narrative of project activities
Site Map	▪ Entire property included on one map (use key map if multi-sheets) ▪ Drainage areas and direction of flow ▪ Private storm drain system(s) ▪ Nearby water bodies and municipal storm drain inlets ▪ Location of stormwater conveyance systems (ditches, inlets, storm drains, etc.) ▪ Location of existing and proposed stormwater controls ▪ location of "impervious" areas-paved areas, buildings, covered areas ▪ Locations where materials would be directly exposed to stormwater ▪ Location of building and activity areas (e.g. fueling islands, garages, waste container area, wash racks, hazardous material storage areas, etc.) ▪ Areas of potential soil erosion (including areas downstream of project.
Pollutants and Conditions of Concern	▪ Pollutants based upon land use ▪ Project located in which watershed ▪ Impaired water bodies downstream of the project and impairment ▪ Drainage Study ▪ Impacts to hydrologic regime (hydromodification evaluation, as applicable)
Types of BMPS	*LID and Site Design BMPs* ▪ Optimize site layout ▪ Use pervious surfaces ▪ Direct runoff to pervious surfaces ▪ Direct runoff to IMPs ▪ Protect slopes and channels *Source Control BMPs* ▪ Inlet stenciling and signage ▪ materials storage ▪ Trash storage ▪ Efficient irrigation ▪ Other controls (as applicable) *Treatment Control BMPs* ▪ Basis for selection (include targeted pollutants, justification, and alternative analysis) ▪ Design criteria (include calculations) ▪ Pollutant removal information (other than vendor specifications) ▪ Literature references ▪ Maintenance condition(s)
BMP Maintenance	▪ O&M Plan ▪ Access Agreement

2.3 Hydromodification Determination

A Hydromodification Management Plan (HMP) was developed by the Copermitees according to the requirements of the Municipal Permit Section D.1.g to manage increases in runoff discharge rates and durations from all PDPs, where such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollution generation, or other impacts to beneficial uses and stream habitat due to increased erosive force. The HMP states that PDPs are required to implement hydrologic control measures so that post-project runoff flow rates and durations do not exceed pre-project flow rates and durations where they would result in an increased potential for erosion or significant impacts to beneficial uses or violate the channel standard (Municipal Permit Section D.1.g(1)(c)). A copy of the HMP can be found at the following website: http://www.projectcleanwater.org/html/wq_susmp.html. Projects proponents are required to determine if the requirements of the HMP apply or if a project is exempt. The Port has the authority to require a project, typically exempt from HMP requirements, to implement applicable HMP requirements.

It should be noted that flow controls for redevelopment projects are only required if the redevelopment project increases impervious area or peak flow rates as compared to pre-project conditions. Projects determined to be exempt from hydromodification flow controls are still required to implement the Municipal Permit's LID and water quality treatment requirements. Projects may be exempt from hydromodification controls and HMP requirements if one of the following conditions are met:

- The project is not a Priority Development Project.
- The proposed project does not increase the impervious area and peak flows to any discharge location.
- The proposed project discharges runoff directly to an exempt receiving water such as the Pacific Ocean, San Diego Bay, an exempt river reach, an exempt reservoir, or a tidally influenced area.[1]
- The proposed project discharges to a hardened conveyance system that extends to the Pacific Ocean, San Diego Bay, an exempt river reach, an exempt reservoir, or a tidally influenced area.

[1] The HMP identifies two exempt river reaches that impact the development and redevelopment projects in the San Diego Bay area. The first exempt river reach is the Otay River between the Lower Otay Reservoir Dam and the San Diego Bay. The second exempt river reach is the Sweetwater River between the Sweetwater Reservoir Dam and the San Diego Bay

- The contributing watershed area to which the project discharges has an impervious area percentage greater than 70 percent.

- The project is an urban infill project discharging to an existing hardened or rehabilitated conveyance system that extends beyond the "domain of analysis" and the potential for cumulative impacts in the watershed are low.[2]

For further discussion on the above mentioned conditions prompting a project's exemption from hydromodification controls and HMP requirements refer to Chapter 6.1 of the HMP document.

When it is determined that the implementation of hydrologic control measures are necessary for a project, the project has the following options:

- Size LID and BMP facilities for flow range from a low threshold 10% of Q_2 to a high threshold of Q_{10}, where Q_2 is the 2 year peak flow, and Q_{10} is the 10 year peak flow, OR

- Use the screening tools developed by SCCWRP to determine the receiving channel susceptibility (lateral and vertical) in order to determine the low flow threshold for the specific conditions.

If the project proponent decides to use the SCCWRP screening tools, it is possible that the minimum threshold for the analysis increases and therefore the size of the LIDs and BMPs facilities will be reduced. That is, as the minimum threshold increases, the range of analysis is reduced, and a small LID or BMP may satisfy the pre-development conditions since the minimum discharge is higher which reduces the detention volume.

It is recommended that project proponents attempt to size the LID and BMP facilities on site using the first option, as it may be more conservative than using the SCCWRP screening tools.

---

[2] Potential urban infill project exemptions are only considered if:

1. The existing impervious area percentage of the sub-watershed is greater than 40 percent.

2. The potential future development impacts within the sub-watershed, as measured from the entire sub-watershed area draining to the existing conveyance system outfall, would not increase the composite impervious area percentage of the sub-watershed by more than 3 percent; AND

3. The project discharges runoff to an existing hardened or rehabilitated conveyance system (storm drain, concrete channel, or engineered vegetated channel) that extends beyond the Domain of Analysis determined for the project site. The Domain of Analysis is defined to extend downstream of a proposed project site to a location in a natural stream section to where a 50% flow accumulation is added to the stream system. For existing storm drain systems or hardened conveyance systems, the Domain of Analysis shall extend downstream to a location where a 100% flow accumulation is added to the storm drain or hardened conveyance system. These definitions may be revised in the future subsequent to ongoing work being conducted by the Southern California Coastal Water Research Project (SCCWRP). Refer to page 6-4 in the HMP for additional information.

However, if the resulting BMP or LID sizes are significant or uneconomical, the project proponent may decide to use the screening tools to attempt to increase the lower threshold to 30% or 50% of Q_2. This may reduce the size of the BMP or LID facility. It should be noted that it is possible that the SCCWRP screening tools may give a low threshold result of 10% of Q_2. It is almost impossible to predict if the SCCWRP screening tool analysis will give you a lower threshold of 10%, 30% or 50% of Q_2.

2.4 Identify Anticipated Project Pollutants

Urban runoff from a developed site has the potential to contribute pollutants, including oil and grease, suspended solids, metals, gasoline, pesticides, and pathogens to the stormwater conveyance system and receiving waters. The pollutants that may be generated at a site are related to land use. The Countywide Model SUSMP has identified anticipated and potential pollutants that would be associated with project type which correspond to priority project categories. Using Table 2-2, identify pollutants that are anticipated to be generated from the proposed priority project categories. Descriptions of general categories of pollutants are provided in Table 2-3. Identification of project pollutants must comply with Section 2.2 of this SUSMP. **Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern**.

Table 2-2 Anticipated and Potential Pollutants of Concern for Priority Project Categories

	General Pollutant Categories								
Priority Project Categories	**Sediments**	**Nutrients**	**Heavy Metals**	**Organic Compounds**	**Trash & Debris**	**Oxygen Demanding Substances**	**Oil & Grease**	**Bacteria & Viruses**	**Pesticides**
Commercial Development >1 acre	P(1)	P(1)	X	P(2)	X	P(5)	X	P(3)	P(5)
Heavy industry /industrial development	X		X	X	X	X	X		
Automotive Repair Shops			X	X(4)(5)	X		X		
Restaurants					X	X	X	X	P(1)
Parking Lots	P(1)	P(1)	X		X	P(1)	X		P(1)
Retail Gasoline Outlets			X	X	X	X	X		
Streets, Highways & Freeways	X	P(1)	X	X(4)	X	P(5)	X		P(1)

X = anticipated
P = potential
(1) A potential pollutant if landscaping exists on-site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

Table 2-3 Pollutant Category Descriptions

Sediments	Sediments are soils or other surficial materials eroded and then transported or deposited by the action of wind, water, ice, or gravity. Sediments can increase turbidity, clog fish gills, reduce spawning habitat, lower young aquatic organisms survival rates, smother bottom dwelling organisms, and suppress aquatic vegetation growth.
Nutrients	Nutrients are inorganic substances, such as nitrogen and phosphorus. They commonly exist in the form of mineral salts that are either dissolved or suspended in water. Primary sources of nutrients in urban runoff are fertilizers and eroded soils. Excessive discharge of nutrients to water bodies and streams can cause excessive aquatic algae and plant growth. Such excessive production, referred to as cultural eutrophication, may lead to excessive decay of organic matter in the water body, loss of oxygen in the water, release of toxins in sediment, and the eventual death of aquatic organisms.
Metals	Metals are raw material components in non metal products such as fuels, adhesives, paints, and other coatings. Primary source of metal pollution in stormwater are typically commercially available metals and metal products. Metals of concern include cadmium, chromium, copper, lead, mercury, and zinc. Lead and chromium have been used as corrosion inhibitors in primer coatings and cooling tower systems. At low concentrations naturally occurring in soil, metals are not toxic. However, at higher concentrations, certain metals can be toxic to aquatic life. Humans can be impacted from contaminated groundwater resources, and bioaccumulation of metals in fish and shellfish. Environmental concerns, regarding the potential for release of metals to the environment, have already led to restricted metal usage in certain applications.
Organic Compounds	Organic compounds are carbon based. Commercially available or naturally occurring organic compounds are found in pesticides, solvents, and hydrocarbons. Organic compounds can, at certain concentrations, indirectly or directly constitute a hazard to life or health. When rinsing off objects, toxic levels of solvents and cleaning compounds can be discharged to storm drains. Dirt, grease, and grime retained in the cleaning fluid or rinse water may also adsorb levels of organic compounds that are harmful or hazardous to aquatic life.
Trash & Debris	Trash (such as paper, plastic, polystyrene packing foam, and aluminum materials) and biodegradable organic matter (such as leaves, grass cuttings, and food waste) are general waste products on the landscape. The presence of trash & debris may have a significant impact on the recreational value of a water body and aquatic habitat. Excess organic matter can create a high biochemical oxygen demand in a stream and thereby lower its water quality. Also, in areas where stagnant water exists, the presence of excess organic matter can promote septic conditions resulting in the growth of undesirable organisms and the release of odorous and hazardous compounds such as hydrogen sulfide.
Oxygen Demanding Substances	This category includes biodegradable organic material as well as chemicals that react with dissolved oxygen in water to form other compounds. Proteins, carbohydrates, and fats are examples of biodegradable organic compounds. Compounds such as ammonia and hydrogen sulfide are examples of oxygen demanding compounds. The oxygen demand of a substance can lead to depletion of dissolved oxygen in a water body and possibly the development of septic conditions.
Oil and Grease	Oil and grease are characterized as high molecular weight organic compounds. Primary sources of oil and grease are petroleum hydrocarbon products, motor products from leaking vehicles, esters, oils, fats, waxes, and high molecular-weight fatty acids. Introduction of these pollutants to the water bodies are very possible due to the wide uses and applications of some of these products in municipal, residential, commercial, industrial, and construction areas. Elevated oil and grease content can decrease the aesthetic value of the water body, as well as the water quality.
Bacteria and Viruses	Bacteria and viruses are ubiquitous microorganisms that thrive under certain environmental conditions. Their proliferation is typically caused by the transport of animal or human fecal wastes from the watershed. Water, containing excessive bacteria and viruses can alter the aquatic habitat and create a harmful environment for humans and aquatic life. Also, the decomposition of excess organic waste causes increased growth of undesirable organisms in the water.
Pesticides	Pesticides (including herbicides) are chemical compounds commonly used to control nuisance growth or prevalence of organisms. Excessive application of a pesticide may result in runoff containing toxic levels of its active component.

2.5 Identify Receiving Water and Watershed Information

PDPs must collect and present applicable drainage information including the receiving waterbody name (including name of hydrologic unit, area, and subarea) and state waterbody number as identified in the *Water Quality Control Plan for the San Diego Basin*, (http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml) prepared by the San Diego Regional Board (San Diego Basin Plan). Receiving waters for the Port are San Diego Bay or the Pacific Ocean. Hydrologic Units in the San Diego Basin Plan that apply to the Port jurisdiction are: Pueblo San Diego (908), Sweetwater (909), and Otay (910). PDPs must present a listing of the downstream waterbody's beneficial uses. This information assists in identifying further information on the downstream waterbody

2.6 Identify Primary and Secondary Pollutants of Concern

Pollutants generated by the proposed PDP that exhibit one or more of the following characteristics are considered primary pollutants of concern:

- Current loadings or historical deposits of the pollutant are impairing the beneficial uses of a receiving water;
- Elevated levels of the pollutant are found in water or sediments of a receiving water and/or have the potential to be toxic to or bioaccumulate in organisms therein; and
- Inputs of the pollutant are at a level high enough to be considered potentially toxic.

To identify primary pollutants of concern in receiving waters, each PDP shall, at a minimum, do the following:

- Compare the specific location where the project discharges to the receiving water (Section 2.5) to the most recent Clean Water Act 303(d) list of impaired water bodies. The 303(d) list can be found at http://www.swrcb.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml, refer to Region 9. Next, also look for TMDL implementation for the receiving water that your project drains to. A listing of TMDLs for San Diego can also be found on the Regional Board's website listed above. The Port has developed a figure to illustrate jurisdictional boundaries and the areas of 303(d) list impairment and TMDL's that apply to Port receiving waters to assist in identifying primary pollutants of concern. This document is posted at: http://www.portofsandiego.org/environment/stormwater.
- Compare pollutants for which the receiving water is impaired to the "Anticipated Project Pollutants" from Section 2.4. Any anticipated project pollutants that are also identified by the 303(d) list for the project discharge location are "Primary Pollutants of Concern." All

other anticipated project pollutants are "Secondary Pollutants of Concern." The USMP template has tables specifically designed to assist with this pollutant prioritization determination.

2.7 Identify Conditions of Concern

Common impacts to the hydrologic regime resulting from development typically include increased runoff volume and velocity; reduced infiltration; increased flow frequency, duration, and peaks; faster time to reach peak flow; and water quality degradation. These changes have the potential to permanently impact downstream channels and habitat integrity. A change to a priority project site's hydrologic regime would be considered a condition of concern if the change would impact downstream channels and habitat integrity. To mitigate these potential impacts, the project proponent must prepare the following supporting documentation:

- Evaluate the project's conditions of concern in a drainage study as part of the USMP. The drainage study and the USMP shall be prepared by a registered civil engineer in the State of California, with experience in drainage design and water resources management. The report shall consider the project area's location (from the larger watershed perspective), topography, soil and vegetation conditions, percent impervious area, natural and infrastructure drainage features, wet season groundwater depth, and any other relevant hydrologic and environmental factors to be protected specific to the project area's watershed.

- Field Reconnaissance including observations of the project site and upstream and downstream conditions. Existing conditions, such as undercutting erosion, slope stability, vegetative stress, and areas susceptible to erosion and/or habitat alteration as a result of altered flow regimes should be pointed out.

- Existing Hydrologic Conditions including description of the location, type, and percent cover of onsite vegetation, description of existing impervious features, description of existing stormwater conveyance features, description of distance to downstream waterbodies, description of soil type (NRCS hydrologic soil classification and types), description of depth to groundwater during the wet season, description of offsite vegetation types, location, and percent cover.

- Drainage Study Information including, at a minimum, existing and post-construction descriptions of impervious area and percentages, rainfall intensities, water quality rainfall volumes, hydromodification applicability checklist (see Section 2.3), geotechnical conditions regarding any planned uses of infiltration techniques (slope stability, expansive soils, compressive soils, seepage, groundwater depth, loss of foundation or pavement subgrade strength), and site constraints (impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, high-intensity land use,

vehicular traffic (R-values), restricted right-of-way, safety concerns, and flow rates, velocities, and durations for the 2-year, 6-hour and 10-year, 6-hour design storm events, (as described in the County of San Diego Hydrology Manual, 2003 Ed.) and water quality flow or volume. The drainage study must also include an analysis of proposed BMPs to mitigate downstream impacts and establish that pre-project hydrologic conditions affecting downstream conditions of concern would be maintained or improved by the proposed project, satisfactory to the Port, by incorporating the site design, source control, and treatment control requirements.

The Port USMP template prompts the preparer to provide this information.

2.8 Establish Stormwater BMPs

All PDPs must establish permanent stormwater BMPs to reduce pollutants and water quality impacts of the proposed project to the MEP. In preparing the USMP and selecting project BMPs, the preparer must go through the BMP selection process presented in this SUSMP to consider, incorporate, and implement Low Impact Development (LID) and Site Design, Source Control and Treatment Control BMPs. In addition, it should be emphasized that selection of Treatment Control BMPs must prioritize and maximize the removal of Primary Pollutants of Concern. If no Primary Pollutants of Concern are identified, Treatment Control BMPs shall be selected that remove Secondary Pollutants of Concern to the MEP. Treatment Control BMP design must also consider any impacts to Treatment Control BMP performance due tidal influence of the subsurface storm drain system within the tidelands. This is particularly relevant to subsurface filtration systems, hydrodynamic separator systems, detention or infiltration basins, and wet ponds/wetlands.

A generalized flow chart summarizing the BMP selection is provided as Figure 2-2. Note that all SUSMP projects are considered commercial unless they specifically meet the definition of other priority pollutant categories.

As explained in following sections, all priority projects shall consider, and incorporate and implement stormwater BMPs into the project design. BMPs shall be considered during the planning and design phases of a project. BMPs shall be incorporated into the project design in the following progression:

- Low Impact Development and Site Design BMPs
- Source Control BMPs
- Treatment Control BMPs

PDPs must implement LID as well as site design BMPs and source control BMPs. When a site cannot treat all of the project area using LID BMPs, the remaining project area must be treated

using treatment control BMPs unless LID criteria are satisfied or a waiver is granted based on the infeasibility of all treatment control BMPs. BMPs must also achieve certain performance standards set in the municipal permit section D.1.d. (5) and (6). Selection of BMPs following the procedures of Sections 2.8 A, 2.8 B, and 2.8 C fulfills these requirements.

Each PDP shall provide an accounting of how each drainage area's runoff is managed and treated. The entire project area shall be divided into individual, discrete Drainage Management Areas (DMAs) .Each DMA shall then be classified as self-treating, self-retaining, draining to a self-retaining area or draining to an Integrated Management Practice (IMP). These concepts are discussed in more detail in this section.

Figure 2-2 BMP Selection Process for Primary and Secondary Pollutants

IMPLEMENT LID AND SITE DESIGN BMPs (SEE SECTION 2.8 A)

- *Minimize disturbances to natural drainages and optimize the site layout – preserve natural drainage features and design buildings and circulation to minimize the amount of roofs and paving.*
- *Use pervious surfaces – such as turf, gravel, or pervious pavement; or use surfaces that retain rainfall, such as vegetated roofs. All drainage from these surfaces is considered to be "self-retained".*
- *Disperse runoff – move runoff from impervious surfaces on to adjacent pervious surfaces (e.g., direct a roof downspout to disperse runoff onto a lawn).*
- *Direct Runoff to BMPs – drain impervious surfaces, such as bioretention facilities, planter boxes, cisterns, or dry wells.*
- *Protect Slopes and Channels – conserve natural area, soils and vegetation.*

↓

IMPLEMENT SOURCE CONTROL BMPs THAT APPLY TO ALL PROJECTS (SEE SECTION 2.8 B)

√	On-site storm drain inlets	√	Food service
√	Interior parking garages	√	Refuse areas
√	Landscape/ Outdoor Pesticide Use	√	Industrial processes
√	Use efficient irrigation systems	√	Outdoor storage of equipment or materials
√	Need for future indoor & structural pest control	√	Vehicle and Equipment Cleaning
√	Fuel Dispensing Areas	√	Vehicle/Equipment Repair and Maintenance
√	Loading Docks	√	Fire Sprinkler Test Water
√	Pools, spas, ponds, decorative fountains, and Plazas, sidewalks, and parking lots	√	Miscellaneous Drain or Wash Water
√	Other water features	√	Boiler drain lines
√	Roofing, gutters, and trim	√	Condensate drain lines
√	Interior floor drains and elevator shaft sump pumps	√	Rooftop equipment drainage sumps
√	Alternative project materials, including any architectural components		

↓

IMPLEMENT TREATMENT CONTROL BMPs THAT MAXIMIZE REMOVAL OF PROJECT POLLUTANT(S) OF CONCERN (SELECT BMPs FROM TABLE 2-10 AND SEE SECTION 2.8 C)

How much does LID Treatment Maximize Removal of Project Pollutant(s) of Concern?

Completely. There are: Bioretention Facilities and/or Infiltration Facilities or Practices		Partially or None. Choose the BMP that Maximizes the Removal of Pollutant(s) of Concern:	
√	BMPs Have Been Designed To Volume or Flow-Based Numeric Treatment Control Standards	√	Settling Basins (Dry Ponds)
		√	Wet Ponds Or Wetlands
√	BMPs Are Near The Pollutant Source	√	Media Filters
√	Infiltration BMP Restrictions Have Been Addressed	√	High-Rate Biofilters
		√	High-Rate Media Filters
		√	Trash Racks And Hydrodynamic Devices

A) LOW IMPACT DEVELOPMENT (LID) AND SITE DESIGN BMPS

LID BMPs must meet minimum requirements set out in the Municipal Permit section D.1d. (4). LID BMPs shall be constructed for each Drainage Management Area (DMA), discussed below, to retain or treat one inch of rainfall for the entire applicable project site (the entire site unless meeting the 50% rule site area reduction). When LID BMPs cannot treat this area completely, the area which cannot be treated by LID BMPs shall be treated by treatment control BMPs. Treatment control BMPs are described in Section 2.8 C.

PDPs shall be designed so as to minimize directly connected impervious surfaces and to promote infiltration using LID techniques. PDPs shall, to the maximum extent practicable, minimize the introduction of pollutants and conditions of concern that may result in significant impacts, generated from site runoff to the stormwater conveyance system. PDPs shall also control post-development peak stormwater runoff discharge rates and velocities to maintain or reduce pre-development downstream erosion and to protect stream habitat. PDPs can address these objectives through the creation of a hydrologically functional project design that attempts to mimic the natural hydrologic regime. Many of these techniques are outlined and reviewed in the County of San Diego's LID Handbook and Appendices (http://www.sdcounty.ca.gov/dplu/docs/LID-Handbook.pdf). Mimicking a site's natural hydrologic regime can be pursued by:

- Reducing imperviousness, conserving natural resources and areas, maintaining and using natural drainage courses in the stormwater conveyance system, and minimizing clearing and grading.

- Providing runoff storage measures dispersed throughout a site's landscape with the use of bioretention facilities and detention, retention, and infiltration practices.

- Implementing on-lot hydrologically functional landscape design and management practices.

These design principles offer an innovative approach to urban stormwater management, one that does not rely on the conventional end-of-pipe or in-the-pipe structural methods but instead uniformly or strategically integrates stormwater controls throughout the urban landscape. Useful resources for applying these principles, referenced in the appendix, include the County of San Diego's LID Handbook (2007), Start at the Source (1999), Low-Impact Development Design Strategies (1999), the City of Portland's Stormwater Manual (2004), and the Contra Costa Clean Water Program's Stormwater C.3 Guidebook (2006).

PDPs shall control post-development peak stormwater runoff discharge rates and velocities to maintain or reduce pre-development downstream erosion. In addition, projects should control runoff discharge volumes and durations to the maximum extent practicable using the LID, site design, source control, and treatment control requirements. There are five components that must

be addressed to satisfy the LID and site design requirements of this SUSMP. The following items briefly describe each component and an itemized list of project considerations is included in Table 2-4.

Optimize Site Layout

Site optimization is performed by preserving natural drainage features, conserving natural areas, soils, and vegetation, limiting coverage of impervious areas, detaining and retaining runoff throughout a site using self-treating landscaping and turf areas, and self-retaining areas that are designed to retain the first one inch of runoff. Buildings and circulation should minimize the amount of roof and paving surface area. Consider using alternative building materials for architectural components that might generate pollutants of concern.

Use Pervious Surfaces

Turf, gravel, or pervious pavement may be used as pervious surfaces. Rainfall retaining surfaces such as vegetated roofs may also be considered.

Direct Runoff to Pervious Surfaces

Draining runoff from impervious surfaces to adjacent pervious surfaces (e.g. directing a roof downspout to a lawn) such that the self-retaining area's first one inch of runoff is contained and a maximum ratio of impervious to pervious area shall be provided at or below 2:1. The design, including slopes and soils, must reflect a reasonable expectation that one inch of rainfall will infiltrate into soil and produce no runoff. For example, a lawn or garden depressed three to four inches below surrounding walkways or driveways provides a simple and functional landscape design element. If directing impervious areas to pervious paving, the pore space of the pavement and base course must be able to retain one inch or rainfall from the tributary area.

Direct Runoff to Integrated Management Practices (IMPs)

Areas that drain to an Integrated Management Practice (IMP) must be multiplied by a sizing factor to determine the size of the IMP required. More than one DMA may drain to an IMP. Designers can minimize the size of the IMP by draining impervious spaces to IMPs. This protects IMPs from sediment collection and increases their efficiency. When different surfaces drain to an IMP, use corresponding runoff coefficients and develop a weighted resultant for calculating IMP sizing.

Protect Slopes and Channels

Include stormwater BMPs to decrease the potential for erosion of slopes and/or channels, consistent with local codes and ordinances and with the approval of all agencies with jurisdiction, e.g., the U.S. Army Corps of Engineers, the Regional Board, and the California Department of Fish and Game.

Table 2-4 LID BMP Design Concepts

Optimize Site Layout	*Conserve Natural Areas Soils, and Vegetation* The following guidelines were used to determine the least sensitive portions of the site in order of increasing sensitivity. The Multiple Species Conservation Plan and/or other biological regulations as appropriate were also referred to: 1. Areas devoid of vegetation including previously graded areas and agricultural fields. 2. Areas of non native vegetation disturbed habitats and eucalyptus woodlands. 3. Areas of chamise or mixed chaparral and non-native grasslands. 4. Areas containing coastal scrub communities 5. All other upland communities. 6. Occupied habitat of sensitive species and all wetlands. 7. All areas necessary to maintain the viability of wildlife corridors. • Areas within each of the previous category areas containing hillsides should be considered more sensitive than the same category without hillsides • Preserve critical areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soils • Minimize disturbance of natural drainage systems • Replicate site's natural drainage patterns • Set back development from creeks, wetlands, and riparian habitats • Conform site layout along natural landforms • Concentrate or cluster development on the least environmentally sensitive portions of the site while leaving the remaining land in a natural undisturbed condition • Concentrate development on portions of the site with less permeable soils, and preserve areas that can promote infiltration • Avoid excessive grading and disturbance of vegetation and soils • Minimize soil compaction • Maximize canopy interception by preserving existing trees and shrubs and planting additional native or drought tolerant trees and large shrubs *Limit Coverage of Impervious Areas* • Compact, taller structures • Narrower and shorter streets • Narrower and shorter sidewalks • Smaller parking lots (fewer stalls, smaller stalls, and more efficient lanes) • Indoor or underground parking • Substitute landscaping for pavement *Detain and Retain Runoff Throughout the Site [Required by Order No. R9-2007-0001, Permit Provision D.1.d.(4)]* • Incorporate self-treating areas • Incorporate self-retaining areas
Use Pervious Surfaces	Vegetative roof Permeable pavements and surface structures (crushed aggregate, turf block, unit pavers, pervious concrete, or pervious asphalt) in low traffic areas and where soil conditions are suitable. *[Required by Order No. R9-2007-0001, Permit Provision D.1.d.(4)]*
Direct Runoff to Adjacent Pervious Surfaces	Drain areas to self-retaining areas
Direct	Drain areas to IMPs.

Runoff to IMPs	Bioretention facilities, flow through planters, dry wells, infiltration basins, cisterns, etc.

Drainage Management Areas

The entire project area shall be divided into individual, discrete Drainage Management Areas (DMAs) and clearly presented in a site map. DMAs may be defined using grade breaks and roof ridge lines. Separate DMAs shall be used for each surface type (e.g., landscaping, pervious paving, or roofs). Each DMA must be clearly delineated so that proper treatment of runoff can be incorporated into a project and so the Port can substantiate that all project areas are providing stormwater BMPs to the maximum extent practicable. Each DMA shall be assigned an identification number, hydrologic soil group, and its areal size. Each DMA shall then be classified as:

Self-treating area

Landscaped or turf areas that do not drain to Integrated Management Practices (IMPs), but rather drain directly off site or to the storm drain system. Examples include upslope undeveloped areas which are ditched and drained around a development and grassed slopes which drain off-site to a street or storm drain. In general, self-treating areas include no impervious areas, unless the impervious area is very small (5% or less) in relationship to the receiving pervious area and slopes are gentle enough to ensure runoff will be absorbed into the vegetation and soil.

Self-retaining (zero-discharge) area

Retain the first 1 inch of rainfall without producing any runoff. The technique works best on flat, heavily landscaped sites. It may be used on mild slopes if there is a reasonable expectation that a one-inch rainfall event would produce no runoff. To create self-retaining turf and landscape areas in flat areas or on terraced slopes, berm the area or depress the grade into a concave cross-section so that these areas will retain the first inch of rainfall. Inlets of area drains, if any, should be set 3 inches above the low point to allow ponding.

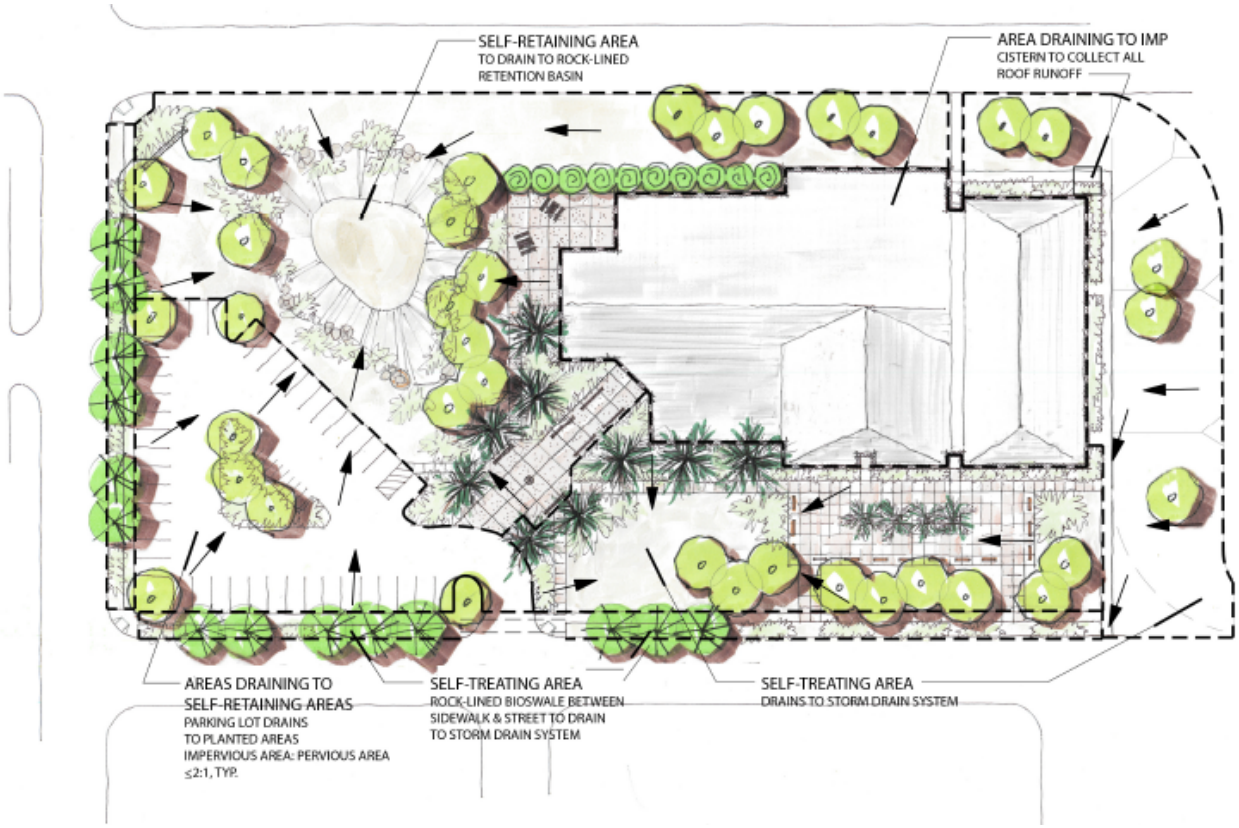
Draining to a self-retaining area

Runoff from impervious or partially pervious areas can be managed by routing it to self-retaining pervious areas. For example, roof downspouts can be directed to lawns, and driveways can be sloped toward landscaped areas. The maximum ratio is 2 parts impervious area for every 1 part pervious area. The drainage from the impervious area must be directed to and dispersed within the pervious area, and the entire area must be designed to retain 1 inch of rainfall without flowing off-site. For example, if the maximum ratio of 2 parts impervious area into 1 part pervious area is used, then the pervious area must absorb 3 inches of water over its surface before overflowing to an off-site drain. A partially pervious area may be drained to a self-retaining area. For example, a driveway composed of unit pavers may drain to an adjacent lawn. In this case, the maximum ratios are: (Runoff factor) x (tributary area) ≤ 2 x (self-retaining area).

Draining to an IMP

One or more areas that drain to an IMP. The minimum IMP size is determined by ratio to the drainage area size. Figure 2-3 graphically illustrates these four different types of DMAs.

Figure 2-3 Examples of DMAs



Each type of DMA surface has a unique runoff factor that estimates how much rainfall will produce effective rainfall, or runoff from that drainage area. Table 2-5 summarizes the runoff factors for surfaces draining to IMPs.

Table 2-5 Runoff Factors

Surface	Factor
Roofs	1.0
Concrete	1.0
Pervious Concrete	0.1
Porous Asphalt	0.1
Grouted Unit Pavers	1.0
Solid Unit Pavers on granular base, minimum 3/16-inch joint space	0.2
Crushed Aggregate	0.1
Turfblock	0.1
Amended, mulch soil	0.1
Landscape	0.1
Other	TBD By Engineer and Approved by Port

There are six types of IMPs that are allowable. Other IMPs may be submitted for approval on a project subject to the approval of the Port. Table 2-6 summarizes the sizing factors for six IMPs.

Table 2-6 IMP Sizing Factors

Surface	Factor
Bioretention Facility	0.04[1]
Flow-through Planter	0.04[1]
Cistern	Minimum Volume = [Tributary Area (sf)] × [Runoff Factor] × [WQV Rainfall Total] / 12
Dry Well	Minimum Volume = [Tributary Area (sf)] × [Runoff Factor] × [WQV Rainfall Total] / 12
Infiltration Trench	Minimum Volume = [Tributary Area (sf)] × [Runoff Factor] × [WQV Rainfall Total] / 12
Infiltration Basin	Minimum Volume = [Tributary Area (sf)] × [Runoff Factor] × [WQV Rainfall Total] / 12
Other	TBD By Engineer and Approved by Port

[1] The sizing factor is the ratio of the design intensity of rainfall on tributary impervious surfaces (0.2 inches/hour) to the design percolation rate in the facility (5 inches/hour), or 0.04 (dimensionless).

When using an LID IMP, the following equations shall be used to calculate the required LID IMP sizes:

Volume = DMA Tributary Area X Runoff Factor X IMP Sizing Factor X Unit Precipitation.

Area = DMA Tributary Area X Runoff Factor X IMP Sizing Factor.

B) SOURCE CONTROL BMPS

To minimize or prevent pollutant generation, source control BMPs are required for each PDP. Table 2-7 identifies the potential pollutant sources and corresponding permanent and operational source controls to be implemented. Items may be:

- Applicable potential sources of stormwater pollutants that apply to the project.
- Corresponding permanent source control BMPs that need to be shown on the Site Map.
- A brief narrative description of the applicable source control BMPs.

Justification of why a particular control could not be implemented for this project because of any special condition or situation shall also be provided.

Fact Sheets for applicable source control BMPs may be obtained from the California Stormwater Quality Association (CASQA) Stormwater Quality Handbooks.

TABLE 2-7 **SOURCE CONTROL BMPS**			
Potential Pollutant Sources	**Permanent Controls** (Show on Site Plan where appropriate)	**Permanent Control Description**	**Operational BMPs**
On-site storm drain inlets	• Locations of inlets.	• Mark all inlets with Port of San Diego storm drain markers (shown below). Markers can be obtained from the Port's Environmental Service Department. 	• Maintain and periodically repaint or replace inlet markings. • Provide stormwater pollution prevention information to new site owners, lessees, or operators. • See applicable operational BMPs in Fact Sheet SC-74, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
Interior floor drains and elevator shaft sump pumps		• Interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	• Inspect and maintain drains to prevent blockages and overflow.
Interior parking garages		• Parking garage floor drains will be plumbed to the sanitary sewer.	• Inspect and maintain drains to prevent blockages and overflow.

TABLE 2-7
SOURCE CONTROL BMPS

Potential Pollutant Sources	**Permanent Controls** (Show on Site Plan where appropriate)	**Permanent Control Description**	**Operational BMPs**
Landscape/ Outdoor Pesticide Use	• Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. • Show self-retaining landscape areas, if any. • Show stormwater treatment facilities.	• Final landscape plans will accomplish all of the following: o Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. o Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. o Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. o Consider using pest-resistant plants, especially adjacent to hardscape. • To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	• Maintain landscaping using minimum or no pesticides. • See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Municipal Stormwater BMP Handbook at http://www.cabmphandbooks.com/Municipal.asp • Provide Integrated Pest Management information to new owners, lessees and operators.
Use efficient irrigation systems	• Provide landscape and irrigation plans and specifications as evidence of employing permanent controls, and include explanations of how each permanent control is specifically addressed in letter by the project landscape architect.	• Employ rain shutoff devices to prevent irrigation after precipitation. • Design irrigation systems to each landscape area's specific water requirements. • Use flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines. • Employ other comparable, equally effective, methods to reduce irrigation water runoff.	

TABLE 2-7
SOURCE CONTROL BMPS

Potential Pollutant Sources	**Permanent Controls** (Show on Site Plan where appropriate)	**Permanent Control Description**	**Operational BMPs**
Need for future indoor & structural pest control		• Note building design features that discourage entry of pests.	• Provide Integrated Pest Management information to owners, lessees, and operators.
Pools, spas, ponds, decorative fountains, and other water features	• Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet.	• Plumb pools to the sanitary sewer in accordance with local requirements.	• See applicable operational BMPs in Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQA Municipal Stormwater BMP Handbook at http://www.cabmphandbooks.com/Municipal.asp
Food service	• For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. • On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	• Describe the location and features of the designated cleaning area. • Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	

TABLE 2-7
SOURCE CONTROL BMPS

Potential Pollutant Sources	**Permanent Controls** (Show on Site Plan where appropriate)	**Permanent Control Description**	**Operational BMPs**
Refuse areas	• Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. • If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run- on and show locations of berms to prevent runoff from the area. • Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	• State how site refuse will be handled and provide supporting detail to what is shown on plans. • Signs will be posted on or near dumpsters with the words “Do not dump hazardous materials here” or similar.	• Provide adequate number of receptacles. • Inspect receptacles regularly; repair or replace leaky receptacles. • Keep receptacles covered. • Prohibit/prevent dumping of liquid or hazardous wastes. • Post “no hazardous materials” signs. • Inspect and pick up litter daily and clean up spills immediately. • Keep spill control materials available on- site. See Fact Sheet SC-34, “Waste Handling and Disposal” in the CASQA Municipal Stormwater BMP Handbook: http://www.cabmphandbooks.com/Municipal.asp
Industrial processes	• Show process area.	• Cover or enclose areas that would be the most significant source of pollutants; or, slope the area toward a dead-end sump; or, discharge to the sanitary sewer system in compliance with the applicable municipal waste water district’s requirements (include a copy of the waste acceptance letter from the agency accepting the waste). • Grade or berm area to prevent run-on from surrounding areas. • Installation of storm drains in areas of equipment repair is prohibited.	• See Fact Sheet SC-10, “Non- Stormwater Discharges” in the CASQA Municipal Stormwater BMP Handbook at http://www.cabmphandbooks.com/Municipal.asp

TABLE 2-7
SOURCE CONTROL BMPS

Potential Pollutant Sources	**Permanent Controls** (Show on Site Plan where appropriate)	**Permanent Control Description**	**Operational BMPs**
		• Implement other features which are comparable or equally effective.	
Outdoor storage of equipment or materials	• Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. • Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. • Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	• Post-project activities will comply with the requirements of local Hazardous Materials Programs for: o Hazardous Waste Generation o Hazardous Materials Release Response and Inventory o California Accidental Release (CalARP) o Aboveground Storage Tank o Uniform Fire Code Article 80 Section 103(b) & (c) 1991 • Underground Storage Tank • Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.	• See the Fact Sheets SC-31, “Outdoor Container Storage” and SC- 33, “Outdoor Storage of Raw Materials ” in the CASQA Municipal Stormwater BMP Handbook at http://www.cabmphandbooks.com/Municipal.asp

TABLE 2-7
SOURCE CONTROL BMPS

Potential Pollutant Sources	**Permanent Controls** (Show on Site Plan where appropriate)	**Permanent Control Description**	**Operational BMPs**
Vehicle and Equipment Cleaning	• Commercial/ industrial facilities having vehicle/ equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. • Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. • Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed. http://www.cabmphandbooks.com	• If a car wash area is not provided, describe measures taken to discourage on-site car washing and explain how these will be enforced. • Equip wash area with a clarifier, grease trap or other pretreatment facility, as appropriate and properly connect to the sanitary sewer. • Implement other features which are comparable or equally effective	• Describe operational measures to implement the following (if applicable): o Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. o Car dealerships and similar may rinse cars with water only. See Fact Sheet SC-21, "Vehicle and Equipment Cleaning," in the CASQA Municipal Stormwater BMP Handbook at http://www.cabmphandbooks.com/Municipal.asp

TABLE 2-7
SOURCE CONTROL BMPS

Potential Pollutant Sources	**Permanent Controls** (Show on Site Plan where appropriate)	**Permanent Control Description**	**Operational BMPs**
Vehicle/Equipment Repair and Maintenance	• Accommodate all vehicle equipment repair and maintenance indoors or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. • Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. • Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	• No vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. • An industrial waste discharge permit will be obtained for floor drains connected to the sanitary sewer; design will meet the permitting agency's requirements. • An industrial waste discharge permit will be obtained for tanks, containers or sinks to be used for parts cleaning or rinsing; design will meet the permitting agency's requirements.	• The following restrictions apply to use the site: o No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinse water from parts cleaning into storm drains. o No vehicle fluid removal shall be performed outside a building, or on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. • No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.

TABLE 2-7
SOURCE CONTROL BMPS

Potential Pollutant Sources	Permanent Controls (Show on Site Plan where appropriate)	Permanent Control Description	Operational BMPs
Fuel Dispensing Areas	• Fueling areas[3] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: o Graded at the minimum slope necessary to prevent ponding o Separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. • Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1]. The canopy [or cover] shall not drain onto the fueling area.		• The property owner shall dry sweep the fueling area routinely. See the Business Guide Sheet, "Automotive Service—Service Stations" in Appendix D of the CASQA Industrial and Commercial Stormwater BMP Handbook at http://www.cabmphandbooks.com/Documents/Industrial/Appendix_D.pdf

[3] The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

TABLE 2-7 SOURCE CONTROL BMPS			
Potential Pollutant Sources	**Permanent Controls** (Show on Site Plan where appropriate)	**Permanent Control Description**	**Operational BMPs**
Loading Docks	• Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible. • Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. • Provide a roof overhang over the loading area or install door skirts cowling at each bay that enclose the end of the trailer.		• Move loaded and unloaded items indoors as soon as possible. • See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Municipal Stormwater BMP Handbook at • http://www.cabmphandbooks.com/Municipal.asp
Fire Sprinkler Test Water		Provide a means to drain fire sprinkler test water to the sanitary sewer.	• See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Municipal Stormwater BMP Handbook at http://www.cabmphandbooks.com/Municipal.asp

TABLE 2-7
SOURCE CONTROL BMPS

Potential Pollutant Sources	**Permanent Controls** (Show on Site Plan where appropriate)	**Permanent Control Description**	**Operational BMPs**
Miscellaneous Drain or Wash Water • Boiler drain lines Condensate drain lines • Rooftop equipment Drainage sumps • Roofing, gutters, and trim		• Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. • Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. • Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment. • Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. • Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	
Plazas, sidewalks, and parking lots			• Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.
Project Materials, Architectural Materials	• Show a preliminary design for any landscape/building architectural features such as roofs, archways, fountains, etc. • Include a schedule of all building materials	• Avoid using architectural materials that are susceptible to the generation pollutants through direct contact with stormwater. Consider using alternative materials that will not release physical or chemical constituents that are known to cause impairment to the downstream waterbodies.	

TABLE 2-7 **SOURCE CONTROL BMPS**			
Potential Pollutant Sources	**Permanent Controls** (Show on Site Plan where appropriate)	**Permanent Control Description**	**Operational BMPs**
	that are exposed to rainfall and subsequent stormwater discharge • Provide analysis for project design associated with materials that may be susceptible to leach into runoff for pollutant constituents associated with any 303(d) list or TMDLs to which your project site drains.		

Where identified in Table 2-8, the following requirements shall be incorporated into applicable priority projects during the stormwater BMP selection and design process. Projects shall adhere to each of the individual priority project category requirements that apply to the project (e.g., a restaurant with more than 15 parking spaces would be required to incorporate the requirements for "Equipment Wash Areas and "Parking Areas" into the project design). These individual source control BMP requirements for individual priority project features were identified in Table 2-7.

Table 2-8 Individual Feature Source Control Stormwater BMP Requirements

Priority Project Category	Requirements Applicable to Individual Priority Project Features(1)							
	Dock Areas	Maintenance Bays	Vehicle Wash Areas	Outdoor Processing Areas	Equipment Wash Areas	Parking Areas	Roadways	Fueling Areas
Commercial Projects > 1 acre	R	R	R	R				
Industrial Development > 1 Acre	R	R	R	R	R			R
Automotive Repair Shop	R	R	R		R			R
Restaurants	R				R			
Parking Lots						R(2)		
Retail Gasoline Outlets			R					R
Streets, Highways & Freeways							R	

R=Required; select BMPs as required from Table.2-8 or equivalent as identified in Appendix B.

(1) Priority project categories must apply specific stormwater BMP requirements, where applicable. Projects are subject to the requirements of all priority project categories that apply.

(2) Applies if the paved area totals ≥5,000 square feet or with ≥15 parking spaces and is potentially exposed to urban runoff.

C) TREATMENT CONTROL BMPS

When a site cannot treat all of a site's project area using LID BMPs, the remaining site area must be treated using treatment control BMPs. In meeting the requirements in this section, PDPs shall implement a single or combination of stormwater BMPs that will remove anticipated pollutants of concern in site runoff to the maximum extent practicable. Treatment control BMPs with high or medium pollutant removal efficiency for the project's most significant pollutant of concern shall be selected. Treatment control BMPs with a low removal efficiency ranking shall only be approved when a feasibility analysis has been conducted which exhibits that implementation of treatment control BMPs with a high or medium removal efficiency ranking are infeasible.

To select a treatment control BMP using the Treatment Control BMP Removal Efficiencies (Table 2-9), each priority project shall compare the list of pollutants for which the downstream receiving waters are impaired (if any), with the pollutants anticipated to be generated by the project (as identified in Table 2-2). Any pollutants identified by Table 2-2 which are also causing a Clean Water Act section 303(d) impairment or for which there is an approved TMDL of the receiving waters of the project shall be considered primary pollutants of concern. When LID BMPs are not sufficient per the requirements of Section 2.8 A, PDPs that are anticipated to generate a primary pollutant of concern shall meet all applicable requirements, and shall select a single or combination of stormwater BMPs from Table 2-9, which maximizes pollutant removal for the particular primary pollutant(s) of concern.

PDPs that are <u>not</u> treated with LID BMPs sufficient per the requirements of Section 2.8 A and are not anticipated to generate a pollutant for which the receiving water is listed as a Clean Water Act Section 303(d) impaired waterbody or for which there is no TMDL shall meet applicable standard requirements and shall select a single or combination of stormwater BMPs from Table 2-9, which are effective for pollutant removal of the identified secondary pollutants of concern, consistent with the "maximum extent practicable" standard defined in Attachment D of the Municipal Permit.

Where a site generates both primary and secondary pollutants of concern, primary pollutants of concern receive priority for treatment control BMP selection. For such sites, selected treatment control BMPs must only maximize pollutant removal for the primary pollutants of concern. Where a site generates only secondary pollutants of concern, selected treatment control BMPs shall target the secondary pollutant of concern determined to be most significant for the project. Selected treatment control BMPs must be effective for the widest range of pollutants of concern anticipated to be generated by a priority project (as identified in Table 2-2), consistent with the maximum extent practicable standard defined in Attachment D of the Municipal Permit.

Preferred treatment control BMPs includes bioretention facilities, settling basins (dry ponds), wet ponds and constructed wetlands, and infiltration facilities or practices. When the preferred treatment control BMPs cannot be incorporated into a project, justification must be provided and other treatment control BMPs must be provided. Conditionally adequate treatment control BMPs

require addition care for justification of use over the list of preferred treatment control BMPs. Conditionally adequate BMPs are preferred in the following order: media filters, high-rate biofilters, high-rate media filters, hydrodynamic separators, drain inlet inserts, trash racks, and other proprietary treatment control devices. Fact sheets for various treatment control BMPs may be obtained from the CASQA Stormwater Quality Handbooks. Additionally engineering details and specifications shall be included for the selected treatment control BMPs.

Table 2-9 Treatment Control BMP Removal Efficiencies

Pollutants of Concern	Bioretention Facilities (LID)	Settling Basins (Dry Ponds)	Wet Ponds and Wetlands	Infiltration Facilities or Practices (LID)	Media Filters	High-rate biofilters	High-rate media filters	Trash Racks & Hydro -dynamic Devices	Vegetated Swales
Coarse Sediment and Trash	High	High	High	High	High	High	High	High	High
Pollutants that tend to associate with fine particles during treatment	High	High	High	High	High	Medium	Medium	Low	Medium
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low	Low

Alternative stormwater BMPs not identified in Table 2-9 may be approved at the discretion of the Port, provided the alternative BMP is as effective in removal of pollutants of concern as other feasible BMPs listed in Table 2-9.

Notes on Treatment Control BMP Categories

All rankings are relative. Ranking of all facilities assumes proper sizing, design, and periodic maintenance. Following are general descriptions of each category.

- **Bioretention Facilities** (infiltration planters, flow-through planters, bioretention areas, and bioretention swales). Facilities are designed to capture runoff and infiltrate slowly through soil media which also supports vegetation. Bioretention facilities, except for flow-through planters, effectively promote infiltration into native soils. In clay soils, facilities may capture excess treated runoff in an under drain piped to the municipal storm drain system. Typical criteria: an infiltration surface area at least 4% of tributary impervious area, 6-inch average depth of top reservoir, 18-inch soil layer, 12-inch to 18-inch gravel subsurface storage layer.

- **Settling Basins and Wetlands** (extended detention basins, "wet" basins, decorative or recreational lakes or water features also used for stormwater treatment, constructed wetlands). Facilities are designed to capture a minimum water quality volume of 80% of total runoff and detain for a minimum of 48 hours. Some wetland designs have proven effective in removing nutrients, but performance varies.

- **Infiltration Facilities or Practices** (infiltration basins, infiltration trenches, dry wells, dispersal of runoff to landscape, pervious pavements). These facilities and landscape designs capture, retain, and infiltrate a minimum of 80% of runoff into the ground. Infiltration facilities are generally only feasible in permeable (Hydrologic Soil Group A or B) soils. Volume and area of infiltration facilities depends on soil permeability and safety factor used. Typical criteria: Infiltration facilities should have pretreatment to remove silt to prolong life of the facility. A 10-foot vertical separation from average seasonal groundwater depth is required. Dispersal to landscape may be accomplished in any soil type and generally requires a maximum 2:1 ratio impervious: pervious and concave topography to ensure the first 1 inch of rainfall is retained.

- **Media Filters** (sand filters). Filters designed to treat runoff produced by a rainfall of 0.2 inches per hour (or 2 $\times$ 85th percentile hourly rainfall intensity) by slow infiltration through sand or other media. Typical criteria: Surface loading rate not to exceed 5 inches/hour. Entire surface of the sand must be accessible for maintenance.

- **High Rate Biofilters** (tree wells, typically proprietary). Biofilters with specially designed media to rapidly filter runoff while removing some pollutants. Filterra® (proprietary version) recommends surface loading rates of up to 100 inches/hour.

- **High-rate Media Filters** (typically proprietary). Vaults with replaceable cartridge filters filled with inorganic media.

- Drainage Inserts have low effectiveness in removing pollutants that tend to associate with fine particles and have medium effectiveness in removing coarse sediment and trash. They are sometimes used to augment more effective treatment facilities and are sometimes used alone when more effective facilities have been deemed infeasible.

- **Vegetated Swales**. The conventional swale design uses available on-site soils and does not include an under drain system. Where soils are clayey, there is little infiltration. Treatment occurs as runoff flows through grass or other vegetation before exiting at the downstream end. Recommended detention times are on the order of 10 minutes.

Notes on Pollutants of Concern:

In Table 2-10, Pollutants of Concern are grouped as gross pollutants, pollutants that tend to associate with fine particles, and pollutants that remain dissolved.

Table 2-10 Pollutant Constituent Generalized Particle Size Associated with the Fate of Constituents

Pollutant	Coarse Sediment and Trash	Pollutants that tend to associate with fine particles during treatment	Pollutants that tend to be dissolved following treatment
Sediment	X	X	
Nutrients		X	X
Heavy Metals		X	
Organic Compounds		X	
Trash & Debris	X		
Oxygen Demanding		X	
Bacteria		X	
Oil & Grease		X	
Pesticides		X	

Design to Treatment Control BMP Standards

All PDPs utilizing treatment control BMPs shall design, construct and implement treatment control BMPs for the areas not treated by acceptable LID BMPs. Treatment control BMPs must meet the design standards of this section, unless specifically exempted by the limited exclusions listed below. Treatment control BMPs required by this section shall be operational prior to the use of any dependent development, and shall be located and designed in accordance with the requirements here and below.

Treatment control BMPs must be designed to meet one of the volume-based or flow-based numeric sizing criteria identified in Table 2-11. Treatment control BMP design must also consider any impacts to treatment control BMP performance due to tidal influence of the subsurface storm drain system within the tidelands. This is particularly relevant to subsurface filtration systems, hydrodynamic separator systems, detention or infiltration basins, and wet ponds/wetlands.

Limited Exclusions:

- Proposed restaurants, where the land area for development or redevelopment is less than 5,000 square feet, are excluded from the numerical sizing criteria requirements listed in Table 2-11.

- Where significant redevelopment results in an increase of less than 50 percent of the impervious surfaces of a previously existing development, and the existing development was not subject to SUSMP requirements, the numeric sizing criteria discussed in Table 2-11 applies only to the addition, and not to the entire development.

Table 2-11 Numeric Sizing Criteria for Treatment Control BMPs

Volume-based BMPs shall be designed to mitigate (infiltrate, filter, or treat) either:

- The volume of runoff produced from a 24-hour 85th percentile storm event, as determined from the County of San Diego's 85th percentile isopulvial map at http://www.sdcounty.ca.gov/dpw/watersheds/susmp/susmppdf/susmp_85precip.pdf . If a project is located between isopulvial contours, the rainfall amount used to design volume-based BMPs shall be interpolated between contours for the project site.
- The volume of runoff produced by the 85th percentile 24-hour runoff event, determined as the maximized capture urban runoff volume for the area, from the formula recommended in *Urban Runoff Quality Management, WEF Manual of Practice No. 23/ ASCE Manual of Practice No. 87, (1998*); or
- The volume of annual runoff based on unit basin storage volume, to achieve 90 percent or more volume treatment by the method recommended in *California Stormwater Best Management Practices Handbook – Industrial/ Commercial, (1993)*, or
- The volume of runoff, as determined from the local historical rainfall record, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85th percentile 24-hour runoff event. Under this criterion, hourly rainfall data may be used to calculate the 85th percentile storm event by calculating storm event totals for the period of historic record where individual storm events are separated by a minimum of six hours of no rain. The 85th percentile storm event shall be determined by ranking storm event totals from the period of record. National Weather Service gauges or other credible sources acceptable to the Port shall be used to obtain hourly rainfall data from a minimum 20-year period.

Flow-based BMPs shall be designed to mitigate (infiltrate, filter, or treat) either:

- The maximum flow rate of runoff produced from a rainfall intensity of 0.2 inch of rainfall per hour for each hour of a storm event; or
- The maximum flow rate of runoff produced by the 85th percentile hourly rainfall intensity, as determined from the local historical rainfall record, multiplied by a factor of two, for each hour of a storm event; or
- The maximum flow rate of runoff, as determined from the local historical rainfall record, which achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85th percentile hourly rainfall intensity multiplied by a factor of two, for each hour of a storm event.

Locate BMPs Near Pollutant Sources

Treatment control stormwater BMPs should be implemented close to pollutant sources to minimize costs and maximize pollutant removal prior to runoff entering receiving waters. Such BMPs may be located on- or off-site, used singly or in combination, or shared by multiple new developments, pursuant to the following requirements:

- All treatment control BMPs shall be located so as to infiltrate, filter, and/or treat the required runoff volume or flow prior to its discharge to any receiving water body supporting beneficial uses;
- Multiple post-construction treatment control BMPs for a single priority development project shall collectively be designed to comply with the design standards in Table 2-11;
- Shared stormwater BMPs shall be operational prior to the use of any dependent development or phase of development. The shared BMPs shall only be required to treat the dependent developments or phases of development that are in use; and
- Interim stormwater BMPs that provide equivalent or greater treatment than is required by numeric standards may be implemented by a dependent development until each shared BMP is operational. If interim BMPs are selected, the BMPs shall remain in use until permanent BMPs are operational.

Restrictions on Use of Infiltration BMPs

Due to the presence of high tidally influenced groundwater throughout the Port Tidelands, it is not anticipated that Infiltration BMPs would be considered feasible for most projects. However, there may be specific applications in specific locations that may be suitable. If Infiltration BMPs are implemented, they must meet the conditions presented in this section. At a minimum, use of treatment control BMPs that are designed to primarily function as infiltration devices shall meet the following conditions[4]:

- Urban runoff from commercial developments shall undergo pretreatment to remove both physical and chemical contaminants, such as sedimentation or filtration, prior to infiltration.
- All dry weather flows shall be diverted from infiltration devices except for those non-stormwater discharges authorized pursuant to 40 CFR 122.26(d)(2)(iv)(B)(1): diverted stream flows, rising ground waters, uncontaminated ground water infiltration [as defined at 40 CFR 35.2005(20)] to stormwater conveyance systems, uncontaminated pumped

4. These conditions do not apply to treatment control BMPs which allow incidental infiltration and are not designed to primarily function as infiltration devices (such as grassy swales, detention basins, vegetated buffer strips, constructed wetlands, etc.)

ground water, foundation drains, springs, water from crawl space pumps, footing drains, air conditioning condensation, flow from riparian habitats and wetlands, water line flushing, landscape irrigation, discharges from potable water sources other than water main breaks, irrigation water, individual residential car washing, and dechlorinated swimming pool discharges.

- Pollution prevention and source control BMPs shall be implemented at a level appropriate to protect groundwater quality at sites where infiltration treatment control BMPs are to be used.

- The vertical distance from the base of any infiltration treatment control BMP to the seasonal high groundwater mark shall be at least 10 feet or as approved on an individual, site-specific basis by the Port. Where groundwater does not support beneficial uses, this vertical distance criterion may be reduced, provided groundwater quality is maintained.

- The soil through which infiltration is to occur shall have physical and chemical characteristics (such as appropriate cation exchange capacity, organic content, clay content, and infiltration rate) which are adequate for proper infiltration durations and treatment of urban runoff for the protection of groundwater beneficial uses.

- Infiltration treatment control BMPs shall not be used for areas of industrial or light industrial activity; areas subject to high vehicular traffic (25,000 or greater average daily traffic on main roadway or 15,000 or more average daily traffic on any intersecting roadway); automotive repair shops; car washes; fleet storage areas (bus, truck, etc.); and nurseries.

- The horizontal distance between the base of any infiltration structural BMP and any water supply wells shall be 100 feet or as approved on an individual, site-specific basis by the Port.

Where infiltration BMPs are considered, their performance shall be evaluated by the project proponent for impacts on groundwater quality and approved by the Port. Three factors significantly influence the potential for urban runoff to contaminate ground water. They are (i) pollutant mobility, (ii) pollutant abundance in urban runoff, (iii) and soluble fraction of pollutant. The risk of contamination of groundwater may be reduced by pretreatment of urban runoff. A discussion of limitations and guidance for infiltration practices is contained in, *Potential Groundwater Contamination from Intentional and Non-Intentional Stormwater Infiltration, Report No. EPA/600/R-94/051, USEPA (1994).*

2.9 Proof of Ongoing Stormwater BMP Maintenance

Stormwater BMP maintenance will be provided by the Port for capital projects (i.e., public entity maintenance) and will be provided by individual tenants for tenant projects (i.e., through lease provisions). As part of project review for both capital and tenant priority projects that include interim or permanent structural BMPs, the Port will verify that appropriate mechanisms are in-place. To aid with the preparation of the O&M Plan, the Port has provided a template O&M Plan, which is available on the website at: http://www.portofsandiego.org/environment/stormwater/1766-usmp-template.html. Maintenance requirements identified in below are required by the Municipal Permit and the Model SUSMP.

A) MAINTENANCE REQUIREMENTS

- Operation & Maintenance (O&M) Plan: The Port will require that a copy of a satisfactory Operation & Maintenance (O&M) plan, prepared by the tenant/project proponent is included in the USMP. The O&M Plan must describe the designated responsible party to manage the stormwater BMP(s), any necessary employee training and duties, operating schedule, maintenance frequency, specific maintenance activities, copies of resource agency permits, and any other necessary activities. At a minimum, the O&M Plan shall require the inspection and servicing of all structural BMPs on an annual basis. Further, annual written verification of effective operation and maintenance of each approved treatment control BMP by the responsible party is required to be submitted to the Port prior to each wet season. The tenant shall document all maintenance requirements and shall retain records for at least 5 years. These documents shall be made available to the Port for inspection upon request at any time. O&M Plans will also be prepared for capital projects that include structural BMPs. The Port's O&M template is to be used to fulfill the O&M planning requirement.

- Access Easement/Agreement: The Port maintains rights to access tenant properties as part of lease provisions. These rights extend to any access required related to structural BMPs. A copy of the access agreement is included in Appendix C.

B) MAINTENANCE MECHANISMS

The maintenance mechanisms below apply to Port projects:

- Public Entity Maintenance: The Port will provide stormwater BMP maintenance for its capital projects. Funding will be provided an on-going basis through the inclusion of maintenance costs in annual operating budgets for any departments having BMP maintenance responsibility.

- Lease Provisions: The Port will assure stormwater BMP maintenance, repair and replacement of tenant projects through conditions in tenant leases.

- Other Mechanisms: On a case by case basis, the Port may consider other mechanisms for treatment control BMP maintenance such as inclusion of maintenance conditions in a use permit; or alternative mechanisms, subject to Port approval.

C) VERIFICATION MECHANISMS

For discretionary projects, stormwater BMP maintenance requirements shall be incorporated into the project plan approval conditions, and shall be consistent with permits issued by resource agencies, before decision-maker approval of discretionary permits. For projects requiring ministerial permits, stormwater BMP maintenance requirements will be incorporated into the permit conditions before the issuance of any ministerial permits. Sample conditions included in Project Plan Approval Letters for tenant projects are provided in Appendix D.

For capital projects requiring treatment control BMPs, the Port will establish a method of stormwater BMP maintenance prior to the commencement of construction.

The Port will verify that the BMPs reflected in the approved USMP document have been implemented at the completion of construction.

2.10 Waiver of Treatment Control BMP Requirements

The Countywide Model SUSMP and the Municipal Permit allow jurisdictions to waive requirements for implementing treatment control BMPs on a project-specific basis if infeasibility can be established. The Port encourages all project proponents to make every attempt to comply with treatment control BMP requirements. The Countywide Model SUSMP and Municipal Permit do not allow waivers from Site Design or Source Control BMPs and all priority projects must comply with these requirements. In addition, priority projects may not cause or contribute to any exceedance of water quality objectives and pollutants in runoff must be reduced to the MEP.

2.11 Alternative Methods for Achieving Treatment Requirements

In accordance with provisions of the Model SUSMP, the Port may implement the Local Equivalent Area Drainage (LEAD) Method, as proposed by the City of San Diego in its May 16, 2002 letter, for meeting the BMP requirements in Table 2-11 for inclusion in their jurisdictional SUSMP. The alternative method must minimally meet the following criteria:

- The alternative treatment area shall be located within the proximity of the project;
- The alternative treatment area shall discharge to the same receiving water as the project;
- The alternative treatment area shall be equivalent or greater than the project footprint;
- The alternative treatment area shall have an equivalent or greater impervious surface area than the project;
- The alternative treatment area shall have an equivalent or greater pollutant load than the project;
- Site Design and Source Control BMPs (Sections 2.8.A and B) shall be required in the project design; and
- Alternative treatments shall be limited to redevelopment and/or infill projects.

The Port may implement an alternative method for no more than three pilot projects within its jurisdiction during this permit cycle. For each project where an alternative method is implemented, the effectiveness of the alternative method shall be monitored and reported on to the Regional Board by the end of the permit cycle.

The Port has not identified any pilot projects for the LEAD Method at this time. Suitable projects may be identified in the future. Candidate projects for LEAD Method pilot evaluation should be brought to the attention of the Port Environmental Services Department. Interested parties should review details of the LEAD Method provided in Appendix C of the Countywide Model SUSMP (http://www.projectcleanwater.org/pdf/susmp/final_updated_model_susmp_2009.pdf).

2.12 Site Design Stormwater Treatment Credits

The Copermittees may develop and submit for public review and comment and Regional Board approval a regional Model Site Design Stormwater Treatment Credits program that allows reductions in the volume or flow of stormwater that must be captured or treated on a project in return for the inclusion of specified project design features in the project. The Model Site Design Stormwater Treatment Credits program shall be deemed to be a part of this Jurisdictional SUSMP following Regional Board approval. Any such model program shall specify the conditions under which project proponents can be credited for the use of site design features and low impact development techniques that can reduce the volume of stormwater runoff, preserve natural areas, and minimize the pollutant loads generated and potentially discharged from the site. Any Site Design Stormwater Treatment Credits program implemented by the Port within its jurisdiction shall be consistent and compliant with this model approved by the Regional Board.

Appendix A Information on SIC Codes

Standard Industrial Classification (SIC) Code Information

U.S. Department of Labor Occupational Safety & Health Administration (www.osha.gov)

SIC Description for *5013*

Division F: *Wholesale Trade*
Major Group 50: *Wholesale Trade-durable Goods*
Industry Group 501: *Motor Vehicles and Motor Vehicle Parts and* 5013 Motor Vehicle Supplies and New Parts

Establishments primarily engaged in the wholesale distribution of motor vehicle supplies, accessories, tools, and equipment; and new motor vehicle parts.

- Automobile engine testing equipment electrical-wholesale
- Automobile glass-wholesale
- Automobile service station equipment-wholesale
- Automotive accessories-wholesale
- Automotive engines, new-wholesale
- Automotive parts, new-wholesale
- Automotive stampings-wholesale
- Automotive supplies-wholesale
- Batteries, automotive-wholesale
- Engine electrical equipment, automotive-wholesale
- Garage service equipment-wholesale
- Hardware, automotive-wholesale
- Motorcycle parts-wholesale
- Pumps, measuring and dispensing: gasoline and oil-wholesale
- Seat belts, automotive-wholesale
- Seat covers, automotive-wholesale
- Service station equipment, automobile-wholesale
- Testing equipment, electrical: automotive-wholesale
- Tools and equipment, automotive-wholesale
- Wheels, motor vehicle: new-wholesale

SIC Description for *5014*

Division F: *Wholesale Trade*
Major Group 75: *Automotive Repair, Services, And Parking*

5014 Tires and Tubes

Establishments primarily engaged in the wholesale distribution of tires and tubes for passenger and commercial vehicles.

- Repair materials, tire and tube-wholesale
- Tires, used-wholesale
- Tires and tubes, new-wholesale
- Tires, used-wholesale

SIC Description for *5541*

Division G: *Retail Trade*
Major Group 55: *Automotive Dealers and Gasoline Service Stations*
Industry Group 554: *Gasoline Service Stations*

5541 Gasoline Service Stations

Gasoline service stations primarily engaged in selling gasoline and lubricating oils. These establishments frequently sell other merchandise, such as tires, batteries, and other automobile parts, or perform minor repair work. Gasoline stations combined with other activities, such as grocery stores, convenience stores, or carwashes, are classified according to the primary activity.

- Automobile service stations-retail
- Filling stations, gasoline-retail
- Gasoline and oil-retail
- Marine service stations-retail
- Service stations, gasoline-retail
- Truck stops-retail

SIC Description for *5812*

Division G: *Retail Trade*
Major Group 58: *Eating And Drinking Places*
Industry Group 581: *Eating And Drinking Places*

5812 Eating Places

Establishments primarily engaged in the retail sale of prepared food and drinks for on-premise or immediate consumption. Caterers and industrial and institutional food service establishments are also included in this industry.

- Automats (eating places)
- Beaneries
- Box lunch stands
- Buffets (eating places)
- Cafes
- Cafeterias
- Carry-out restaurants
- Caterers
- Coffee shops
- Commissary restaurants
- Concession stands, prepared food (e.g., in airports and sports arenas)
- Contract feeding
- Dairy bars
- Diners (eating places)
- Dining rooms
- Dinner theaters
- Drive-in restaurants
- Fast food restaurants
- Food bars
- Food service, institutional
- Frozen custard stands
- Grills (eating places)
- Hamburger stands
- Hot dog (frankfurter) stands
- Ice cream stands
- Industrial feeding
- Lunch bars
- Lunch counters
- Luncheonettes
- Lunchrooms
- Oyster bars
- Pizza parlors
- Pizzerias
- Refreshment stands

- Restaurants
- Restaurants, carry-out
- Restaurants, fast food
- Sandwich bars or shops
- Snack shops
- Soda fountains
- Soft drink stands
- Submarine sandwich shops
- Tea rooms
- Theaters, dinner

SIC Description for *7532*

Division I: *Services*
Major Group 75: *Automotive Repair, Services, and Parking*
Industry Group 753: *Automotive Repair Shops*

7532 Top, Body, and Upholstery Repair Shops and Paint Shops

Establishments primarily engaged in the repair of automotive tops, bodies, and interiors, or automotive painting and refinishing. Also included in this industry are establishments primarily engaged in customizing automobiles, trucks, and vans except on a factory basis. Establishments primarily engaged in customizing automobiles, trucks, and vans on a factory basis are classified in Manufacturing, Industry Group 371.

- Antique and classic automobile restoration
- Automotive body shops
- Automotive interior shops
- Automotive paint shops
- Automotive tops (canvas or plastic), installation, repair, or sales and
- Automotive trim shops
- Bump shops (automotive repair)
- Collision shops, automotive
- Customizing automobiles, trucks or vans: except on a factory basis
- Upholstery repair, automotive
- Van conversions, except on a factory basis

SIC Description for *7533*

Division I: *Services*
Major Group 75: *Automotive Repair, Services, and Parking*
Industry Group 753: *Automotive Repair Shops*

7533 Automotive Exhaust System Repair Shops

Establishments primarily engaged in the installation, repair, or sale and installation of automotive exhaust systems. The sale of mufflers, tail pipes, and catalytic converters is considered to be incidental to the installation of these products.

- Catalytic converters, automotive: installation, repair, or sales
- Exhaust system services, automotive
- Mufflers, automotive: installation, repair, or sales and installation

SIC Description for *7534*

Division I: *Services*
Major Group 75: *Automotive Repair, Services, And Parking*
Industry Group 753: *Automotive Repair Shops*

7534 Tire Retreading and Repair Shops

Establishments primarily engaged in repairing and retreading automotive tires. Establishments classified here may either retread customers' tires or retread tires for sale or exchange to the user or the trade.

- Rebuilding and retreading tires for the trade
- Retreading tires
- Tire recapping
- Tire repair shops
- Tire studding and restudding
- Vulcanizing tires and tubes

SIC Description for *7536*

Division I: *Services*
Major Group 75: *Automotive Repair, Services, And Parking*
Industry Group 753: *Automotive Repair Shops*

7536 Automotive Glass Replacement Shops

Establishments primarily engaged in the installation, repair, or sales and installation of automotive glass. The sale of the glass is considered incidental to the replacement.

- Glass replacement and repair, automotive

SIC Description for *7537*

Division I: *Services*
Major Group 75: *Automotive Repair, Services, And Parking*
Industry Group 753: *Automotive Repair Shops*

7537 Automotive Transmission Repair Shops

Establishments primarily engaged in the installation, repair, or sales and installation of automotive transmissions. The sale of transmissions and related parts is considered incidental to the installation or repair of these products.

- Automatic transmission repair, automotive
- Transmission repair, automotive
- Transmission, automotive: installation, repair, or sale and installation

SIC Description for *7538*

Division I: *Services*
Major Group 75: *Automotive Repair, Services, And Parking*
Industry Group 753: *Automotive Repair Shops*

7538 General Automotive Repair Shops

Establishments primarily engaged in general automotive repair. Establishments primarily engaged in industrial truck repair are classified in Industry 7699.

- Automotive repair shops, general
- Diesel engine repair, automotive
- Engine repair, automotive
- Engine repair, truck: except industrial
- Garages, general automotive repair and service

- Motor repair, automotive
- Truck engine repair, except industrial

SIC Description for *7539*

Division I: *Services*
Major Group 75: *Automotive Repair, Services, And Parking*
Industry Group 753: *Automotive Repair Shops*

7539 Automotive Repair Shops, Not Elsewhere Classified

Establishments primarily engaged in specialized automotive repair, not elsewhere classified, such as fuel service (carburetor repair), brake relining, front-end and wheel alignment, and radiator repair. Establishments primarily engaged in automotive welding are classified in Industry 7692.

- Air-conditioner repair, automotive
- Automotive springs, rebuilding and repair
- Axle straightening, automotive
- Brake linings, sale and installation
- Brake repairing, automotive
- Carburetor repair
- Electrical service, automotive (battery and ignition repair)
- Frame repair shops, automotive
- Front end repair, automotive
- Fuel system conversion, automotive
- Fuel system repair, automotive
- Generator and starter repair, automotive
- Radiator repair shops, automotive
- Wheel alignment, automotive

This page intentionally left blank.

Appendix B Stormwater Best Management Practices

STORMWATER BEST MANAGEMENT PRACTICES

The following are a list of BMPs that may be used to minimize the introduction of pollutants of concern that may result in significant impacts to receiving waters. Other BMPs approved by the Port as being equal to or more effective in pollutant reduction than comparable BMPs identified below are acceptable. See Appendix E: Suggested Resources for additional sources of information. All BMPs must comply with local zoning and building codes and other applicable regulations.

LID and Site Design BMPs

Optimize Site Layout

- Conserve and utilize natural soils and/or use amended soils to encourage light infiltration/ percolation.
- Minimize disturbances to natural drainages.
- Minimize soil compaction in planned green space (landscaped areas, lawns, etc.) and re-till soils when compacted by grading/construction equipment.
- Conform the site layout along natural landforms, avoid excessive grading and disturbance of vegetation and soils, and replicate the site's natural drainage patterns.
- Preserve significant trees, especially native trees and shrubs, and identify locations for planting additional native or drought tolerant trees and large shrubs.
- Reduce sidewalk widths
- Design residential streets for the minimum required pavement widths.
- Minimize the number of residential street cul-de-sacs and incorporate landscaped areas within cul-de-sac centers with curb-cuts to reduce their impervious cover.
- Use open space development that incorporates smaller lot sizes.
- Increase building density while decreasing the building footprint.
- Incorporate landscaped buffer areas between sidewalks and streets.
- Reduce overall lot imperviousness by promoting alternative driveway surfaces and shared driveways that connect two or more homes together.
- Reduce overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, and using pervious materials in spillover parking areas.
- Maximizing canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.

Use Pervious Surfaces

- Use permeable materials for private sidewalks, driveways, parking lots, and interior roadway surfaces (examples: hybrid lots, parking groves, permeable overflow parking, etc.).
- Vegetated Roofs / Modules / Walls
- Permeable Paving
- Gravel
- Permeable asphalt
- Pervious concrete
- Unit pavers, ungrouted, set on sand or gravel

Disperse Runoff to Adjacent Pervious Areas

- Use curb-cuts to allow parking lots to drain into landscape areas co-designed as biofiltration areas and/or swales prior to draining into the MS4.
- Draining roads, sidewalks, and impervious trails into adjacent landscaping.
- Pitch driveways and parking areas toward yards and vegetated areas prior to draining into the MS4.
- Draining rooftops into adjacent landscaping prior to discharging to the storm drain.
- Use curb-cuts to allow parking lots to drain into landscape areas co-designed as biofiltration areas and/or swales prior to draining into the MS4.
- Draining roads, sidewalks, and impervious trails into adjacent landscaping.

Direct Runoff to Integrated Management Practices

- Cisterns / Rain barrels.
- Foundation landscaping.
- Biofilters
- Bioretention Swale (detains and infiltrates water through soil)
- Stormwater Planter Box (open-bottomed)
- Stormwater Flow-Through Planter (sealed bottom)
- Vegetated filter strip
- Bioretention Area
- Dry well

Slope and Channel Protection

- Use of natural drainage systems to the maximum extent practicable.
- Stabilized permanent channel crossings.
- Planting native or drought tolerant vegetation on slopes.
- Energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels.

Source Control BMPs

- Storm drain system stenciling and signage.
- Outdoor material and trash storage area designed to reduce or control rainfall runoff.
- Efficient irrigation system.
- Avoid or eliminate the use of architectural materials that are susceptible to the generation of pollutants through direct contact with stormwater
- Good Housekeeping practices.
- Provide a roof overhang over loading docks.
- Accommodate all vehicle equipment repair and maintenance indoors.
- Covered refuse areas.

Treatment Control BMPs

- Detention Basins
- Extended/dry detention basin with grass/vegetated lining
- Extended/dry detention basin with impervious lining

- Infiltration basin
- Infiltration trench
- Wet pond (permanent pool)
- Constructed wetland
- Media filtration
- Sand filtration
- Hydrodynamic Separators
- Trash racks and screens

This page intentionally left blank

Appendix C Port of San Diego BMP Access Agreement

San Diego Unified Port District

Standard Urban Stormwater Mitigation Plan
Access and Maintenance Acknowledgment Form

Applicable to the Urban Stormwater Mitigation Plan for
_____ Project.

This Urban Stormwater Mitigation Plan (USMP) Access and Maintenance Acknowledgement form is applicable to _____ leasehold in order to meet a condition of the Coastal Development Permit or project approval issued for the _____ (Project). The USMP was prepared to satisfy the conditions of the San Diego County Municipal Stormwater Permit Order No. R9-2007-0001 (Municipal Permit) and the San Diego Unified Port District (Port) Standard Urban Stormwater Mitigation Planning Document, dated February 2008.

As directed in the Municipal Permit and required by the Port's Stormwater Management and Discharge Control Ordinance (Article 10 of the San Diego Unified Port District Code), Sections 10.06 and 10.07, the tenant/Project proponent must verify on an annual basis that all structural stormwater treatment control BMPs are being maintained and inspected as described in the Project USMP approved by the Port. This verification will be accomplished by the tenant/Project proponent through inspections and the submittal of an annual written verification of effective operation and maintenance of each approved treatment control BMP. Annual verification must be completed prior to each wet season (October 1 to April 30). The tenant/Project proponent shall document all maintenance requirements and activities and shall retain these records for at least five (5) years. These documents shall be made available to the Port upon request.

Further, the Port maintains the right to access tenant properties as part of lease provisions. This right extends to any required access related to structural treatment control BMPs for inspection.

I, _____ (tenant/Project proponent), acknowledge the above stated responsibilities of maintenance and maintaining access to the structural treatment control BMPs contained in the USMP dated _____ for the Project.

Furthermore, the following individual will be responsible for correspondence, on-going maintenance and inspection of the post-construction BMPs at the Project site:

Name: _____

Title: _____

Phone: _____

Address: _____

Appendix D — Tenant Improvement Projects Post-Construction/Operational Phase Stormwater Conditions

Tenant Improvement Projects – POST-CONSTRUCTION / OPERATIONAL PHASE STORMWATER CONDITIONS

CONDITION OF APPROVAL # 1:

The following statement shall be added to Project Plan Approval Letter for all tenant projects:

"All Port tidelands are regulated under Regional Water Quality Control Board Order No. R9-2007-0001, National Pollutant Discharge Elimination System (NPDES) Permit No. CAS0108758, Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, and the San Diego Unified Port District (Municipal Permit), as adopted, amended, and/or modified. The Municipal Permit prohibits any activities that could degrade stormwater quality. Post-construction / operational use of this project site must comply with the Municipal Permit and District direction related to permitted activities including the requirements found in the District Jurisdictional Urban Runoff Management Document (JURMP). The JURMP is available on the District website: (http://www.portofsandiego.org/sandiego_environment/jurmp.asp) or by contacting the Environmental Services Department, (619) 686-6254.

No discharges of any material or waste, including potable water, wash water, dust, soil, trash and debris, may contaminate stormwater or enter the stormwater conveyance system. Any such material that inadvertently contaminates stormwater or enters the stormwater conveyance system as part of site operations must be removed immediately. All unauthorized discharges to the stormwater conveyance system or the Bay or the ocean must be reported immediately to the Environmental Services Department, in order to address any regulatory permit requirements regarding spill notifications.

Best management practices (BMPs) must be implemented by the Tenant to control the potential release of any materials or wastes being handled or stored on-site which could enter the stormwater conveyance system due to wind or stormwater runoff.

In addition, this project is subject to the Port Standard Urban Stormwater Mitigation Plan (SUSMP) process. As such, approval of the project by the District is necessarily conditioned upon submission by the project proponent of a project specific Urban Stormwater Mitigation Plan (USMP) that meets District requirements. Project approval requires full implementation of all USMP structural and non-structural BMPs throughout the life of the project. The implementation and maintenance of the USMP BMPs constitute regulatory obligations for the lessee, and failure to

comply with the Municipal Permit, the JURMP, or the Port approved USMP, including the specific BMPs contained therein, and may be considered a default under the lease.

Appendix E Suggested Resources

SUGGESTED RESOURCES	HOW TO GET A COPY
PORT OF SAN DIEGO URBAN STORM WATER MITIGATION PLAN (PORT USMP) (2009) This template walks the project proponent through the USMP submittal process.	The Port of San Diego Environmental Services 3165 Pacific Highway San Diego, CA 92101-1128 (619) 686-6254 http://www.portofsandiego.org/environment/stormwater/286-port-susmp.html
COUNTYWIDE MODEL SUSMP (2010) Standard Urban Stormwater Mitigation Plan Requirements for Development Applications Includes the basis of the SUSMP requirements for all Copermittees, including the Port.	The County of San Diego The Department of Planning and Land Use 5201 Ruffin Road, Suite B San Diego, CA 92123 (858) 694-2055 http://www.waterboards.ca.gov/sandiego/water_issues/programs/stormwater/docs/sd_permit/updates_4_2_09/Updated%20Model%20SUSMP.pdf
The County of San Diego Low Impact Development Handbook; Stormwater Management Strategies. (2007). Presents guidance for LID stormwater planning and management techniques. Fact Sheets on LID BMPs are provided in the Appendices.	The County of San Diego The Department of Planning and Land Use 5201 Ruffin Road, Suite B San Diego, CA 92123 (858) 694-2055 http://www.sdcounty.ca.gov/dplu/docs/LID-Handbook.pdf www.sdcounty.ca.gov/dplu/
Better Site Design: A Handbook for Changing Development Rules in Your Community (1998) Presents guidance for different model development alternatives.	Center for Watershed Protection 8391 Main Street Ellicott City, MD 21043 (410) 461-8323 http://www.cwp.org/PublicationStore/bsd.htm
California Urban runoff Best Management Practices Handbooks (2003) for Construction Activity, Municipal, and Industrial/Commercial Presents a description of a large variety of Structural BMPs, Treatment Control, BMPs and Source Control BMPs	Los Angeles County Department of Public Works Cashiers Office 900 S. Fremont Avenue Alhambra, CA 91803 (626) 458-6959 www.cabmphandbooks.org
Caltrans Treatment BMP Technology Report (April 2008, CTSW-RT-08-167.02.02). The Technology Report is a catalog of available technologies that have been evaluated by Caltrans. Fact sheets are provided for each technology that include pertinent design information, constituent removal efficiencies, and relative cost information.	California Department of Transportation P.O. Box 942874 Sacramento, CA 94274-0001 (916) 653-2975 www.dot.ca.gov/hq/env/stormwater
Caltrans Urban runoff Quality Handbook: Planning and Design Staff Guide (Best Management Practices Handbooks (1998) Presents guidance for design of urban runoff BMPs	California Department of Transportation P.O. Box 942874 Sacramento, CA 94274-0001 (916) 653-2975

SUGGESTED RESOURCES	HOW TO GET A COPY
Bioretention Manual (updated 2002) Presents guidance for designing bioretention facilities.	Prince George's County Watershed Protection Branch 9400 Peppercorn Place, Suite 600 Landover, MD 20785 (301) 883-5834 http://www.princegeorgescountymd.gov/der/esg/bioretention/bioretention.asp
Contra Costa Clean Water Program *Stormwater C.3 Guidebook* Includes an integrated design approach to meet California Stormwater NPDES treatment and hydrograph modification management requirements using Low Impact Development site design techniques and facilities.	Contra Costa Clean Water Program 255 Glacier Drive Martinez, CA 94553 (925) 313-2373 http://www.cccleanwater.org/c3-guidebook.html
Design of Stormwater Filtering Systems (1996) by Richard A. Claytor and Thomas R. Schuler Presents detailed engineering guidance on ten different urban runoff-filtering systems.	Center for Watershed Protection 8391 Main Street Ellicott City, MD 21043 (410) 461-8323 http://www.cwp.org/Resource_Library/Controlling_Runoff_and_Discharges/sm.htm
Development Planning for Stormwater Management, A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), (September 2002)	Los Angeles County Department of Public Works (626) 458-4300 http://dpw.lacounty.gov/wmd/NPDES/table_contents.cfm or http://www.888cleanLA.com
Florida Development Manual: A Guide to Sound Land and Water Management (1988) Presents detailed guidance for designing BMPs	Florida Department of the Environment 2600 Blairstone Road, Mail Station 3570 Tallahassee, FL 32399
Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters (1993) Report No. EPA–840-B-92-002. Provides an overview of, planning and design considerations, programmatic and regulatory aspects, maintenance considerations, and costs.	National Technical Information Service U.S. Department of Commerce Springfield, VA 22161 (800) 553-6847 http://www.ntis.gov/
Guide for BMP Selection in Urban Developed Areas *(2001)*	ASCE Envir. and Water Res. Inst. 1801 Alexander Bell Dr. Reston, VA 20191-4400 (800) 548-2723
Low-Impact Development Design Strategies - An Integrated Design Approach *(June 1999)*	Prince George's County, Maryland Department of Environmental Resource Programs and Planning Division 9400 Peppercorn Place Largo, Maryland 20774 http://www.princegeorgescountymd.gov/Government/AgencyIndex/DER/ESG/manuals.asp
Maryland Stormwater Design Manual (1999) Presents guidance for designing urban runoff BMPs	Maryland Department of the Environment 2500 Broening Highway Baltimore, MD 21224 http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.asp

SUGGESTED RESOURCES	HOW TO GET A COPY
National Stormwater Best Management Practices (BMP) Database, Version 1.0 Provides data on performance and evaluation of urban runoff BMPs	American Society of Civil Engineers 1801 Alexander Bell Drive Reston, VA 20191 (703) 296-6000
National Stormwater Best Management Practices Database *(2001)*	*Urban Water Resources Research Council of ASCE* *Wright Water Engineers, Inc.* *(303) 480-1700*
Operation, Maintenance and Management of Stormwater Management (1997) Provides a thorough look at stormwater practices including, planning and design considerations, programmatic and regulatory aspects, maintenance considerations, and costs.	Watershed Management Institute, Inc. 410 White Oak Drive Crawfordville, FL 32327 http://stormwaterfinance.urbancenter.iupui.edu/PDFs/OMMSWM.pdf
Portland Stormwater Management Manual (2004) Includes design illustrations and criteria for bioretention facilities.	Environmental Services 1120 SW 5th Ave., Rm. 1000 Portland, OR 97204 (503) 823-7740 *http://www.portlandonline.com/bes/index.cfm?c=35122&*
Potential Groundwater Contamination from Intentional and Non-Intentional Stormwater Infiltration	*Report No. EPA/600/R-94/051, USEPA (1994).*
Preliminary Data Summary of Urban runoff Best Management Practices (August 1999) *EPA-821-R-99-012*	http://www.epa.gov/ost/stormwater/
Reference Guide for Stormwater Best Management Practices *(July 2000)*	*City of Los Angeles* *Urban runoff Management Division* *650 South Spring Street, 7th Floor* *Los Angeles, California 90014* (213) 482-7066 http://www.lacitysan.org/watershed_protection/pdfs/bmp_refguide.pdf
Second Nature: Adapting LA's Landscape for Sustainable Living (1999) by Tree People Detailed discussion of BMP designs presented to conserve water, improve water quality, and achieve flood protection.	Tree People 12601 Mullholland Drive Beverly Hills, CA 90210 (818) 623-4600 Fax (818) 753-4625
Start at the Source (1999) Detailed discussion of permeable pavements and alternative driveway designs presented.	Bay Area Stormwater Management Agencies Association 2101 Webster Street Suite 500 Oakland, CA (510) 286-1255 www.basmaa.org
Stormwater Management in Washington State (1999) Vols. 1-5 Presents detailed guidance on BMP design for new development and construction.	Department of Printing State of Washington Department of Ecology P.O. Box 798 Olympia, WA 98507-0798 (360) 407-7529

SUGGESTED RESOURCES	HOW TO GET A COPY
Stormwater, Grading and Drainage Control Code, Seattle Municipal Code Section 22.800-22.808, and Director's Rules, Volumes 1-4. (Ordinance 119965, effective July 5, 2000)	*City of Seattle* *Department of Design, Construction & Land Use* *700 5th Avenue, Suite 1900* *Seattle, WA 98104-5070* (206) 684-8880 http://www.seattle.gov/dclu/codes/default.asp
Texas Nonpoint Source Book – Online Module (1998) www.txnpsbook.org Presents BMP design and guidance information on-line	Texas Statewide Urban Runoff Quality Task Force North Central Texas Council of Governments 616 Six Flags Drive Arlington, TX 76005 (817) 695-9150
The Practice of Watershed Protection by Thomas R. Shchuler and Heather K. Holland	Center for Watershed Protection 8391 Main Street Ellicott City, MD 21043 (410) 461-8323 http://www.cwp.org/PublicationStore/practice.htm
Urban Storm Drainage, Criteria Manual – Volume 3, Best Management Practices (1999) Presents guidance for designing BMPs	Urban Drainage and Flood Control District 2480 West 26th Avenue, Suite 156-B Denver, CO 80211 (303) 455-6277